Burlington International Airport
14 CFR Part 150 Update
2018 and 2023 Noise Exposure Maps

HMMH Report No. 308770.008

September 2019

Prepared for:

City of Burlington, Vermont
1200 Airport Drive, #1
Burlington, VT 05403

Prepared by:

HMMH
&
The Jones Payne Group

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Certification

The City of Burlington has completed a comprehensive update of the Title 14 Code of Federal Regulations (CFR) Part 150 Noise Exposure Map for the Burlington International Airport.

(1) The revised Noise Exposure Maps and associated documentation for the Burlington International Airport submitted in this volume to the Federal Aviation Administration under Federal Aviation Regulations Part 150, Subpart B, Section 150.21, are true and complete.

(2) Pursuant to Part 150, Subpart B, Section 150.21(b), all interested parties have been afforded adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft noise exposure map, and of the descriptions of forecast aircraft operations.

(3) The "Existing Conditions (2018) Noise Exposure Map" (Figure 12 on page 39) accurately represents conditions for calendar year 2018.

Note: The transition from F-16C to F-35A aircraft by the Vermont Air National Guard was in progress during the development of this update. As such, no stable state of aircraft operations existed from which to define an Existing Condition. As it represents the last full calendar year of F-16C aircraft operating at Burlington International Airport, 2018 was selected as the Existing Condition for this submission.

(4) The "Five-Year Forecast Conditions (2023) Noise Exposure Map" (Figure 13 on page 41) accurately represents forecast conditions for calendar year 2023, as well as the fifth calendar year after the date of this submission.

By: Eugene E. Richards III

Title: Director of Aviation

Date: SEPTEMBER 19, 2019

Airport Name:	Burlington International Airport
Airport Owner/Operator:	The City of Burlington, Vermont
Address:	1200 Airport Drive, #1, Burlington, VT 05403

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1 Introduction

Part 150 of the Federal Aviation Regulations "Airport Noise Compatibility Planning"[1] sets forth standards for airport operators to use in documenting noise exposure in airport environs and establishing programs to minimize noise-related land use incompatibilities. A formal submission to the Federal Aviation Administration (FAA) under Part 150 includes documentation for two principal elements: (1) Noise Exposure Maps (NEMs) and (2) a Noise Compatibility Program (NCP).

Part 150 "Airport Noise Compatibility Planning" is a voluntary program provided to airports and communities by the Federal Aviation Administration (FAA) to assess and mitigate aircraft noise around airports. One of the principal reasons for preparation of this update is the City's interest in continuing implementation of federally supported noise mitigation at BTV. The City would like to update the NEM to reflect calendar year 2018 operations, calendar year 2023 forecast operations, and current land uses. In addition, the FAA requested that the City update the NEM to continue federally supported noise mitigation.

The City of Burlington, Vermont (the City) completed the most recent Part 150 studies for the Burlington International Airport (BTV) in 2015 and 2008. The studies culminated in submission of two volumes of documentation to the Federal Aviation Administration (FAA): (1) NEM documentation,[2] and (2) a proposed Noise Compatibility Program (NCP).[3] The FAA found the NEM in compliance with Part 150 requirements on December 22, 2015 with NEM contours for 2015 and 2020 conditions. The 2015 and 2020 NEM represent the most recent aircraft noise contours used for FAA funded noise mitigation efforts at BTV. FAA provided a Record of Approval (ROA) for the NCP on June 23, 2008.[4] The ROA included approval of extending the land acquisition and relocation program to include residences between the 65 dB and 70 dB Day Night Average Sound Level (DNL) contours. Appendix A presents a copy of the 2008 ROA. BTV is currently in the process of updating the NCP with changes to transition away from acquisition to sound insulation.

The Airport is home to the Vermont Air National Guard (VTANG) 158th Fighter Wing, which operated the F-16C aircraft for over 30 years. The United States Air Force (USAF) prepared the F-35A Operational Basing Final Environmental Impact Statement (EIS) and later issued a Record of Decision (ROD).[5] According to a USAF April 2016 press release, VTANG is anticipated to start flying the F-35A in fall 2019.[6] To account for the change in the anticipated VTANG operations, the City is updating the NEM to reflect existing aircraft operations, including updated aviation forecast with VTANG F-35A aircraft, and current land uses.

1.1 Purpose and Request for FAA Determination

With this submission, the City of Burlington, Vermont requests that the FAA review the included figures and associated documentation to determine compliance with Part 150 requirements. This document presents the updated NEM for BTV, as required by the specific provisions of 14 CFR Part 150 Subpart B, Section 150.21, and the respective Appendix A. This document includes noise contours (the 2018 NEM as Figure 12 and the 2023 NEM as Figure 13), land use, and related documentation for 2018 conditions and 2023 forecast conditions.

[1] Title 14 of the Code of Federal Regulations (CFR) Part 150.
[2] City of Burlington, Burlington International Airport 14 CFR Part 150 Update 2015 and 2020 Noise Exposure Maps, December 2015.
[3] City of Burlington, Burlington International Airport 14 CFR Part 150 Update Noise Compatibility Program, April 2008.
[4] http://www.faa.gov/airports/environmental/airport_noise/part_150/states/?state=Vermont
[5] The Environmental Impact Statement was released September 2013. The Air Force issued a Record of Decision (ROD) December 2, 2013.
[6] The USAF made a Public Affairs Release on April 4, 2016 that included a statement that F-35A are planned to arrive at Burlington Air Guard Station, Burlington, Vermont, in fall 2019.
http://www.jsf.mil/news/docs/20160404_Selected.pdf

The City intends to use this NEM determination to continue federally supported noise mitigation in accordance with the FAA-approved NCP.

1.2 Recommendations

Based on the results of this NEM update and pending FAA's favorable determination, the BTV staff and its consultants make the following recommendations:

- The City should use the extents of the 2023 NEM contours for land use planning, as the 2018 NEM contours represent a short lived interim state of greatly reduced operations for the VTANG. The extents of the DNL contours for the 2018 NEM are reduced relative to prior NEMs and the 2023 NEM because of the following factors in CY 2018:
  - The VTANG was in the process of drawing down numbers of F-16C aircraft and operations in preparation for the arrival of the F-35A aircraft in 2019.
  - Periods of construction on Runway 15/33 resulted in reduced usage of afterburner departures by the VTANG F-16C aircraft.
- The City should continue with the implementation of the voluntary land acquisition measure for properties with noncompatible use, as approved by the FAA.[7] The voluntary land acquisition measure will be implemented for properties within the 75 dB DNL contour as[8]
  - funding becomes available from the FAA,
  - agreed upon by individual residential property owners, and
  - agreed upon by the applicable land use jurisdiction, in particular the City of South Burlington.
- For properties not included within the voluntary land acquisition area (as described above) and considered a noncompatible land use within the 65 dB DNL contour according to this updated NEM, the City should consider implementing a residential sound insulation program as stated in the BTV 2008 NCP ROA Measure 11, and allowed by Federal funding guidelines.[9]
- The City should update the NEMs if a change in the operation of the airport would establish a substantial new noncompatible use, or would significantly reduce noise over existing noncompatible uses, relative to the 2023 NEM. The City's decision to pursue an NEM update should be considered in the context of applicable state or federal laws, regulations (particularly 14 CFR Part 150) and associated funding guidelines. [10]

1.3 Organization of this Document

The balance of the document presents information required by Title 14 CFR Part 150, and supplementary information that the City believes will assist in providing a full understanding of the current and forecasted noise exposure at BTV. The organization of this document is presented below.

- Chapter 2 provides an overview of Part 150, including a copy of the FAA checklist utilized for review of NEM submissions.
- Chapter 3 provides an introduction to noise evaluation, terminology, and effects. This chapter also presents the Part 150 noise / land use compatibility guidelines that the City used in determining compatibility at BTV.

[7] The reuse plan for properties that have been, or maybe purchased, by the Airport via this NCP measure will be documented separately. FAA has certain requirements for such reuse plans, though reuse planning is beyond the scope of this NEM update. However, the City of Burlington has entered into a contract with a firm to assist with a reuse plan.
[8] This is a brief summary of the 2008 NCP document and the respective FAA ROA. See also Section 4.3.1 of this document.
[9] See also Section 4.3.2 of this document.
[10] Federal Guidelines change from time to time. Currently these guidelines are primarily documented in FAA's Order 5100.38D "Airport Improvement Program (AIP) Handbook."

- Chapter 4 summarizes the elements and status of the existing FAA-approved NCP.
- Chapter 5 presents the official NEM graphics for 2018 and 2023, as well as comparisons of the contours for those years. Additional comparisons of the 2018 and 2023 NEM contours to prior noise study contours from the 2015 NEM as well as the F-35A EIS are also presented. Section 5.3 identifies potentially noncompatible land uses in the noise contours and includes estimates of the residential population contained within the noise contours.
- Chapter 6 describes the development of the noise contours, including detailed information that Part 150 requires on noise modeling methodology, data sources, data reduction, and final modeling assumptions and inputs.
- Chapter 7 summarizes the public consultation process that BTV undertook in developing this NEM update.
- Appendix A presents the documentation of non-standard noise modeling requests submitted for FAA approval.
- Appendix B presents the documentation of airport layout and operations assumptions for noise modeling of the existing and forecast conditions submitted for FAA approval.
- Appendix C presents material related to public notice and participation for the NEM update.
- Appendix D presents the comments received on the May 2019 Draft NEM document.

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2 Part 150 Overview

Part 150 defines a process for airport proprietors to follow in developing and obtaining FAA approval for programs to reduce or eliminate incompatibilities between aircraft noise and surrounding land uses. Part 150 prescribes specific standards and systems for:

- Measuring and calculating noise
- Estimating cumulative noise exposure
- Describing noise exposure (including instantaneous, single aircraft event levels and cumulative levels)
- Coordinating NCP development with local land use officials and other interested parties
- Documenting the analytical process and development of the noise compatibility program
- Submitting documentation to the FAA
- Providing for FAA and public review processes
- FAA acceptance of NEM submissions
- FAA approval or disapproval of the NCP submission

2.1 Noise Exposure Maps

NEM documentation describes the airport layout and operation, aircraft-related noise exposure, land uses in the airport environs, and the resulting noise/land use compatibility. The NEM documentation must address two time frames: (1) data representing the existing condition and (2) a forecast condition that is at least five years in the future. Part 150 requires more than simple "maps" to provide the necessary information in an NEM, graphic information is too extensive to present in a single figure. Requirements also include extensive tabulated information and text discussion. Therefore, the NEM documentation includes graphic depiction of existing and future noise exposure resulting from aircraft operations and of land uses in the airport environs. It also describes the data collection and analysis undertaken in its development.

This update contains an existing condition map for calendar year 2018, and a five-year forecast condition map for calendar year 2023. Chapter 5 presents the updated existing and forecast condition NEM figures.

2.2 Noise Compatibility Program

The NCP is essentially a list of the actions that an airport proprietor proposes to undertake to minimize existing and future noise/land use incompatibilities. The NCP documentation must describe the development of the program, including a description of all measures considered, the reasons that individual measures were accepted or rejected, how measures will be implemented and funded, and the predicted effectiveness of individual measures and the overall program.

Official FAA acceptance of the Part 150 submission and approval of the NCP does not eliminate requirements for formal environmental assessment of any proposed actions pursuant to requirements of the National Environmental Policy Act (NEPA). However, acceptance of the submission is a prerequisite to the application for funding of implementation actions.

Chapter 4 presents information on the current 2008 NCP. An update to the Airport's 2008 NCP is currently in process and is scheduled to be completed during the first half of 2020.

2.3 FAA Noise Exposure Checklist

The FAA produced Advisory Circular 150/5020-1, "Airport Noise and Land Use Compatibility Planning", that includes a checklist to aid in both the development and review of NEM and NCPs. The FAA prefers that the NEM documentation include a copy of the NEM checklist with appropriate page numbers or other references and other notes and comments (as presented in Table 1).

Table 1. Part 150 Noise Exposure Maps Checklist

Source: FAA/APP, Washington, DC, March 1989; revised June 2005; reviewed for currency 12/2007[11]

PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport (BTV)	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
I. Submitting and Identifying the NEM:			
A. Submission properly identified:			
1. 14 C.F.R. Part 150 NEM?	Yes		
2. NEM and NCP together?		No	Only NEM Update
3. Revision to NEM FAA previously determined to be in compliance with Part 150?	Yes		Chapter 1
B. Airport and Airport Operator's name are identified?	Yes		Certification
C. NCP is transmitted by operator's dated cover letter, describing it as a Part 150 submittal and requesting appropriate FAA determination?		No	Only NEM Update
II. Consultation: [150.21(b), A150.105(a)]			
A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?	Yes		Chapter 7
B. Identification of consulted parties:			Chapter 7
1. Are the consulted parties identified?	Yes		Chapter 7
2. Do they include all those required by 150.21(b) and A150.105 (a)?	Yes		Chapter 7
3. Agencies in 2. above, correspond to those indicated on the NEM?	Yes		Chapter 7
C. Does the documentation include the airport operator's certification, and evidence to support it, that interested persons have been afforded adequate opportunity to submit their views, data, and comments during map development and in accordance with 150.21(b)?	Yes		Certification Chapter 7
D. Does the document indicate whether written comments were received during consultation and, if there were comments that they are on file with the FAA regional airports division manager?	Yes		Chapter 7
III. General Requirements: [150.21]			
A. Are there two maps, each clearly labeled on the face with year (existing condition year and one that is at least 5 years into the future)?	Yes		Figure 12 and Figure 13

[11] http://www.faa.gov/airports/environmental/airport_noise/part_150/checklists/

PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport (BTV)	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
B. Map currency:			
1. Does the year on the face of the existing condition map graphic match the year on the airport operator's NEM submittal letter?		No	The existing condition year is 2018.
2. Is the forecast year map based on reasonable forecasts and other planning assumptions and is it for at least the fifth calendar year after the year of submission?		No	The forecast year is 2023.
3. If the answer to 1 and 2 above is no, the airport operator must verify in writing that data in the documentation are representative of existing condition and at least 5 years' forecast conditions as of the date of submission?	Yes		See Certification
C. If the NEM and NCP are submitted together:			
1. Has the airport operator indicated whether the forecast year map is based on either forecast conditions without the program or forecast conditions if the program is implemented?		N/A	This is only an NEM document. Maps reflect implementation of the previously approved NCP as discussed in Chapter 4.
2. If the forecast year map is based on program implementation:		N/A	
a. Are the specific program measures that are reflected on the map identified?		N/A	
b. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the map?		N/A	
3. If the forecast year NEM does not model program implementation, the airport operator must either submit a revised forecast NEM showing program implementation conditions [B150.3 (b), 150.35 (f)] or the sponsor must demonstrate the adopted forecast year NEM with approved NCP measures would not change by plus/minus 1.5 DNL [or Community Noise Equivalent Level, CNEL]? [150.21(d)]		N/A	
IV. MAP SCALE, GRAPHICS, AND DATA REQUIREMENTS: [A150.101, A150.103, A150.105, 150.21(a)]			
A. Are the maps of sufficient scale to be clear and readable (they must not be less than 1" to 2,000'), and is the scale indicated on the maps? (Note (1) if the submittal uses separate graphics to depict flight tracks and/or noise monitoring sites, these must be of the same scale, because they are part of the documentation required for NEM.) (Note (2) supplemental graphics that are not required by the regulation do not need to be at the 1" to 2,000' scale)	Yes		Figure 12, Figure 13, Figure 18, Figure 19, Figure 20, Figure 21, Figure 22, Figure 23, Figure 24, and Figure 25 are provided at 1" to 2,000' (printing instructions provided are provided for readers of the electronic version of this document)
B. Is the quality of the graphics such that required information is clear and readable? (Refer to C. through G., below, for specific graphic depictions that must be clear and readable)	Yes		All official figures

PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport (BTV)	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
C. Depiction of the airport and its environs.			
1. Is the following graphically depicted to scale on both the existing condition and forecast year maps:			
a. Airport boundaries	Yes		All official figures
b. Runway configurations with runway end numbers	Yes		
2. Does the depiction of the off-airport data include?			All official figures
a. A land use base map depicting streets and other identifiable geographic features	Yes		
b. The area within the DNL 65 dB (or beyond, at local discretion) [or Community Noise Equivalent Level, CNEL]	Yes		
c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the DNL 65 dB (or beyond, at local discretion) [or Community Noise Equivalent Level, CNEL]	Yes		
D. 1. Continuous contours for at least DNL 65, 70, and 75 dB? [or Community Noise Equivalent Level, CNEL]	Yes		All contour figures
2. Has the local land use jurisdiction(s) adopted a lower local standard and, if so, has the sponsor depicted this on the NEM?		No	BTV uses 14 CFR Part 150 land use compatibility guidelines for the development of the NEM. Section 3.4
3. Based on current airport and operational data for the existing condition year NEM, and forecast data representative of the selected year for the forecast NEM?	Yes		
E. Flight tracks for the existing condition and forecast year timeframes (these may be on supplemental graphics which must use the same land use base map and scale as the existing condition and forecast year NEM), which are numbered to correspond to accompanying narrative?	Yes		
F. Locations of any noise monitoring sites (these may be on supplemental graphics which must use the same land use base map and scale as the official NEM)		N/A	No noise monitoring sites
G. Noncompatible land use identification:			
1. Are noncompatible land uses within at least the DNL 65 dB [or Community Noise Equivalent Level, CNEL] noise contour depicted on the map graphics?	Yes		Chapter 5, Figure 12 and Figure 13. Additional detail is provided on Table 3 in Section 5.3.2.
2. Are noise sensitive public buildings and historic properties identified? (Note: If none are within the depicted NEM noise contours, this should be stated in the accompanying narrative text.)	Yes		Chapter 5, Figure 12 and Figure 13. Additional detail is provided on Table 3 in Section 5.3.2.

PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport (BTV)	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?	Yes		Chapter 5, Figure 12 and Figure 13. Additional detail is provided on Table 3 in Section 5.3.2.
4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?	Yes		Chapter 5
V. NARRATIVE SUPPORT OF MAP DATA: [150.21(a), A150.1, A150.101, A150.103]			
A. 1. Are the technical data and data sources on which the NEM are based adequately described in the narrative?	Yes		Chapter 6 presents current and forecast operational data and other modeling inputs.
2. Are the underlying technical data and planning assumptions reasonable?	Yes		
B. Calculation of Noise Contours:			
1. Is the methodology indicated?	Yes		Chapter 6
a. Is it FAA approved?	Yes		Chapter 6 AEDT 2d and NOISEMAP (NMap 7.3) were used for all modeling. These were the most current versions of the respective models at the time the noise analysis was started.
b. Was the same model used for both maps? (Note: The same model also must be used for NCP submittals associates with NEM determinations already issued by FAA where the NCP is submitted later, unless the airport sponsor submits a combined NEM/NCP submittal as a replacement, in which case the model used must be the most recent version at the time the update was started.)	Yes		
c. Has AEE approval been obtained for use of a model other than those that have previous blanket FAA approval?		N/A	AEDT and NOISEMAP are approved noise models in Section 11.1.4 of the FAA Order 1050.1F Desk Reference.
2. Correct use of noise models:			No calibration. Substitutions are documented in Section 6 and FAA correspondence in Appendix B
a. Does the documentation indicate, or is there evidence, the airport operator (or its consultant) has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another that was not included on the FAA's pre-approved list of aircraft substitutions?	Yes		
b. If so, does this have written approval from AEE, and is that written approval included in the submitted document?	Yes		Appendix A
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?		N/A	No monitoring data used.

PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport (BTV)	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
4. For noise contours below DNL 65 dB [or Community Noise Equivalent Level, CNEL], does the supporting documentation include an explanation of local reasons? (Note: A narrative explanation, including evidence the local jurisdiction(s) have adopted a noise level less than DNL 65 dB as sensitive for the local community(ies), and including a table or other depiction of the differences from the Federal table, is highly desirable but not specifically required by the rule. However, if the airport sponsor submits NCP measures within the locally significant noise contour, an explanation must be included if it wants the FAA to consider the measure(s) for approval for purposes of eligibility for Federal aid.)		N/A	
C. Noncompatible Land Use Information:			
1. Does the narrative (or map graphics) give estimates of the number of people residing in each of the contours (DNL 65, 70 and 75, at a minimum) [or Community Noise Equivalent Level, CNEL] for both the existing condition and forecast year maps?	Yes		Section 5.3.3 Table 4
2. Does the documentation indicate whether the airport operator used Table 1 of Part 150?	Yes		Section 3.4
a. If a local variation to table 1 was used:			
(1) Does the narrative clearly indicate which adjustments were made and the local reasons for doing so?		N/A	
(2) Does the narrative include the airport operator's complete substitution for table 1?		N/A	
3. Does the narrative include information on self-generated or ambient noise where compatible or noncompatible land use identifications consider non-airport and non-aircraft noise sources?		N/A	
4. Where normally noncompatible land uses are not depicted as such on the NEM, does the narrative satisfactorily explain why, with reference to the specific geographic areas?	Yes		Chapter 5
5. Does the narrative describe how forecast aircraft operations, forecast airport layout changes, and forecast land use changes will affect land use compatibility in the future?	Yes		Chapter 5
VI. MAP CERTIFICATIONS: [150.21(b), 150.21(e)]			
A. Has the operator certified in writing that interested persons have been afforded adequate opportunity to submit views, data, and comments concerning the correctness and adequacy of the draft maps and forecasts?	Yes		Certification

PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport (BTV)	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
B. Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete under penalty of 18 U.S.C. Section 1001?	Yes		Certification

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3 Introduction to Noise Terminology and Evaluation

Noise is a complex physical quantity. The properties, measurement, and presentation of noise involve specialized terminology that can be difficult to understand. Throughout the Part 150 update, we will use graphics and everyday comparisons to communicate noise-related quantities and effects in reasonably simple terms.

To provide a basic reference on these technical issues, this chapter introduces fundamentals of noise terminology (Section 3.1), the effects of noise on human activity (Section 3.2), weather and distance effects (Section 3.3), and Part 150 noise-land use compatibility guidelines (Section 3.4).

3.1 Introduction to Noise Terminology

Part 150 relies largely on a measure of cumulative noise exposure over an entire calendar year, in terms of a metric called the Day-Night Average Sound Level (DNL). However, DNL does not provide an adequate description of noise for many purposes. A variety of other measures are available to address essentially any issue of concern, including:

- Sound Pressure Level (SPL) and the Decibel (dB)
- A-Weighted Decibel
- Maximum A-Weighted Sound Level (Lmax)
- Sound Exposure Level (SEL)
- Equivalent A-Weighted Sound Level (Leq)
- Day-Night Average Sound Level (DNL or Ldn)

3.1.1 Sound Pressure Level (SPL) and the Decibel (dB)

All sounds come from a sound source – a musical instrument, a voice speaking, an airplane passing overhead. It takes energy to produce sound. The sound energy produced by any sound source travels through the air in sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. The ear senses these pressure variations and – with much processing in our brain – translates them into "sound."

Our ears are sensitive to a wide range of sound pressures. Although the loudest sounds that we can hear without pain contain about one million times more energy than the quietest sounds we can hear, our ears are incapable of detecting small differences among these pressures. Thus, to better match how we hear this sound energy, we compress the total range of sound pressures to a more meaningful range by introducing the concept of sound pressure level.

Sound pressure levels (SPL) are measured in decibels (or dB). Decibels are logarithmic quantities reflecting the ratio of the two pressures, the numerator being the pressure of the sound source of interest (P_{source}), and the denominator being a reference pressure ($P_{reference}$)[12] (the quietest sound we can hear).

$$Sound\ Pressure\ Level\ (SPL) = 20 * Log\left(\frac{P_{source}}{P_{reference}}\right) dB$$

The logarithmic conversion of sound pressure to SPL means that the quietest sound that we can hear (the reference pressure) has a sound pressure level of about 0 dB, while the loudest sounds that we hear without pain

[12] The reference pressure is approximately the quietest sound that a healthy young adult can hear.

have sound pressure levels of about 120 dB. Most sounds in our day-to-day environment have sound pressure levels from about 40 to 100 dB.[13]

Because decibels are logarithmic quantities, we cannot use common arithmetic to combine them. For example, if two sound sources each produce 100 dB operating individually, when they operate simultaneously they produce 103 dB -- not the 200 dB we might expect. Doubling again the number of sources from two to four, each source producing 100 dB and operating simultaneously, adds another three decibels of noise, resulting in a total SPL of 106 dB. For every doubling of the number of equal sources, the SPL goes up another three decibels. A tenfold increase in the number of sources makes the sound pressure level increase 10 dB.

If one noise source is much louder than another, the louder source "masks" the quieter one and the two sources together produce virtually the same SPL as the louder source alone. For example, a 100 dB source plus an 80 dB source produce approximately 100 dB of noise when operating together (actually, 100.04 dB). The louder source "masks" the quieter one. But if the quieter source gets louder, it will have an increasing effect on the total SPL such that, when the two sources are equal, as described above, they produce a level three decibels above the sound of either one by itself.

People hear changes in sound level according to the following rules of thumb: (1) a 6 to 10 dB increase in the SPL to sometimes described to be about a doubling of loudness,[14] and (2) changes in SPL of less than about three decibels are not readily detectable by the human ear outside of a laboratory environment.

3.1.2 A-Weighted Decibel

An important characteristic of sound is its frequency, or "pitch." This is the per-second oscillation rate of the sound pressure variation at our ear, expressed in units known as Hertz (Hz).

When analyzing the total noise of any source, acousticians often break the noise into frequency components (or bands) to determine how much is low-frequency noise, how much is middle-frequency noise, and how much is high-frequency noise. This breakdown is important for two reasons:

- Our ear is better equipped to hear mid and high frequencies and is least sensitive to lower frequencies. Thus, we find mid- and high-frequency noise more annoying.
- Engineering solutions to noise problems differ with frequency content. Low-frequency noise is generally harder to control.

The normal frequency range of hearing for most people extends from a low of about 20 Hz to a high of about 10,000 to 15,000 Hz. Most people respond to sound more readily when the predominant frequency is in the range of normal conversation – typically around 1,000 to 2,000 Hz. The acoustical community has defined several "filters," which approximate this sensitivity of our ear and thus, help us to judge the relative loudness of various sounds made up of many different frequencies.

The "A" filter (or "A weighting") does this best for most environmental noise sources. A-weighted sound levels are measured in decibels, just like unweighted. To avoid ambiguity, A-weighted sound levels should be identified as such (e.g. "an A-weighted sound level of 85 dB") or stated up front that all noise levels presented in this document are A-weighted unless otherwise specified (as in this study).

Government agencies in the U.S (and most governments worldwide) recommend or require the use of A-weighted sound levels for measuring, modeling, describing, and assessing aircraft sound levels (and sound levels from most other transportation and environmental sources).

Figure 1 depicts A-weighting adjustments to sound from approximately 20 Hz to 10,000 Hz.

[13] The logarithmic ratio used in its calculation means that SPL changes relatively quickly at low sound pressures and more slowly at high pressures. This relationship matches human detection of changes in pressure. We are much more sensitive to changes in level when the SPL is low (for example, hearing a baby crying in a distant bedroom), than we are to changes in level when the SPL is high (for example, when listening to highly amplified music).

[14] A "10 dB per doubling" rule of thumb is the most often used approximation.

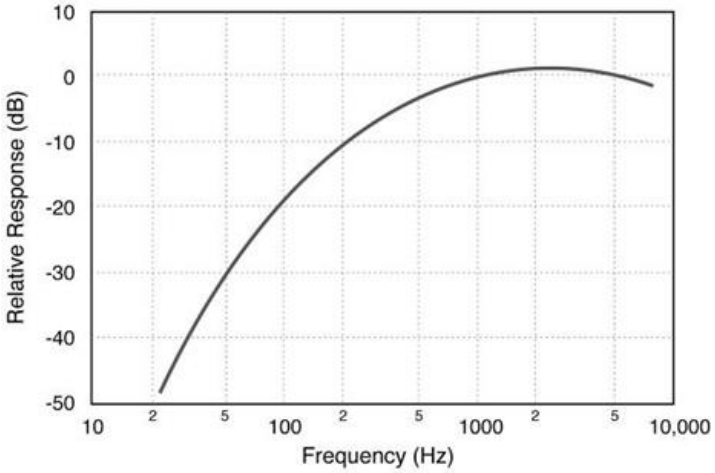


Figure 1. A-Weighting Frequency-Response

Source: HMMH

The A-weighted filter significantly de-emphasizes those parts of the total noise at lower and higher frequencies (below about 500 Hz and above about 10,000 Hz) where we do not hear as well. The filter has very little effect, or is nearly "flat", in the middle range of frequencies between 500 and 10,000 Hz where we hear quite easily. Because this filter generally matches our ears' sensitivity, sounds having higher A-weighted sound levels are usually judged to be louder than those with lower A-weighted sound levels. It is for this reason that acousticians normally use A-weighted sound levels to evaluate environmental noise sources.

All sound pressure levels presented in this document are A-weighted unless otherwise specified.

Figure 2 depicts representative A-weighted sound levels for a variety of common sounds.

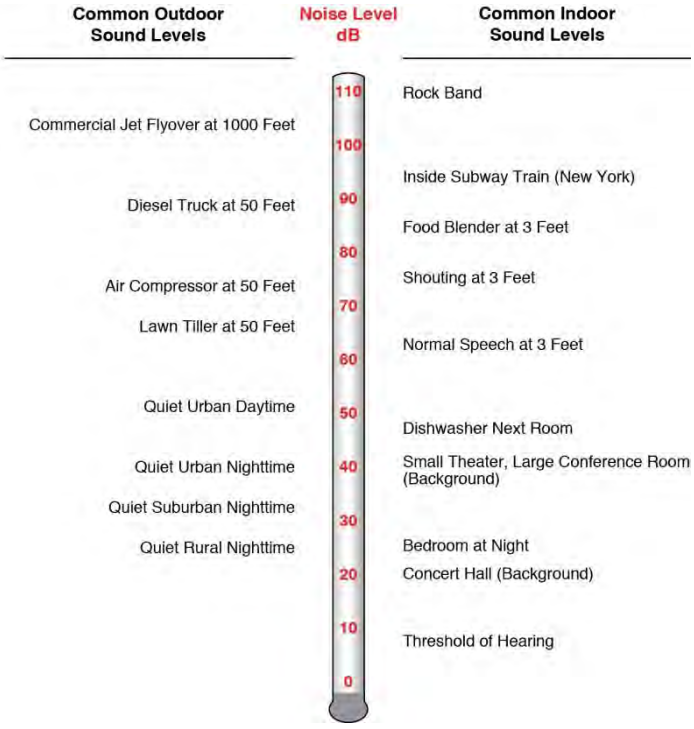


Figure 2. A-Weighted Sound Levels for Common Sounds

Source: HMMH

3.1.3 Maximum A-Weighted Sound Level (Lmax)

An additional dimension to environmental noise is that A-weighted levels vary with time. For example, the sound level increases as a car or aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance. The background or "ambient" level continues to vary in the absence of a distinctive source, for example due to birds chirping, insects buzzing, leaves rustling, etc. It is often convenient to describe a particular noise "event" (such as a vehicle passing by, a dog barking, etc.) by its maximum sound level, abbreviated as L_{max}.

Figure 3 depicts this general concept, for a hypothetical noise event with an L_{max} of approximately 102 dB.

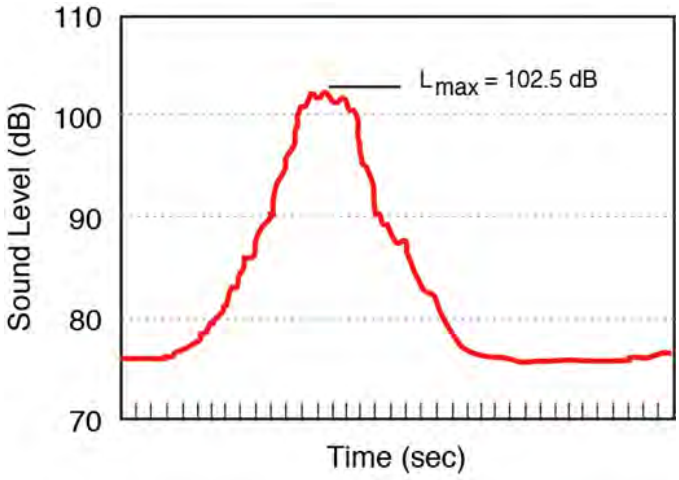


Figure 3. Variation in A-Weighted Sound Level over Time and Maximum Noise Level

Source: HMMH

While the maximum level is easy to understand, it suffers from a serious drawback when used to describe the relative "noisiness" of an event such as an aircraft flyover; i.e., it describes only one dimension of the event and provides no information on the event's overall, or cumulative, noise exposure. In fact, two events with identical maximum levels may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be judged much more annoying. The next section introduces a measure that accounts for this concept of a noise "dose," or the cumulative exposure associated with an individual "noise event" such as an aircraft flyover.

3.1.4 Sound Exposure Level (SEL)

The most commonly used measure of cumulative noise exposure for an individual noise event, such as an aircraft flyover, is the Sound Exposure Level (or SEL). SEL is a summation of the A-weighted sound energy over the entire duration of a noise event. SEL expresses the accumulated energy in terms of the one-second-long steady-state sound level that would contain the same amount of energy as the actual time-varying level.

SEL provides a basis for comparing noise events that generally match our impression of their overall "noisiness," including the effects of both duration and level. The higher the SEL, the more annoying a noise event is likely to be. In simple terms, SEL "compresses" the energy for the noise event into a single second. Figure 4 depicts this compression, for the same hypothetical event shown in Figure 4. Note that the SEL is higher than the L_{max}.

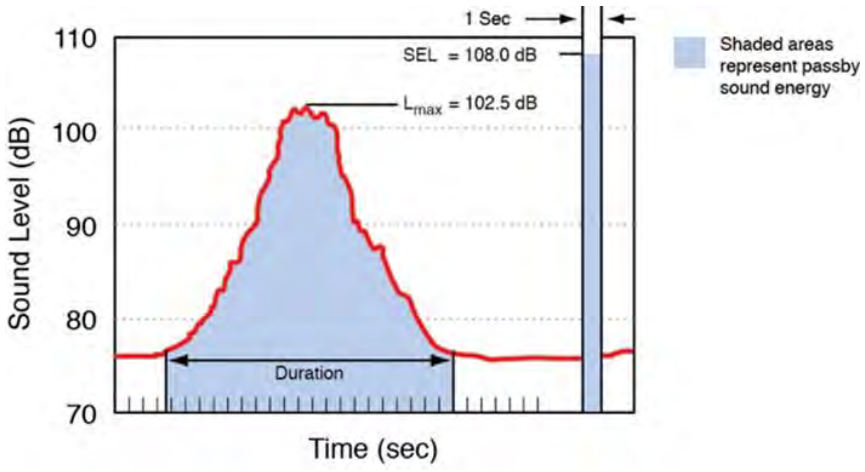


Figure 4. Graphical Depiction of Sound Exposure Level

Source: HMMH

The "compression " of energy into one second means that a given noise event's SEL will almost always will be a higher value than its L_{max}. For most aircraft flyovers, SEL is roughly five to 12 dB higher than L_{max}. Adjustment for duration means that relatively slow and quiet propeller aircraft can have the same or higher SEL than faster, louder jets, which produce shorter duration events.

3.1.5 Equivalent A-Weighted Sound Level (Leq)

The Equivalent Sound Level, abbreviated L_{eq}, is a measure of the exposure resulting from the accumulation of sound levels over a particular period of interest; e.g., one hour, an eight-hour school day, nighttime, or a full 24-hour day. L_{eq} plots for consecutive hours can help illustrate how the noise dose rises and falls over a day or how a few loud aircraft significantly affect some hours.

L_{eq} may be thought of as the constant sound level over the period of interest that would contain as much sound energy as the actual varying level. It is a way of assigning a single number to a time-varying sound level. Figure 5 illustrates this concept for a one-hour period. Note that the L_{eq} is lower than either the L_{max} or SEL.

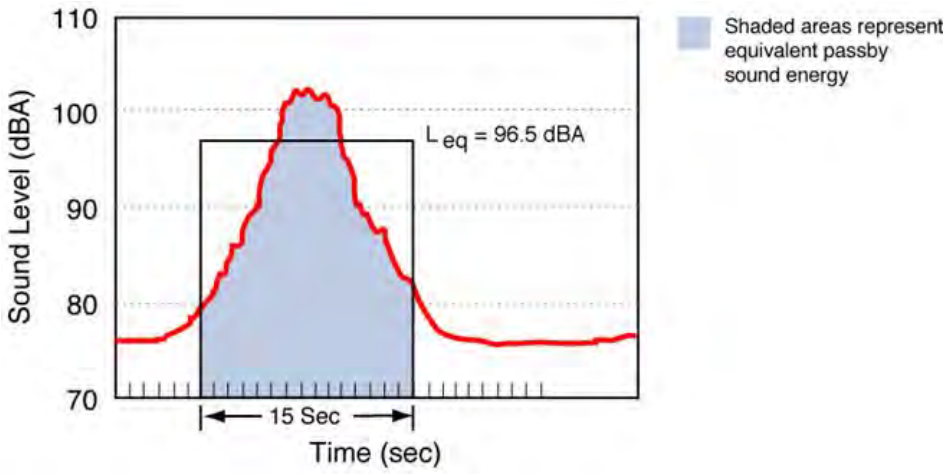


Figure 5. Example of a One-Minuet Equivalent Sound Level

Source: HMMH

In airport noise applications, Leq is often presented for consecutive one-hour periods to illustrate how the hourly noise dose rises and falls throughout a 24-hour period as well as how certain hours may be significantly affected by only a few loud aircraft.

3.1.6 Day-Night Average Sound Level (DNL or Ldn)

The previous sections address noise measures that account for short term fluctuations in levels as sound sources come and go affecting the overall noise environment. The FAA requires that airports use a more complex measure of noise exposure than either a single, peak event metric (Lmax) or a single event total energy metric (SEL or SENEL). Therefore, the Day-Night Average Sound Level (DNL or Ldn) was developed to represent a 24-hour noise dose.

Most aircraft noise studies use computer-generated estimates of DNL, determined by adding up the energy from the SELs for each event, with the 10 dB adjustment applied to night operations. Computed values of DNL are often depicted as noise contours reflecting lines of equal exposure around an airport (much as topographic maps indicate contours of equal elevation). The contours usually reflect long-term (annual-average) operating conditions, taking into account the average flights per day, how often each runway is used throughout the year, and where over the surrounding communities aircraft normally fly. Alternative time frames may also be helpful in understanding shorter term aspects of a noise environment.

Why is DNL used to describe noise around airports? The U.S. Environmental Protection Agency identified DNL as the most appropriate means of evaluating airport noise based on the following considerations.[15]

- The measure should be applicable to the evaluation of pervasive long-term noise in various defined areas and under various conditions over long periods.
- The measure should correlate well with known effects of the noise environment and on individuals and the public.
- The measure should be simple, practical, and accurate. In principal, it should be useful for planning as well as for enforcement or monitoring purposes.
- The required measurement equipment, with standard characteristics, should be commercially available.
- The measure should be closely related to existing methods currently in use.
- The single measure of noise at a given location should be predictable, within an acceptable tolerance, from knowledge of the physical events producing the noise.
- The measure should lend itself to small, simple monitors, which can be left unattended in public areas for long periods.

Most federal agencies dealing with noise have formally adopted DNL. The Federal Interagency Committee on Noise (FICON) reaffirmed the appropriateness of DNL in 1992. The FICON summary report stated; “There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric.”

DNL is essentially equal to the 24-hour Leq, with one important adjustment: noise occurring at night – from 10:00 p.m. through 7:00 a.m. – is “factored up.” The factoring up can be made in one of two ways:

- Weighting, by counting each nighttime noise contribution 10 times; e.g., if DNL is calculated by summing the SEL of aircraft operations over a 24-hour period, each nighttime operation is represented by 10 identical daytime operations.
- Penalizing, by adding 10 dB to all nighttime noise contributions; e.g., if DNL is calculated from the SEL of aircraft operations occurring over a 24-hour period, 10 dB are added to the SEL values for nighttime operations.

The 10 dB adjustment accounts for our greater sensitivity to nighttime noise and the fact lower ambient levels at night tend to make noise events, such as aircraft flyovers, more intrusive.

DNL can be measured or estimated. Measurements are practical only for obtaining DNL values for limited numbers of points, and, in the absence of a permanently installed monitoring system, only for relatively short

[15] "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," U. S. EPA Report No. 550/9-74-004, March 1974.

periods. Most airport noise studies use computer-generated DNL estimates depicted as equal-exposure noise contours (much as topographic maps have contours of equal elevation). Part 150 *requires* that airports use computer-generated contours, as discussed in Section 2.1.

More specifically, Part 150 requires that Noise Exposure Maps depict the 65, 70, and 75 dB DNL contours for total annual operations for the existing and forecast conditions cases (2018 and 2023 in this study). The annual DNL is mathematically identical to the DNL for the average annual day; i.e., a day on which the number of operations is equal to the annual total divided by 365 (366 in a leap year).

Figure 6 graphically depicts the manner in which the nighttime adjustment applies in calculating DNL. Each bar in the figure is a one-hour L_{eq}. The 10 dB penalty is added for hours between 10 p.m. and 7 a.m. Figure 7 presents representative outdoor DNL values measured at various U.S. locations.

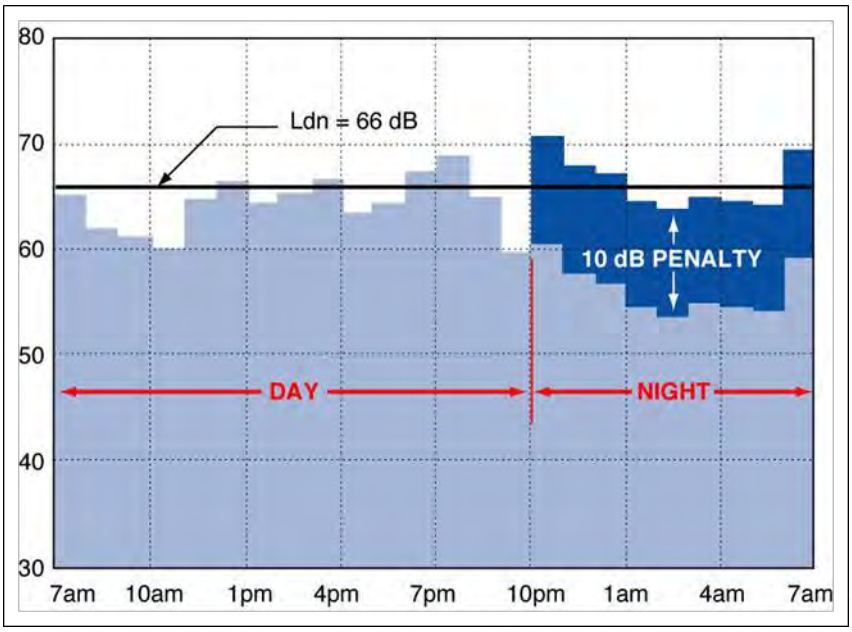


Figure 6. Example of a Day-Night Average Sound Level Calculation

Source: HMMH

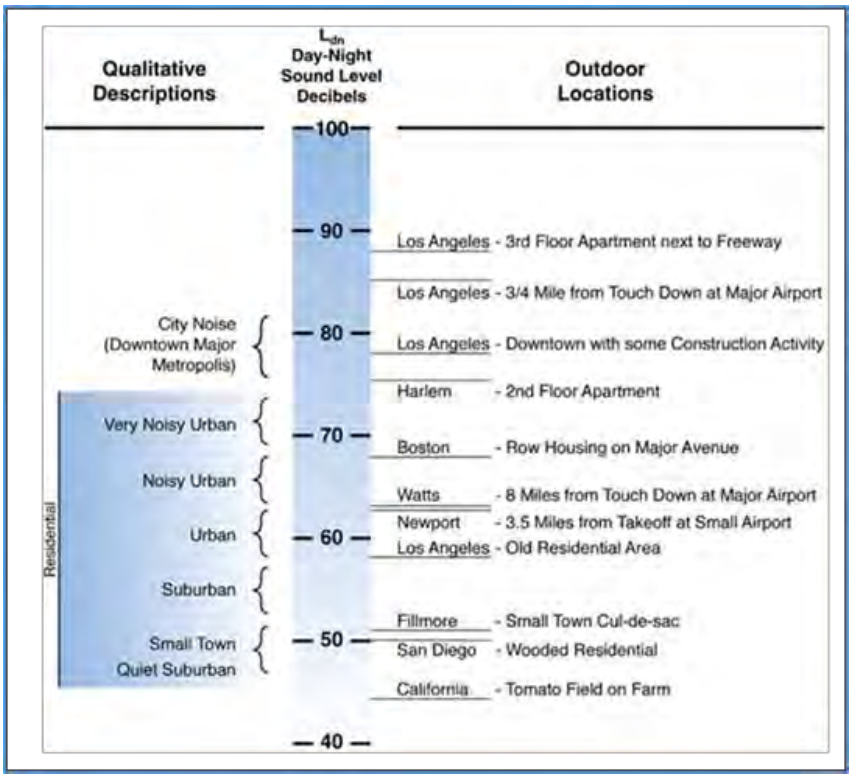


Figure 7. Examples of Measured Day-Night Average Sound Levels, DNL

Source: EPA, 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000L3LN.txt

3.2 Aircraft Noise Effects on Human Activity

To residents around airports, aircraft noise can be an annoyance and a nuisance. It can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep. Relating these effects to specific noise metrics helps in the understanding of how and why people react to their environment.

3.2.1 Speech Interference

A primary effect of aircraft noise is its tendency to "mask" speech, making it difficult to carry on a normal conversation. The sound level of speech decreases as the distance between a talker and listener increases. As the background sound level increases, it becomes harder to hear speech.

Figure 8 presents typical distances between talker and listener for satisfactory outdoor conversations, in the presence of different steady A-weighted background noise levels for raised, normal, and relaxed voice effort. As the background level increases, the talker must raise his/her voice, or the individuals must get closer together to continue talking.

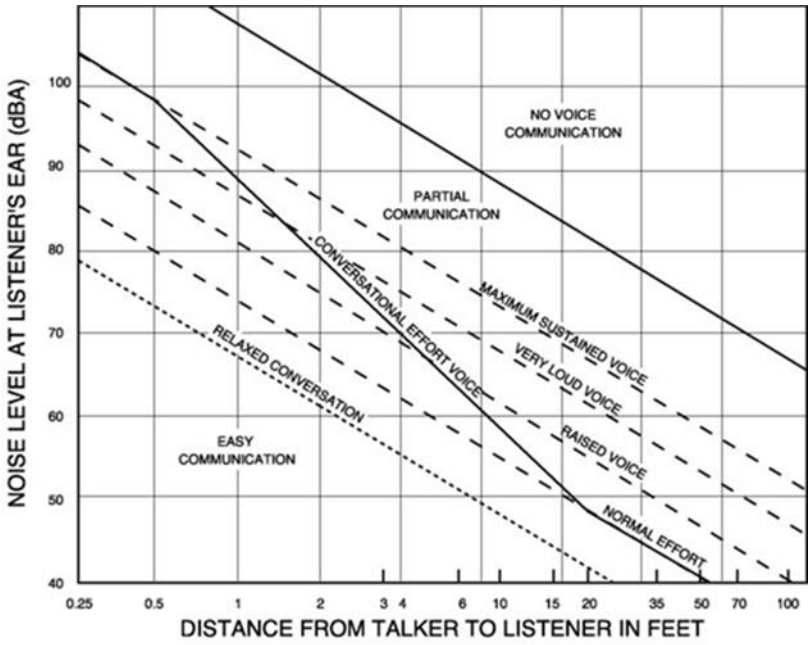


Figure 8. Outdoor Speech Intelligibility

Source: U.S. Environmental Protection Agency, "Public Health and Welfare Criteria for Noise". July, 1973. Pg. 6-5.

As indicated in the figure, "satisfactory conversation" does not always require hearing every word; 95% intelligibility is acceptable for many conversations. However, in relaxed conversation we have higher expectations of hearing speech and generally require closer to 100% intelligibility. Any combination of talker-listener distances and background noise that falls below the bottom line in the figure (which roughly represents the upper boundary of 100% intelligibility) represents an ideal environment for outdoor speech communication. Indoor communication is generally acceptable in this region as well.

One implication of the relationships in Figure 8 is that for typical communication distances of three or four feet, acceptable outdoor conversations can be carried on in a normal voice as long as the background noise outdoors is less than about 65 dB. If the noise exceeds this level, as might occur when an aircraft passes overhead, intelligibility would be lost unless vocal effort were increased or communication distance were decreased.

Indoors, typical distances, voice levels, and intelligibility expectations generally require a background level less than 45 dB. With windows partly open, housing generally provides about 10 to 15 dB of interior-to-exterior noise level reduction. Thus, if the outdoor sound level is 60 dB or less, there a reasonable chance that the resulting indoor sound level will afford acceptable interior conversation. With windows closed, 24 dB of attenuation is typical.

3.2.2 Sleep Interference

Research on sleep disruption from noise has led to widely varying observations. In part, because (1) sleep can be disturbed without awakening, (2) the deeper the sleep the more noise it takes to cause arousal, (3) the tendency to awaken increases with age, and other factors. Figure 9 shows a recent summary of findings on the topic.

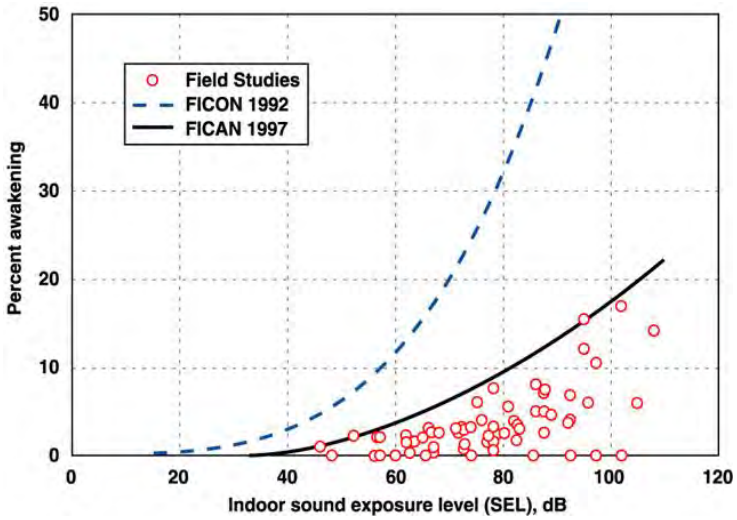


Figure 9. Sleep Interference

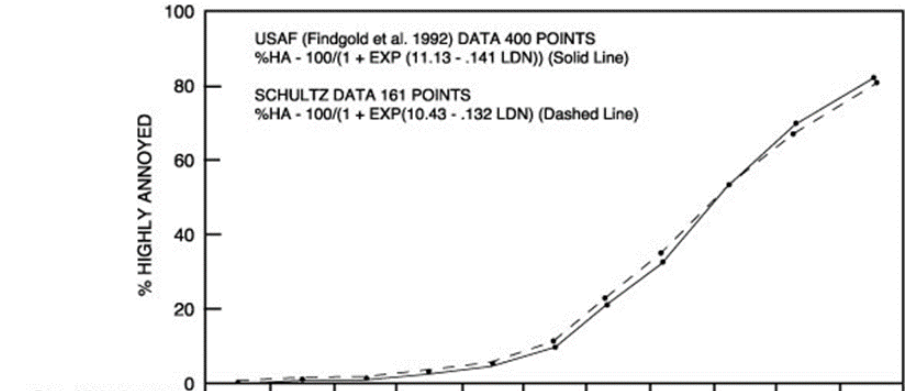
Source: Federal Interagency Committee on Aviation Noise (FICAN), "Effects of Aviation Noise on Awakenings from Sleep", June 1997, page 5

Figure 9 uses indoor SEL as the measure of noise exposure; current research supports the use of this metric in assessing sleep disruption. An indoor SEL of 80 dBA results in a maximum of 10% awakening. Assuming the typical windows-open interior-to-exterior noise level reduction of approximately 12 dBA and a typical L_{max} value for an aircraft flyover 12 dBA lower than the SEL value, an interior SEL of 80 dBA roughly translates into an exterior L_{max} of the same value.[16]

3.2.3 Community Annoyance

Numerous psychoacoustic surveys provide substantial evidence that individual reactions to noise vary widely with noise exposure level. However, since the early 1970s, researchers have determined (and subsequently confirmed) that aggregate community response is generally predictable and relates reasonably well to cumulative noise exposure such as DNL. Figure 10 depicts the widely recognized relationship between environmental noise and the percentage of people "highly annoyed," with annoyance being the key indicator of community response usually cited in this body of research.

[16] The awakening data presented in Figure 9 apply only to individual noise events. The American National Standards Institute (ANSI) has published a standard that provides a method for estimating the number of people awakened at least once from a full night of noise events: ANSI/ASA S12.9-2008 / Part 6, "Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes." This method can use the information on single events computed by a program such as the FAA's AEDT, to compute awakenings.



Day - Night Average Sound Level in dB	40	45	50	55	60	65	70	75	80	85	100
Calculated %HA Points: USAF	0.41	0.831	1.66	3.31	6.48	12.29	22.1	36.47	53.74	70.16	82.64
Calculated %HA Points: SCHULTZ	0.576	1.11	2.12	4.03	7.52	13.59	23.32	37.05	53.25	68.78	81

Figure 10. Percentage of People Highly Annoyed

Source: Federal Interagency Committee on Noise, Vol. 2, Technical Report. "Federal Agency Review of Selected Airport Noise Analysis Issues". August 1992. (From data provided by USAF Armstrong Laboratory). pp. 3-6

Based on data from 18 surveys conducted worldwide, the curve indicates that at levels as low as DNL 55 dB, something on the order of 3 to 4 percent of the persons would be highly annoyed, whereas this percentage of persons annoyed increases more rapidly as exposure increases above DNL 65 dB.

Separate work by the EPA has shown that overall community reaction to a noise environment is also dependent on DNL, Figure 11 depicts this relationship.

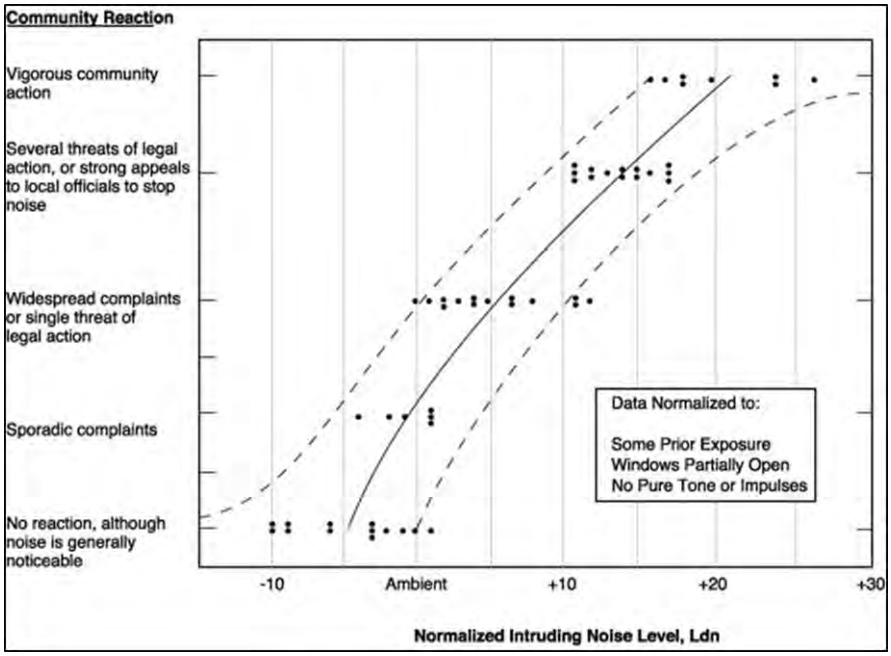


Figure 11. Community Reaction as a Function of Outdoor DNL

Source: U.S. EPA, "Community Noise," NTID300.3, December 1971, derived from Figure 25, page 63.

Data summarized in the figure suggest that little reaction would be expected for intrusive noise levels five decibels below the ambient, while widespread complaints can be expected as intruding noise exceeds background levels by about five decibels. Vigorous action is likely when levels exceed the background by 20 dB.

3.3 Effects of Weather and Distance

Participants in airport noise studies often express interest in two sound-propagation issues: (1) weather and (2) source-to-listener distance.

3.3.1 Weather-Related Effects

Atmospheric effects that can influence the propagation of sound include (in roughly increasing order of importance) humidity, precipitation, temperature and wind gradients, and turbulence (or gustiness). The effect of wind – turbulence in particular – is generally more important than the effects of other factors. Under calm-wind conditions, the importance of temperature (in particular vertical "gradients") can increase, sometimes to very significant levels. Humidity generally has little significance relative to the other effects.

Influence of Humidity and Precipitation

In general, humidity and precipitation have little effect on sound propagation. Humidity can reduce propagation of high-frequency noise under calm-wind conditions. In very cold conditions, listeners often observe that aircraft sound "tinny," because the dry air increases the propagation of high-frequency sound. Rain, snow, and fog also have little, if any noticeable effect on sound propagation. A substantial body of empirical data supports these conclusions.[17]

Influence of Temperature

The velocity of sound in the atmosphere is dependent on the air temperature.[18] As a result, if the temperature varies at different heights above the ground, sound will travel in curved paths rather than straight lines. During the day, temperature normally decreases with increasing height. Under such "temperature lapse" conditions, the atmosphere refracts ("bends") sound waves upwards and an acoustical shadow zone may exist at some distance from the noise source.

Under some weather conditions, an upper level of warmer air may trap a lower layer of cool air. Such a "temperature inversion" is most common in the evening, at night, and early in the morning when heat absorbed by the ground during the day radiates into the atmosphere.[19] The effect of an inversion is just the opposite of lapse conditions. It causes sound propagating through the atmosphere to refract downward.

Often, however, the downward refraction caused by temperature inversions allows sound rays with originally upward-sloping paths to bypass obstructions and ground effects, increasing noise levels at greater distances. This type of effect is most prevalent at night, when temperature inversions are most common and when wind levels often are very low, limiting any confounding factors.[20] Under extreme conditions, one study found that noise from ground-borne aircraft might be amplified 15 to 20 dB by a temperature inversion. In a similar study, noise caused by an aircraft on the ground registered a higher level at an observer location 1.8 miles away than at a second observer location only 0.2 miles from the aircraft.[21]

Influence of Wind

Just as there is a temperature gradient in the atmosphere, there is also a wind gradient; typically higher wind speeds exist at greater heights above the ground. Wind has a strong directional component that can lead to

[17] Ingard, Uno. "A Review of the Influence of Meteorological Conditions on Sound Propagation," Journal of the Acoustical Society of America, Vol. 25, No. 3, May 1953, p. 407.
[18] In dry air, the approximate velocity of sound can be obtained from the relationship:
c = 331 + 0.6Tc (c in meters per second, Tc in degrees Celsius). Pierce, Allan D., Acoustics: An Introduction to its Physical Principles and Applications. McGraw-Hill. 1981. p. 29.
[19] Embleton, T.F.W., G.J. Thiessen, and J.E. Piercy, "Propagation in an inversion and reflections at the ground," Journal of the Acoustical Society of America, Vol. 59, No. 2, February 1976, p. 278.
[20] Ingard, p. 407.
[21] Dickinson, P.J., "Temperature Inversion Effects on Aircraft Noise Propagation," (Letters to the Editor) Journal of Sound and Vibration. Vol. 47, No. 3, 1976, p. 442.

significant variation in propagation. In general, receivers that are downwind of a source will experience higher sound levels, and those that are upwind will experience lower sound levels. Wind perpendicular to the source-to-receiver path has no significant effect.

The refraction caused by wind direction and temperature gradients is additive.[22] One study suggests that for frequencies greater than 500 Hz, the combined effects of these two factors tends towards two extreme values: approximately 0 dB in conditions of downward refraction (temperature inversion or downwind propagation) and -20 dB in upward refraction conditions (temperature lapse or upwind propagation). At lower frequencies, the effects of refraction due to wind and temperature gradients are less pronounced.[23]

Wind turbulence (or "gustiness") can also affect sound propagation. Sound levels heard at remote receiver locations will fluctuate with gustiness. In addition, gustiness can cause considerable attenuation of sound due to effects of eddies traveling with the wind. Attenuation due to eddies is essentially the same in all directions, with or against the flow of the wind, and can mask the refractive effects discussed above.[24]

3.3.2 Distance-Related Effects

People often ask how distance from an aircraft to a listener affects sound levels. Changes in distance may be associated with varying terrain, offsets to the side of a flight path, or aircraft altitude. The answer is a bit complex, because distance affects the propagation of sound in several ways.

The principal effect results from the fact that any emitted sound expands in a spherical fashion – like a balloon – as the distance from the source increases, resulting in the sound energy being spread out over a larger volume. With each doubling of distance, spherical spreading reduces instantaneous or maximum level by approximately six decibels, and SEL by approximately three decibels.

"Atmospheric absorption" is a secondary effect. As an overall example, increasing the aircraft-to-listener distance from 2,000' to 3,000' could produce reductions of about four to five decibels for instantaneous or maximum levels, and of about two to four decibels for SEL, under average annual weather conditions. This absorption effect drops off relatively rapidly with distance. The Integrated Noise Model (INM) takes these reductions into account.

3.4 Noise/ Land Use Compatibility Guidelines

The Federal Aviation Administration Part 150 Airport Noise Compatibility Planning guidelines provide the following:

1. A basis for comparing existing noise conditions to the effects of noise abatement procedures and/or forecast changes in airport activity.
2. A quantitative basis for identifying potential noise exposure.

Both of these functions require the application of objective criteria for evaluating noise exposure. 14 CFR Part 150 Appendix A provides land use compatibility guidelines as a function of DNL values. Table 2 reproduces those guidelines.

These guidelines represent a compilation of the results of extensive scientific research into noise-related activity interference and attitudinal response. However, reviewers should recognize the highly subjective nature of response to noise, and that special circumstances can affect individuals' tolerance. For example, a high non-aircraft background noise level can reduce the significance of aircraft noise, such as in areas constantly exposed to relatively high levels of traffic noise. Alternatively, residents of areas with unusually low background levels may find relatively low levels of aircraft noise annoying.

[22] Piercy and Embleton, p. 1412. Note, in addition, that as a result of the scalar nature of temperature and the vector nature of wind, the following is true: under lapse conditions, the refractive effects of wind and temperature add in the upwind direction and cancel each other in the downwind direction. Under inversion conditions, the opposite is true.
[23] Piercy and Embleton, p. 1413.
[24] Ingard, pp. 409-410.

Response may also be affected by expectation and experience. People may get used to a level of exposure that guidelines indicate may be unacceptable, and changes in exposure may generate response that is far greater than that which the guidelines might suggest.

The cumulative nature of DNL means that the same level of noise exposure can be achieved in an essentially infinite number of ways. For example, a reduction in a small number of relatively noisy operations may be counterbalanced by a much greater increase in relatively quiet flights, with no net change in DNL. Residents of the area may be highly annoyed by the increased frequency of operations, despite the seeming maintenance of the noise status quo.

With these cautions in mind, the Part 150 guidelines can be applied to the DNL contours to identify the potential types, degrees and locations of incompatibility. Measurement of the land areas involved can provide a quantitative measure of impact that allows a comparison of at least the gross effects of existing or forecast operations.

14 CFR Part 150 guidelines indicate that all uses normally are compatible with aircraft noise at exposure levels below 65 DNL. This limit is supported in a formal way by standards adopted by the U. S. Department of Housing and Urban Development (HUD). The HUD standards address whether sites are eligible for federal funding support. These standards, set forth in Part 51 of the Code of Federal Regulations, define areas with DNL exposure not exceeding 65 dB as acceptable for funding. Areas exposed to noise levels between DNL 65 and 75 are "normally unacceptable," and require special abatement measures and review. Those at 75 and above are "unacceptable" except under very limited circumstances.

14 CFR Part 150 permits airports and local land use control jurisdictions to adopt land use compatibility criteria that differ from the guidelines reproduced in Table 2. Typically, FAA will accept such alternate land use compatibility designations only if the airport bases them on criteria that local land-use control jurisdictions have formally adopted and rigorously enforced. The City and other jurisdictions surrounding BTV have not adopted such alternative criteria. Therefore, the City uses the FAA guidelines as set forth in Part 150 for the determination of land use compatibility.

Table 2. 14 CFR Part 150 Noise / Land Use Compatibility Guidelines

Source:14 CFR Part 150, Appendix A, Table 1

Land Use	Yearly Day-Night Average Sound Level, DNL, in Decibels (Key and notes on following page)					
	<65	**65-70**	**70-75**	**75-80**	**80-85**	**>85**
Residential Use						
Residential other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade--general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Key to Table 2

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

Notes for Table 2

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

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often started as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

4 Existing Noise Compatibility Program

This NEM builds on the previous noise compatibility studies at BTV. The existing Noise Compatibility Program (NCP) includes 15 FAA-approved measures with a mix of operational, implementation, and land use elements. The FAA's 2008 Record of Approval (ROA), for the 2008 NCP submission, listed NCP elements in the order presented below. The 2008 NCP, and associated ROA, revised a single measure. Appendix A presents a copy of the 2008 ROA.

The following discussion of the NCP has been organized in the same manner as the FAA's 2008 ROA. The 2018 and 2023 NEM are based on empirical data reflecting the current implementation status of these noise abatement measures. The United State Air Force's Record of Decision for the F-35A Operational Basing Environmental Impact Statement (USAF EIS)[25], agreed to adhere to the 2008 NCP.

Note that the Airport is currently undergoing an update to the NCP. Submission of the updated NCP to the FAA is anticipated to occur in late 2019 or early 2020. A determination of program compliance with Part 150, by the FAA, is followed by a 180-day approval period for any new NCP.

4.1 Airport Operations Measures

4.1.1 Extension of Taxiway G

Taxiway G would be extended from the existing intersection with Taxiway A to Taxiway C, remaining parallel with Runway 15/33 in order to reduce noise levels for residents along Airport Drive (2008 ROA Measure 1).

Status: In progress. The FAA approved the extended Taxiway G at the planning level, it is shown on the updated 2012 Airport Layout Plan. Current Taxiway G is on the northwest side of the airfield and current Taxiway K is on the southeast side. The complete Taxiway G extension will create a single taxiway parallel to Runway 15-33 and linking to the current Taxiway K. Construction of the first phase, at current Taxiway K, started early November 2015 and was completed in July 2016. Construction of the second phase started in October 2016 and was completed in October 2018. The final phase of construction is scheduled to commence in 2020. The 2018 NEM reflects the varying taxiway layout for the year, and the 2023 NEM reflects the forecasted taxiway layout including the extended Taxiway G.

4.1.2 Terminal Power Installation and APU/GPU Restrictions

Installation of terminal power hookups for aircraft would reduce the need for aircraft to use internal auxiliary power units (APU) or ground power units (GPU). Following the installation, a rule prohibiting the use of APUs or GPUs between 10:00 p.m. and 7:00 a.m., would be put in place (2008 ROA Measure 2).

Status: Not fully implemented. The Airport terminal now has "aircraft ground power" (referred to as "terminal power hooks" in the ROA and the 1989 NCP document) capability at all eleven Passenger Boarding Bridges. The Airport will not be implementing the GPU/APU rule between 10:00 p.m. and 7:00 a.m., as a too many flights arrive/depart during those hours. However, use of ground power is required for all aircraft in proximity to an available hookup.

[25] Document was released September 2013. The Air Force issued a Record of Decision (ROD) December 2, 2013. The documents are available at http://www.158fw.ang.af.mil/f-35information.asp

4.1.3 Nighttime Bi-Direction Runway Use

To minimize late-night operations over the City of Winooski, the air traffic control tower would use Runway 15 for departure and Runway 33 for arrivals, traffic conditions permitting (2008 ROA Measure 3).

Status: Not implemented. The BTV ATCT is closed from midnight until 5:00 a.m., which makes implementation of this measure infeasible during these hours. The ATCT has not implemented the procedure during the remaining DNL "nighttime" hours; i.e., from 6:00 to 7:00 a.m.

4.1.4 Noise Abatement Flight Paths for Runway 15 and 33 Departures and Runway 15 Arrivals

New procedures[26] would have civil aircraft fly over less populated areas. Runway 33 departures would turn to a heading of 310 degrees. Runway 15 departures would turn to a heading of 180 degrees (2008 ROA Measure 4).

Status: Not fully implemented. Current procedures involve assignments that result in: (1) most west-bound Runway 15 departures making initial turns to a heading of 190, (2) most west-bound Runway 33 departures maintaining runway heading until past the City of Winooski, and (3) most east-bound Runway33 departures initiating right hand turns over the City of Winooski.

4.1.5 Voluntary Limits of Military C-5A Training

An informal agreement with the military limits C-5A operations to only necessary takeoffs and landings (2008 ROA Measure 5).

Status: Not fully implemented. An agreement is not currently in place, however (1) BTV operations strongly discourage C-5 training at the Airport, because of the runways are only 150 feet wide and wake turbulence from C-5 operations tear up the runway-edge lighting, (2) historically the military has always coordinated the arrival of a C-5 with BTV Operations because of the constraints on the airfield, and (3) all transient military aircraft are limited to two practice approaches.

4.1.6 Voluntary Minimization of F-16 Multiple Aircraft Flights

Military personnel will schedule as many single-aircraft, as opposed to multiple-aircraft, flights as possible (2008 ROA Measure 6).

Status: Not fully implemented. Most VTANG flights require between 2 and 4 aircraft, depending on mission and tactical scenario. Multiple-aircraft flights typically operate with some distance between individual aircraft, so that the aircraft do not produce their maximum noise levels at the same locations at the same time; while aircraft are operating close in time, they are not simultaneous in most cases.

4.1.7 Voluntary Army Guard Helicopter Training Controls

The National Guard helicopter training operations will be conducted away from the Airport when conditions permit. In terms of long range planning, the Guard should consider consolidating operations at Camp Johnson (2008 ROA Measure 7).

Status: Not implemented. The Vermont Army National Guard has continued training operations at BTV.

[26] "New procedures" was the language used in the 1989 NCP.

4.2 Monitoring and Review Elements

4.2.1 Ongoing Monitoring and Review of Noise Exposure Map (NEM) and Noise Compatibility Program (NCP) Status

This measure provides for revision of the NEM and NCP, citing three examples: changes in airport layout, unanticipated changes in the level of airport activity, and non-compliance with the NCP. This measure also included the recommendation of the Technical Advisory Committee (TAC) as a Noise Abatement Committee and purchase of a permanent noise monitoring system (2008 ROA Measure 8).

Status: Not fully implemented. The City of Burlington, Vermont updated the BTV NEM in 1997, 2006 and 2015. This documentation represents the fourth NEM update. The City updated the NCP in 2008 and is currently developing an update to the NCP for 2020 A standing Sound Mitigation Committee meets at various times throughout the year. Currently, there are no plans to purchase and install a noise monitoring system.

4.2.2 Flight Track Monitoring

Utilization of an outside firm to perform flight track analysis of radar data on a temporal sampling basis (2008 ROA Measure 9).

Status: Not fully implemented. The City is moving forward with prospective companies that analyze flight track data. A system is anticipated to be in place in 2019.

4.3 Land Use Measures

Most of the following land use measures require noise contours, and would use the 2018 and 2023 NEM once they are found in compliance with 14 CFR Part 150 by FAA. As discussed in Section 1.2, the City recommends using the extents of the 2023 NEM contours for land use planning.

4.3.1 Land Acquisition and Relocation

Noncompatible land use includes residences within the 65 dB DNL contour. This program is voluntary. Eligible property owners will be paid fair market value for their property at the highest and best rate, and provided relocation assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (the "Uniform Act") and implementation of Department of Transportation (DOT) regulations. The City, in coordination with applicable jurisdiction, will conduct studies to define program boundaries and to identify options for compatible reuse of the acquired properties.

The City, and the applicable jurisdiction, will develop a land use plan for the area surrounding the Airport that is impacted by noise. This effort will follow the guidance contained in the FAA document "Management of Acquired Noise Land: Inventory Reuse Disposal" dated January 30, 2008, or later superseding documents. (2008 ROA Measure 10).

Status: Implemented. The City has purchased some, and is in the process of purchasing additional, permanent residences in the 65 dB DNL contour. Since the start of federal Fiscal Year 2007 (started October 1, 2006) through September 2015, the FAA has issued 12 grants to the City of Burlington totaling approximately $32.6 million.[27] The extent of the acquisition area is coordinated with the local land use jurisdiction, in particular the City of South Burlington, and with residential property owners. Note: As with most grant programs, the FAA does have additional eligibility requirements asides from the property being within the 65 dB DNL NEM contour. FAA's

[27] FAA grant data is available at http://www.faa.gov/airports/aip/grantapportion_data/

eligibility requirements are best described in FAA's Airport Improvement Program (AIP) Handbook.[28] *Both the City and other local municipalities have expressed an interest in ending the voluntary acquisition program and transitioning to other mitigation options. The City's recommendation regarding future of the Land Acquisition and Relocation measure will be discussed in a later chapter of the document.*

4.3.2 Sound Insulation

Qualified compatible residential and noise sensitive land uses within the 65 and 70 dB DNL contours, and qualified compatible non-residential land uses in the 75 dB DNL contour, would be included in a sound insulation program (2008 ROA Measure 11).

Status: Not implemented. To date, the City has chosen to apply available funding to land acquisition. The City intends to start a sound insulation program to provide mitigation for properties eligible, properties that are not included in the land acquisition and relocation program. As with most grant programs, the FAA does have additional eligibility requirements asides from the property being within the 65 dB DNL NEM contour. Other requirements do include, but may not be limited to, an evaluation of the existing structure and when the property was built. FAA's sound insulation eligibility requirements are best described in FAA's AIP Handbook.[29]

4.3.3 Easement Acquisition Related to Soundproofing

The City would attempt to negotiate avigation easements within the 65 dB DNL contour, in return for sound attenuation assistance (2008 ROA Measure 12).

Status: Not implemented. To date, the City has chosen to apply available funding to land acquisition. However, with a future sound insulation program the City is weighing the requirement of easements for properties that receive soundproofing. The recommendation for easements will be included in the new NCP.

4.3.4 Airport Zoning Overlay District

Land use measure that would restrict uses which are highly sensitive to noise and could also feature construction standards for sound insulation (2008 ROA Measure 13).

Status: Not implemented. Although a formal Airport Zoning Overlay District has not been adopted, the City of South Burlington has actively worked to consider airport noise when addressing land-use decisions around the Airport.

4.3.5 Easement Acquisition for New Development

Easements would be obtained for new development within the 65, 70 and 75 dB DNL contours (2008 ROA Measure 14).

Status: Not implemented.

4.3.6 Real Estate Disclosure

A real estate disclosure policy would be developed for land uses within the 65 DNL contour, and implemented through revisions to zoning ordinances (2008 ROA Measure 15).

[28] FAA's current guidance, policy and procedures are documented in FAA Order 5100.38D "Airport Improvement Program (AIP) Handbook", effective February 26, 2019.
http://www.faa.gov/airports/aip/aip_handbook/

[29] See footnote 28 for the AIP Handbook's citation. In particular, see appendix sections C-5 and R of the AIP Handbook effective February 26, 2019.

Status: Not implemented. The Airport has not actively encouraged the use of Real Estate Disclosures for properties within the 65 dB DNL. However, outside the Part 150 process, a disclosure of airport noise, particularly related to anticipate changes of Vermont Air National Guard Aircraft, has been included in many real estate transactions.

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5 Updated Existing and Forecast Conditions Noise Exposure Maps with Existing Noise Compatibility Program

The most fundamental elements of the NEM submission are cumulative noise exposure contours for annual operations at the airport for: (1) data representing the existing condition and (2) data representing a forecast condition of at least five years in the future.

For this NEM Update the existing conditions noise contours represent 2018 and the five-year forecast contours represent 2023. This section describes the updated NEM figures and associated land use compatibility as follows:

- Section 5.1 presents the NEM figures
- Section 5.2 compares historical contours from previous Part 150 Studies
- Section 5.3 documents the incompatible land uses within the NEM noise contours

5.1 2018 and 2023 Noise Exposure Maps

Figure 12 presents the existing condition NEM for 2018 operations. Figure 13 presents the forecast condition NEM for 2023 operations. These are the official NEMs that the City of Burlington, Vermont is submitting under Part 150 for FAA review and determination of compliance, pursuant to §150.21(c).

As is discussed in Section 1.2, The City recommends using the extents of the 2023 NEM contours for future land-use planning.

The figures present noise contours for 2018 operations and 2023 forecast operations on a map depicting land uses, in generalized Part 150 land use categories. The land uses are color-coded. Consistent with Part 150 requirements, the figures also depict airport, municipal, and county boundaries, and discrete noise sensitive receptors (e.g., educational facilities and houses of worship) within the 65 dB DNL contours (some discrete noise sensitive receptors outside the 65 dB DNL contours are shown for reference, but do not represent a full inventory and are not required for Part 150). The 80 dB and 85 dB DNL contours are not shown, as they are completely on airport property and/or do not include any potentially noncompatible land uses.

Both NEMs reflect continuation of the noise abatement elements of the existing NCP (as summarized in Chapter 4) and the existing airport layout. Consistent with Part 150 requirements, the City will submit revised NEMs should either of these assumptions change, or if "any change in the operation of the airport would create any 'substantial, new noncompatible use' in any area depicted on the map beyond that which is forecast for the fifth calendar year after the date of submission."[30]

The 2018 and 2023 noise modeling assumptions differ in terms of the level and mix of aircraft activity operating at the Airport. Section 6.4 presents the modeling "fleet mixes" for those two years. Section 5.3.1 includes further discussion regarding differences between the 2018 and 2023 65 dB DNL contours.

The local municipalities (land use control jurisdictions) within the 2018 65 dB DNL NEM contour include:

- Town of Williston ("Williston"); and
- City of South Burlington ("South Burlington" or "So. Burlington") ; and
- City of Winooski ("Winooski").

[30] In 14 CFR §150.21(d).

The local municipalities (land use control jurisdictions) within the 2023 65 dB DNL NEM contour include:

- Town of Williston ("Williston");
- City of South Burlington ("South Burlington" or "So. Burlington");
- City of Burlington ("City" or "Burlington");
- City of Winooski ("Winooski");
- Town of Colchester ("Colchester") ; and
- Town of Essex ("Essex")

All of these municipalities are within Chittenden County. The maps include building outlines as reference, where such data were available. Non-contiguous 65 dB DNL contour areas are present in the 2018 NEM and 2023 NEM due to the effects of terrain.

Additional discussion is presented in the sections below.

5.2 Comparison of Various Noise Contours for 2015 through 2023

To provide a historical frame of reference Figure 14 compares the 65 – 75 dB DNL contours for 2015 and 2023, and Figure 15 compares the 65 dB DNL contours from previously documented noise contours along with the 2018 and 2023 contours that are part of this submission. The four contours, and the respective approximate land area, are listed below.

- The 2015 existing condition contour from the most recent NEM update study, accepted by FAA on December 22, 2015. Approximately 2,059 acres.
- The "ANG Scenario 1" contour from the USAF's September 2013 FEIS, Figure BR3.2-2.31. Note that this noise contour is based on the USAF's 228 flying days. All the others noise contours in this figure, and in this document, are based on 365 days, as required by Part 150 and FAA guidance. Approximately 3,132 acres.
- The 2018 existing condition contour from this submission. Approximately 1,063 acres.
- The 2023 existing condition contour from this submission. Approximately 2,655 acres.

The comparison of these contours would not be complete without noting that these contours were developed at different times and with different information. The development of the 2018 and 2023 contours is discussed in Chapter 6 of this document, while the development of the 2015 contour is discussed in the 2015 NEM update. For the purpose of these comparisons, only the 2015 DNL contour is referenced since the 2015 and 2020 DNL contours differ very little from each other.

Both the 2015 NEM and the 2018 NEM include VTANG F-16C aircraft. The 2018 65 dB DNL contour is overall smaller than the 2015 and 2023 contours due primarily to the following two factors occurring during 2018:

1. The VTANG is in the process of drawing down numbers of F-16C aircraft and operations in preparation for the arrival of the F-35A aircraft in 2019.
2. Periods of construction on Runway 15/33 resulted in reduced usage of afterburner departures by the VTANG F-16C aircraft.

As a result of the two factors mentioned above, the 2018 NEM DNL contours are representative of an atypical and short term reduced state of operations for the VTANG. The VTANG F-16C aircraft are represented at full operational capability in the 2015 NEM DNL contours.

The total acreage of the 2023 65 dB DNL contour is reduced relative to the EIS "ANG Scenario 1" contour. As noted previously, the EIS F-35A noise modeling was based on 228 flying days rather than the 365 annual day period

[31] The exact graphical files used to produce this Figure BR3.2-2 were not available, so the contour presented here is approximate and may differ very slightly from the FEIS.

required by 14 CFR Part 150. The overall reduction in acreage results primarily from the change in the number of days over which annual aircraft operations are averaged for modeling. Taken by itself, this change in the methodology used for calculating average daily aircraft operations results in a reduction of approximately 2 dB DNL at all locations. Forecast annual activity for the VTANG F-35A aircraft in the 2023 NEM remains unchanged from that presented in the FEIS "ANG Scenario 1".

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BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 12
2018 Existing Conditions Noise Exposure Map

2018 DNL Contour

- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)
- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

*Possible sound insulation areas

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

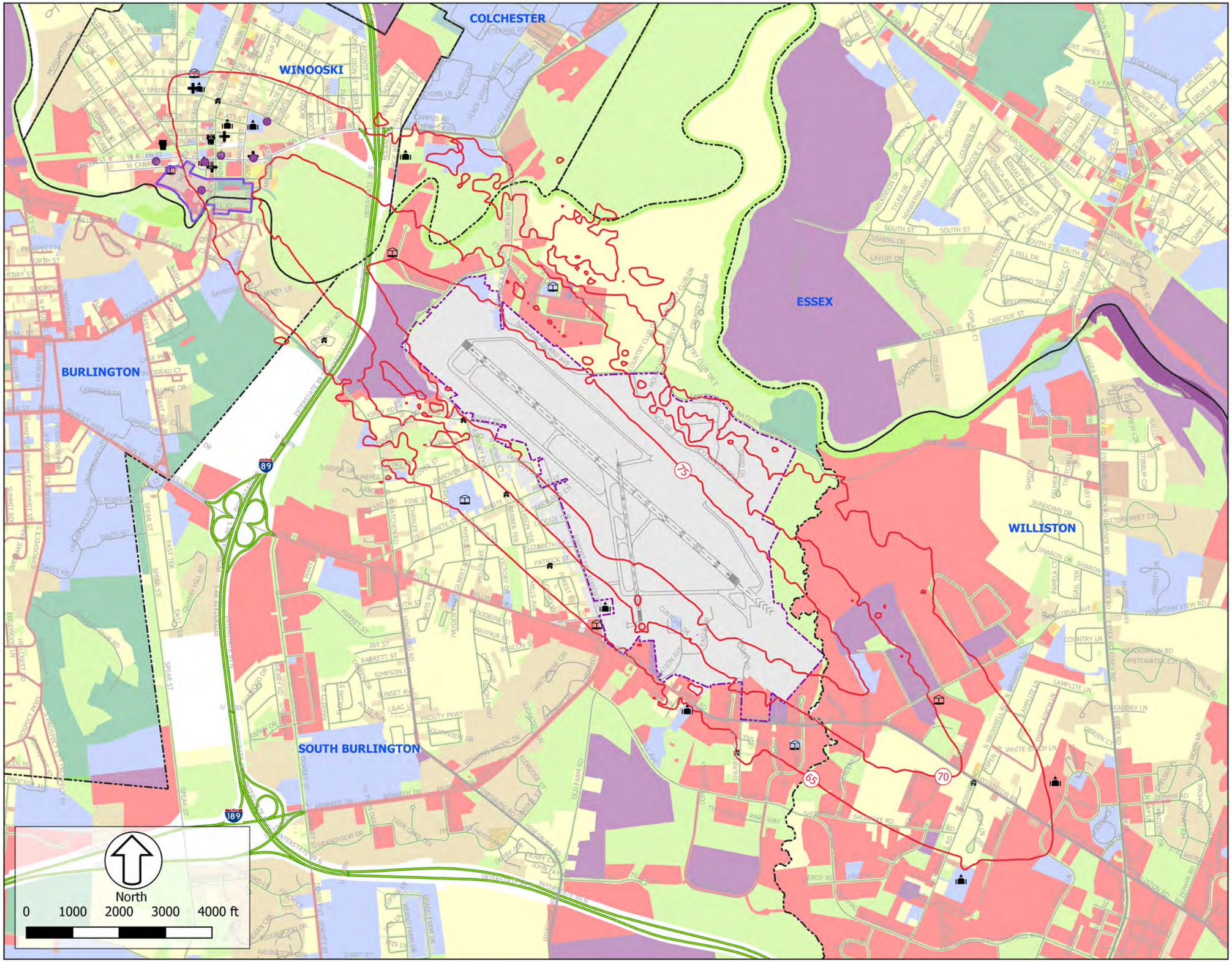
The Jones Payne Group, Inc.

North
0 1000 2000 3000 4000 ft

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 13
2023 Forecast Conditions Noise Exposure Map



2023 DNL Contour

- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

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Figure 13 - North
2023 Forecast Conditions Noise Exposure Map

2023 DNL Contour

- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

North
0 400 800 1200 1600 ft

The Jones Payne Group, Inc.

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PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 13 - West
2023 Forecast Conditions Noise Exposure Map

- 2023 DNL Contour
- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

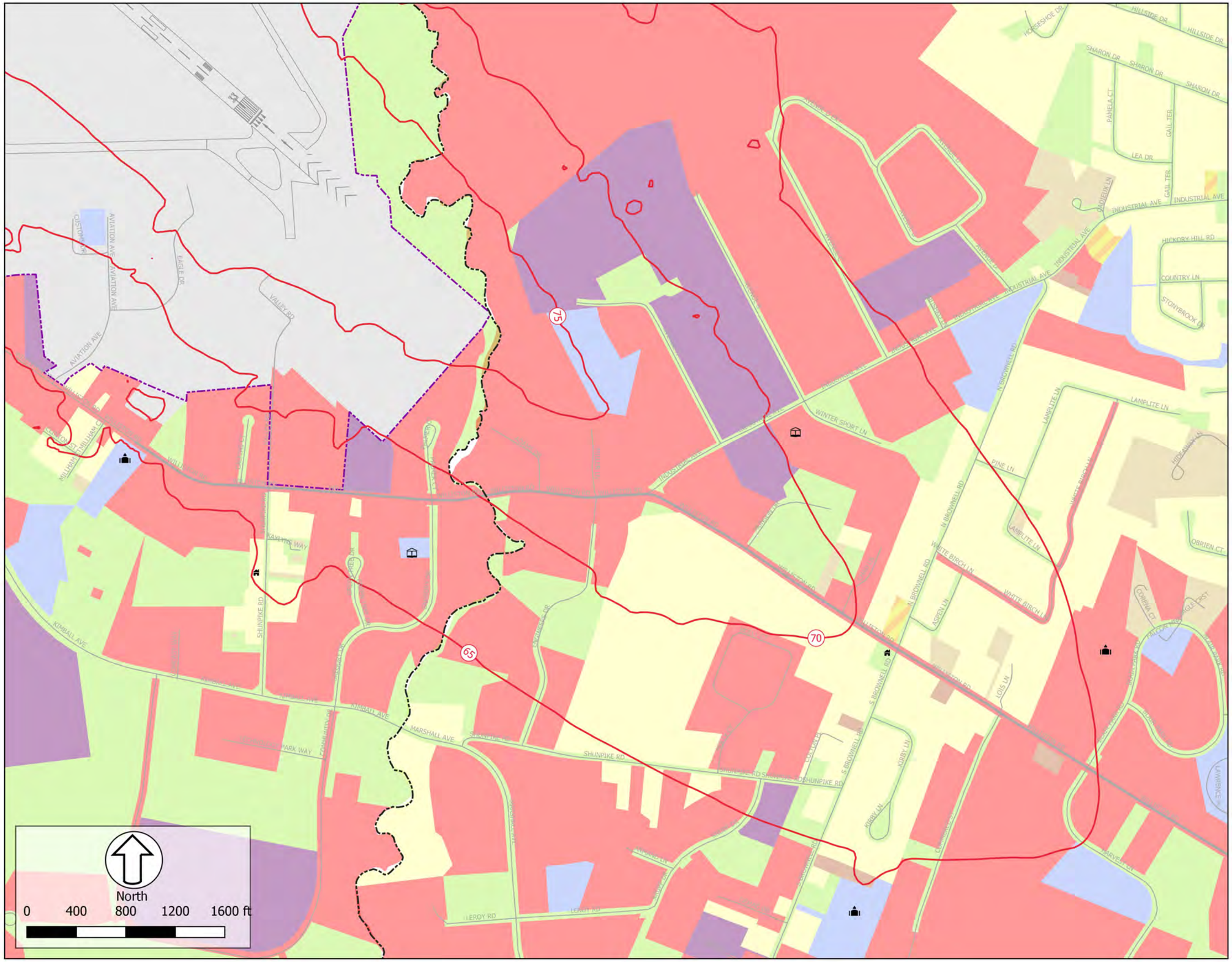
North
0 400 800 1200 1600 ft

The Jones Payne Group, Inc.

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 13 - South
2023 Forecast Conditions Noise Exposure Map



2023 DNL Contour

- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)
- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

*Possible sound insulation areas

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

The Jones Payne Group, Inc.

BURLINGTON INTERNATIONAL AIRPORT

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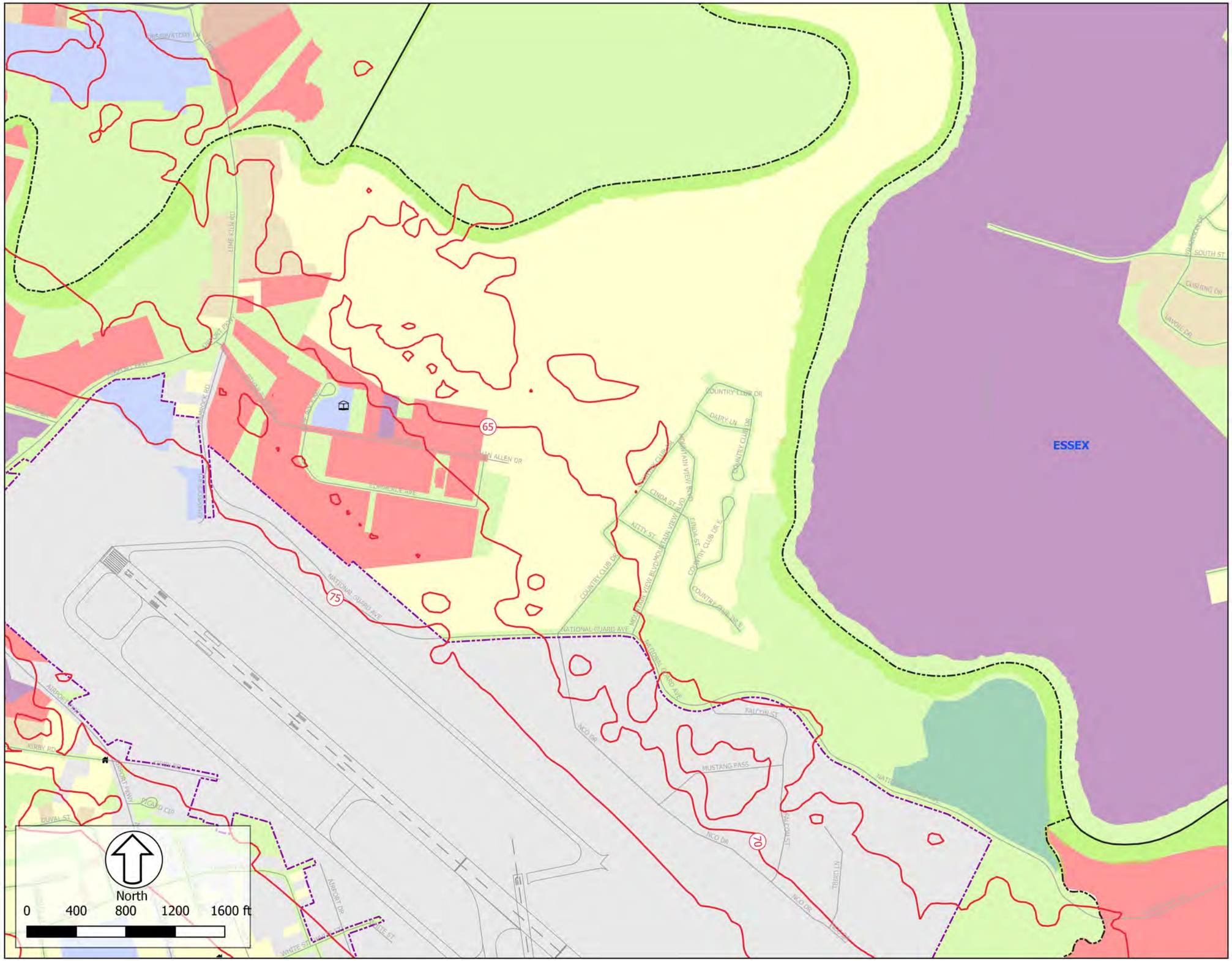
Figure 13 - East
2023 Forecast Conditions Noise Exposure Map



2023 DNL Contour

- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

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BURLINGTON INTERNATIONAL AIRPORT

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Figure 14
Comparison of F-16 (2015) and F-35 (2023) Sound Levels

2015 DNL Contour

2023 DNL Contour

Town Boundary

Airport Property Boundary

Historic Districts

Historic Sites

Local Roads

Major Roads

Highways

Education

Health Care

Place of Worship

Public Gathering

Residential

2018 Land Use

Single Family Residential (1)

Multi Family Residential (1)

Other Residential (1)

Mixed Use (1)

Public Use (1)

*Possible sound insulation areas

Airport

Transportation (2)

Commercial (2)

Manufacturing & Production (2)

Recreational (2)

Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

The Jones Payne Group, Inc.

North

0 1000 2000 3000 4000 ft

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Figure 15
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS

- 2018 65 DNL Contour
- 2023 65 DNL Contour
- 2013 EIS 65 Countour
- 2015 65 DNL Contour
- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)
- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

*Possible sound insulation areas

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

The Jones Payne Group, Inc.

North
0 1000 2000 3000 4000 ft

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Figure 15 - North
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS

- 2018 65 DNL Contour
- 2013 EIS 65 Countour
- 2023 65 DNL Contour
- 2015 65 DNL Contour
- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)
- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

*Possible sound insulation areas

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

The Jones Payne Group, Inc.

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Figure 15 - West
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS

- 2018 65 DNL Contour
- 2013 EIS 65 Countour
- 2023 65 DNL Contour
- 2015 65 DNL Contour
- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

The Jones Payne Group, Inc.

North
0 400 800 1200 1600 ft

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Figure 15 - South
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS

- 2018 65 DNL Contour
- 2013 EIS 65 Countour
- 2023 65 DNL Contour
- 2015 65 DNL Contour
- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

North
0 400 800 1200 1600 ft

The Jones Payne Group, Inc.

BURLINGTON INTERNATIONAL AIRPORT

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Figure 15 - East
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS

- 2018 65 DNL Contour
- 2013 EIS 65 Countour
- 2023 65 DNL Contour
- 2015 65 DNL Contour
- Town Boundary
- Airport Property Boundary
- Historic Districts
- Historic Sites
- Local Roads
- Major Roads
- Highways
- Education
- Health Care
- Place of Worship
- Public Gathering
- Residential

2018 Land Use

- Single Family Residential (1)
- Multi Family Residential (1)
- Other Residential (1)
- Mixed Use (1)
- Public Use (1)

*Possible sound insulation areas

- Airport
- Transportation (2)
- Commercial (2)
- Manufacturing & Production (2)
- Recreational (2)
- Open Space

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.4.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.4.

Data Source:
Vermont Center for Geographic Information Inc. (VCGI), United States Census Bureau, National Register of Historic Places, Burlington Internationa Airport, Harris Miller Miller & Hanson Inc.

The Jones Payne Group, Inc.

North
0 400 800 1200 1600 ft

5.3 Potential Noncompatibile Land Uses within the Noise Contours

Based on the land use compatibility guidelines presented in Table 2, the following land uses are *potentially* noncompatible with aircraft noise exposure, within the 65 dB DNL contours.[32]

- Residential land use within the 65 dB and higher contours (shown in various shades of yellow in the figures. This includes residential elements of areas shown as "Mixed Use").
- Residential homes on agricultural land within 65 dB and higher contours.
- Public and private schools within 65 dB and higher contours.
- Day care facilities within the 65 dB and higher contours, considered schools.
- Places of worship within 65 dB and higher contours.
- Auditoriums, concert halls, and public meeting areas within 65 dB and higher contours.
- Government service, Manufacturing and Wholesale Trade, General Sales and Services, Transportation, Communication, and Utilities buildings within the 70 dB and higher contours.

These potential noncompatible land uses fall into two principal categories: (1) discrete sensitive uses or "receptors", and (2) residential. Section 5.3.1 discusses the expected changes in noncompatible land-use between 2018 and 2023. Section 5.3.2 identifies the discrete noise sensitive locations within the 65 dB DNL contours while Section 5.3.3 presents the estimated population contours within 65 dB DNL contours.

A key element of the FAA-approved NCP for BTV is voluntary property acquisitions and associated relocation. BTV has pursued this program, with FAA funding support. This process was discussed in Section 4.3.1, Section 4.3.2, and Section 4.3.3. The City of Burlington and other local municipalities have expressed an interest in ending the voluntary acquisition program and transition to other mitigation options. The City would like to continue acquisitions to the extent the homeowner, land use jurisdiction, the FAA and the Airport/City are in agreement. Going forward, the City's preference is to implement sound insulation as the primary mitigation measure.

5.3.1 Comparison of the 2018 and 2023 Noncompatibile Land Uses

Comparison of the 2018 and 2023 contours, as depicted in Figure 14, show that the area within the 65 dB DNL contours is expected to increase in all directions for the 2023 forecast year, resulting in increases to noncompatible land uses. The most notable increases occur to the northwest and southeast of the airfield in line with Runway 15/33, while areas adjacent to the runway show a still notable but lesser degree of expansion. It should be noted, however, that 2018 represents an atypically low level of operations by the VTANG, due to removal of F-16C aircraft from their inventory in preparation for the arrival of the first F-35A aircraft in 2019. Furthermore, runway construction in 2018 hindered the use of afterburners for F-16C departures during much of the year. These two factors combined, result in the 2018 65 dB DNL contour being notably reduced in extent relative to the prior 2015 and 2020 NEMs. These circumstances unique to 2018, result in greater increases to the area within the 65 dB DNL contour from the existing condition to the forecast condition than would be encountered when comparing forecast conditions to a typical historic year of unimpeded VTANG operations.

5.3.2 Discrete Sensitive Receptors and National Register of Historic Places within the Noise Contours

The existing and forecast condition NEMs (Figure 12 and Figure 13) also show the locations of potentially noise sensitive discrete locations, both non-residential and select residential locations, at noise levels of 65 dB DNL or greater for either of the NEM conditions. One of these locations is currently listed on the National Register of

[32] As indicated in the notes to Table 2, the ultimate compatibility determination depends on the amount of outdoor to indoor "Noise Level Reduction" incorporated into the building, or for some land uses, certain portions of the building.

Historic Places. These locations are depicted on the NEMs and the status within the 2018 NEM and the 2023 NEM are listed in Table 3. Figure 14 presents these locations labeled with the IDs designated in Table 3.

These noise sensitive locations could be either compatible or noncompatible depending on the buildings outdoor-to-indoor Noise Level Reduction (NLR). The appropriate NLR for each activity is specified in Table 2. The facilities identified in Table 3 and in the 65-70 dB DNL contours would require a NLR of 25 dB while facilities in the 70-75 dB DNL contour would require a NLR of 30 dB. The NLR is only beneficial for activities within the facilities' structure and does not provide benefit for outdoor activities.

Table 3. Discrete Noise Sensitive Locations within, or near, the 65 dB DNL Contours for 2018 and 2023

City/Town	Type	Facility Name	2018 NEM Contour Interval	2023 NEM Contour Interval	ID on Figure 14 [2]
South Burlington	Education	Chamberlain Elementary School	< 65	65-70	BuS03
South Burlington	Education	Champlain Valley Gymnastics, Inc.	65-70	70-75	BuS09
South Burlington	Education	Union Training Center, IBEW Local 300	< 65	65-70	BuS10
South Burlington	Education	Kid Logic Learning	65-70	70-75	BuS12
South Burlington	Education	Centerpoint - Private School	< 65	65-70	BuS13
South Burlington	Place of Worship	Eldredge Cemetery	< 65	65-70	BuW11
South Burlington	Place of Worship	Community Bible Church	< 65	< 65	BuW13
South Burlington	Residential	Shunpike Road	< 65	65-70	BuR02
South Burlington	Residential	Patrick Street	< 65	65-70	BuR03
South Burlington	Residential	Airport Parkway/Kirby Road	65-70	70-75	BuR04
South Burlington	Residential	Valley Ridge Road	< 65	65-70	BuR05
Williston	Education	Center for Science Education	< 65	65-70	BuS02
Williston	Place of Worship	Calvary Chapel	< 65	< 65	BuW01
Williston	Place of Worship	Maranatha Christian Church	< 65	< 65	BuW03
Williston	Residential	Williston Road at S Brownell Road	< 65	65-70	BuR01
Winooski	Health Care	Health Care	< 65	65-70	BuH02
Winooski	Health Care	O'Brien Health Center	< 65	65-70	BuH03
Winooski	Health Care	Casey Family Services	< 65	65-70	BuH04
Winooski	Place of Worship	Sisters of Providence Church	< 65	65-70	BuW04
Winooski	Place of Worship	Winooski United Methodist Church [1]	< 65	65-70	BuW06
Winooski	Place of Worship	Saint Stephen Church	< 65	65-70	BuW09
Winooski	Place of Worship	Faith Baptist Church	< 65	65-70	BuW10
Winooski	Place of Worship	St Stephens Cemetery	< 65	65-70	BuW14
Winooski	Public Gathering	Veterans of Foreign Wars	< 65	65-70	BuP02
Winooski	Residential	Main Street/E Spring Street	< 65	65-70	BuR06

City/Town	Type	Facility Name	2018 NEM Contour Interval	2023 NEM Contour Interval	ID on Figure 14 [2]
Winooski	Education	Centerpoint School	< 65	<65	BUS14
Winooski	Public Gathering	O'Brien Community Center	< 65	<65	BUP03
Winooski	Education	Saint Francis Xavier School	< 65	65-70	BUS05
Winooski	Health Care	Our Lady of Providence	< 65	65-70	BUH06

Table 3 Notes:

1) The above property is on the National Register of Historic Places.

2) Designators are the same as the USAF FEIS where appropriate. This NEM continued designators in the same number scheme. Some locations are identified solely in just one of the documents and not necessarily in both.

5.3.3 Residential Population within the Noise Contours

Table 4 presents the estimated residential population within the 2018 and 2023 contours. These estimates were developed by multiplying the number of dwelling units within each DNL contour band by the average number of residents per dwelling unit. Based on 2010 Census data, the average household size for units within the Census blocks encompassed by the 2018 and 2023 65 dB DNL contours is 2.32 residents.

The table presents estimates of the number of residential dwelling units, based on data compiled from multiple sources by the Vermont Center for Geographic Information, airport staff, aerial photography, and street view. If a parcel was intersected by a contour, all dwelling units within that parcel are assumed to experience the higher interval level.

The estimated dwelling and population counts include all residential properties identified to date. Each jurisdiction provided zoning information and building point data that further refined the current land use. There are 3 areas where there are large multi-family structures, generally identified as Lime Kiln Rd., Winooski Falls, and Wollen Mill. When the unit count for these structures was not available, aerial photography was used to estimate the total. See the footnotes on Table 4 for the specific building addresses and estimated unit counts.

The 2018 NEM includes all of the same residential properties in the 2023 NEM. The 2023 NEM contour will be utilized by the City for future land-use planning.

Table 4. Estimated Residential Population within the 65 dB DNL Contour for 2018 and 2023

Sources: US Census (2010), Jones Payne Group (2018)

Day-Night Average Sound Level (DNL) Contour Interval	Estimated Dwelling Units and Population	Burlington		Colchester		Essex		South Burlington		Williston		Winooski		Total	
		2018	2023	2018	2023	2018	2023	2018	2023	2018	2023	2018	2023	2018	2023
Single Family Parcels															
65-70 dB	Dwelling Units	-	51	-	9	-	-	126	356	-	105	-	260	126	781
	Population	-	118	-	21	-	-	292	826	-	244	-	603	292	1,812
70-75 dB	Dwelling Units	-	-	-	-	-	-	8	96	-	1	-	-	8	97
	Population	-	-	-	-	-	-	19	223	-	2	-	-	19	225
75 dB +	Dwelling Units	-	-	-	-	-	-	-	12	-	-	-	-	-	12
	Population	-	-	-	-	-	-	-	28	-	-	-	-	-	28
Total 65 dB +	Dwelling Units	-	51	-	9	-	-	134	464	-	106	-	260	134	890
	Population	-	118	-	21	-	-	311	1,076	-	246	-	603	311	2,065
Multi-Family & Mixed Use Parcels															
65-70 dB	Dwelling Units	-	209	-	13	-	-	30	344 [1]	-	4	-	993 [2]	30	1,563
	Population	-	485	-	30	-	-	70	798 [1]	-	9	-	2,304 [2]	70	3,626
70-75 dB	Dwelling Units	-	81 [3]	-	-	-	-	-	14	-	2	-	89 [4,5]	-	186
	Population	-	188 [3]	-	-	-	-	-	32	-	5	-	206 [4,5]	-	432
75 dB +	Dwelling Units	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	Population	-	-	-	-	-	-	-	2	-	-	-	-	-	2
Total 65 dB +	Dwelling Units	-	290	-	13	-	-	30	359	-	6	-	1,082	30	1,750
	Population	-	673	-	30	-	-	70	833	-	14	-	2,510	70	4,060
Estimated Totals - All Parcel Types															
65-70 dB	Dwelling Units	-	260	-	22	-	-	156	700	-	109	-	1,253	156	2,344
	Population	-	603	-	51	-	-	362	1,624	-	253	-	2,907	362	5,438
70-75 dB	Dwelling Units	-	81	-	-	-	-	8	110	-	3	-	89	8	283
	Population	-	188	-	-	-	-	19	255	-	7	-	206	19	657
75 dB +	Dwelling Units	-	-	-	-	-	-	-	13	-	-	-	-	-	13
	Population	-	-	-	-	-	-	-	30	-	-	-	-	-	30
Total 65 dB +	Dwelling Units	-	341	-	22	-	-	164	823	-	112	-	1,342	164	2,640
	Population	-	791	-	51	-	-	380	1,909	-	260	-	3,113	380	6,125

Notes:

1 Includes estimated units at: 303 Lime Kiln Rd. (18); 305 Lime Kiln Rd. (18); 325 Lime Kiln Rd. (40); 327 Lime Kiln Rd. (40); 331 Lime Kiln Rd. (40); 378 Lime Kiln Rd. (24); 380 Lime Kiln Rd. (24); 418 Lime Kiln Rd. (24)

2 Includes estimated units at: 81 E Allen St. (2); 20 W Canal St. (96); 79 W Canal St. (24); 23 Weaver Ln. (4); 4 Weaver Ln. (2); 240 E Allen St. (0); 114 Main St. (5); 54 Leclair St. (2); 158 Main St. (6); 167 Main St. (3); 99 Weaver St. (3)

3 No city records available for 109 Mulberry Ln. and 116 Mulberry Ln.

4 Includes estimates for 1 Abeanki Way (26)

5 Includes 106 E Allen St., which is a new building with an unknown unit count.

Additonal:

- A single family parcel has a single dwelling on the property while a multi-family parcels has two or more dwelling units. All units are assumed to have an average population of 2.32, based on US Census data.

- Each property considered for inclusion in the program also must meet any other eligibility requirements that the FAA may adopt. For example, consistent with FAA policy guidance set out in 14 CFR Part 150, Docket No. 28149, "Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects", effective October 1, 1998, new non-compatible land uses established after that date within October 1, 1998, will not be eligible for acquisition. Current FAA guidelines are probably best described in the FAA's Airport Improvement Program (AIP) Handbook, September 30, 2014. See also footnotes 26 and 27 in Section 4.3 of this document.

Table 5 presents the estimated residential population within the three historical contours presented in Figure 15 along with the 2018 and 2023 NEM contours. The purpose of this table is to provide a dwelling and population comparison to the historical contours presented in Figure 15, all with the same land use data and dwelling inventory methodology used in this NEM. The dwelling unit and population estimates in the middle three columns of Table 5 (labeled as "Land Use Inventoried and Depicted for this 2018/2023 NEM") were developed from the same land use data set used for this NEM update. Therefore, the numbers provided differ from the original documents, each of which used different land use data and/or methodologies. Table 5 also provides the

comparable values from the respective original documents in the right columns (labeled as "Comparable Previously Documented Values"), where applicable, and the notes to the table provide specific references.

Table 5. Estimated Residential Population within the 65 dB DNL Contour for Historical Cases

Sources: US Census (2010), Jones Payne Group (2018)

65 dB Day-Night Average Sound Level, DNL Contour	Estimated Dwelling Units and Population	Land Use Inventoried and Depicted for this 2018/2023 NEM [2]			Comparable Previously Documented Values [3]
		On Single Family Parcels	On Multi-Family & Mixed Use Parcels	Estimated Total	Estimated Total
2015 Noise Exposure Map	Dwelling Units	616	203	**819**	**976** [1]
	Population	1,429	471	**1,900**	**2,267 (2,531)** [1]
"ANG Scenario 1" Contour from the USAF's September 2013 FEIS, Figure BR3.2-8.	Dwelling Units	1,186	1,758	**2,944**	**2,963** [4]
	Population	2,752	4,079	**6,830**	**6,663** [4]
2018 Noise Exposure Map	Dwelling Units	134	30	**164**	
	Population	311	70	**380**	
2023 Noise Exposure Map	Dwelling Units	890	1,750	**2,640**	
	Population	2,065	4,060	**6,125**	

Notes:

1 Dwelling units do not include the dormitories at Saint Michael's College. Estimated Population numbers in parenthesis include estimates of residents in the dormitory facilities at Saint Michael's College.

2 All land use counts in these three columns are based on data collected for this project instead of the original published document. This allows for comparison to Table 4. "On Single Family Parcels" and "On Multi-Family Parcels" correspond to the color coding in the NEM Figures. A single family parcel has a single dwelling on the property while a multi-family parcels has two or more dwelling units. All single family and multi-family units are assumed to have an average population of 2.32, based on US Census data.

3 These are comparable values reported in the respective original document. Each document used different land use data and assumed a different average population per residential unit. Details are provided in the respective documents.

4 USAF's September 2013 FEIS, Table BR3.2-8. Note that this noise contour is based on the USAF's 228 flying days. All the others noise contours referred to in this table are based on 365 days, as required by Part 150 and FAA guidance.

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6 Development of Noise Contours

The DNL contours for this study were prepared using FAA recommended practices as required by 14 CFR Part 150 and FAA's guidance documents. This chapter presents information pertaining to the development of the 2018 and 2023 NEM contours.

6.1 Noise Models

Per guidance from the FAA Office of Environment and Energy (AEE), the US Department of Defense's NOISEMAP software was used to model based military aircraft operations (arrivals, departures, touch and goes, and maintenance activity) for the BTV NEM. The FAA's Aviation Environmental Design Tool (AEDT) was used to model the remaining civilian and transient military operations for the BTV NEM. The output grid results from these two models were then added together utilizing the grid combining feature of the AEDT. NOISEMAP uses many of the same inputs as AEDT, and are included in discussion and tables below, as appropriate.

Each noise model was run separately and the outputs were combined to present an average annual day contour and grid point values using the hybrid approach recommended by FAA.

The hybrid modeling approach recommended by FAA for this project has also been used for several other Part 150 projects at other civilian airports with military activity. Examples of similar projects in the New England region include:

- Westover Metropolitan Airport/ Westover Air Reserve Base Noise Exposure Map and Noise Compatibility Program Update (FAA accepted NEM in July 2014)
- Westfield-Barnes Airport Part 150 Noise Compatibility Study Update (FAA accepted NEM in April 2009)
- Burlington Vermont International Airport Noise Exposure Map Update (FAA accepted NEM in December 2015)

6.1.1 AEDT

The BTV NEM contours were prepared with the most recent version of FAA's Aviation Environmental Design Tool (AEDT), a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality consequences. The AEDT includes databases containing information that includes aircraft noise and emissions profiles and airport layout data, which are used in conjunction with various user inputs to perform the noise computations. AEDT model input data includes:

- Physical description of the airport layout
- Number and mix of aircraft flight operations
- Aircraft noise and performance characteristics
- Runway utilization rates
- Prototypical flight track descriptions and accompanying utilization rates
- Terrain data
- Meteorological Conditions
- Meteorological data
- Terrain data

AEDT version 2.d was used to prepare all noise exposure contours without any unauthorized "calibration" or "adjustment" as presented in this NEM update.

6.1.2 NOISEMAP

NOISEMAP is a suite of computer modeling programs developed by the U.S. Air Force for prediction of noise exposures from aircraft flight, maintenance, and ground run-up operations. NOISEMAP includes several modules.[34]

The BTV NEM contours were prepared with the most recent version of NOISEMAP (NMap Version 7.3) to represent the VTANG F-16C and F-35A, and VTARNG helicopter operations. The modeling inputs can be categorized in a similar manner as the AEDT. NOISEMAP modeling inputs, documented in the following sections, were based on the inputs used in the United States Air Force F-35A Operational Basing Final Environmental Impact Statement (USAF EIS)[35] and additional data provided by the VTANG for F-16C operations in 2018.

6.2 Airport Physical Parameters

BTV is located in northern Vermont, approximately three miles east of downtown Burlington. BTV has two operational runways: Runway 15/33 and Runway 1/19. The primary runway, Runway 15/33, is 8,319 feet long and 150 feet wide. Runway 1/19 is 4,112 feet long and 75 feet wide. The published airport elevation is 335 feet above mean sea level. The runway layout and airport property are shown on all of the contour and flight track figures in this document.

The AEDT includes an internal airport layout database, including runway locations, orientation, start-of-takeoff roll points, runway end elevations, landing thresholds, approach angles, etc. The AEDT data was updated with the latest Airport Layout Plan. Table 6 provides the runway details, including the runway end coordinates.

The primary information that AEDT uses with regards to runways are:

- departure thresholds (i.e. where aircraft begin their take-off roll);
- arrival threshold (a location marked on the runway);
- arrival threshold crossing height (TCH) (the height that arriving aircraft cross the arrival threshold);
- runway gradient (i.e. is the runway slightly uphill or downhill);
- runway location; and
- runway direction.

Runway length, runway width, instrumentation and declared distances do not directly affect noise calculations, although these parameters may affect which aircraft might use a particular runway and under what conditions, and therefore how often a runway would be used relative to the other runways at the Airport.

[34] Additional documentation is available at http://wasmerconsulting.com/baseops.htm

[35] Document was released September 2013. The Air Force issued a Record of Decision (ROD) December 2, 2013. The documents are available at https://www.158fw.ang.af.mil/ABOUT/ENVIRONMENTAL/

Table 6. Runway Details

Source: FAA NASR effective 21 June 2018 https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/NASR_Subscription/

Runway	Latitude	Longitude	Elevation (ft MSL)	Length (ft)	Displaced Arrival Threshold (ft)	Displaced Departure Threshold (ft)
1	44.463826	-73.151003	333.7	4,112	225	0
19	44.474978	-73.153352	326.8	4,112	500	0
15	44.480674	-73.165879	305.5	8,319	0	0
33	44.465758	-73.141763	334.2	8,319	500 (982)[1]	0 (982)[1]

[1]Displaced threshold in place 12 Apr - 12 July 2018 (91 days). A proportional share of operations on this runway were modeled with the displaced threshold for the current conditions case.

6.3 Aircraft Noise and Performance Characteristics

Specific noise and performance data must be entered into AEDT for each aircraft type operating at the Airport. Noise data is included in the form of sound exposure level (SEL – see Section 3.1.4) at a range of distances (from 200 feet to 25,000 feet) from a particular aircraft with engines at a specific thrust level. Performance data includes thrust, speed and altitude profiles for takeoff and landing operations. The AEDT database contains standard noise and performance data for over 300 different fixed wing aircraft types, most of which are civilian aircraft. AEDT automatically accesses the noise and performance data for takeoff and landing operations by those aircraft.

Additional modeling inputs were created for this study and submitted to the FAA for approval. The details of these changes and the submission to FAA Office of Environment and Energy (AEE-100) are provided in Appendix B. In summary, these changes include the following topics:

- Non-standard substitutions
- Taxiways and ramp activity

6.3.1 Non-Standard Substitutions

Not all aircraft types identified as operating at BTV have specific AEDT aircraft types or FAA-approved substitutions. Therefore, for those aircraft types, recommended substitutions were submitted to the FAA, as provided in Appendix B. For those aircraft types not in the AEDT standard database, FAA approved substitutions were used to model the aircraft with a similar type that was in the database, or a user-defined aircraft was created for that specific aircraft type. FAA approved substitutions and user-defined aircraft came from the following two sources:

- AEDT Version 2d, which includes the current list of standard FAA substitutions;
- BTV Part 150 specific request to the FAA for non-standard substitutions and user-defined aircraft (request documented in Appendix B). These aircraft include the:
  - Embraer 175 Long Wing (substitution with EMB175)
  - Embraer 175 Short Wing (substitution with EMB175)
  - Cessna Citation Latitude (substitution with CNA680)
  - Bombardier Challenger 350 (substitution with CL600)
  - Diamond Club Star DA40 (substitution with GASEPV)
  - Mooney M-20C Ranger (substitution with GASEPV)
  - Piper Cherokee Arrow (substitution with GASEPV)
  - Piper Malibu (substitution with GASEPV)

6.3.2 Taxiways and Ramp Activity

Taxiway noise is associated with aircraft taxiing to and from the runways to their respective parking areas or gates on the ramp. The taxiing may also include a queue time, where the aircraft is stationary, awaiting clearance to proceed, and the engines are at idle. Non-standard modeling inputs were prepared so that AEDT could represent taxiway operations. Section 6.7.1 provides additional details.

6.3.3 F-16C and F-35A Profiles

The Department of Defense's NOISEMAP software was utilized for noise modeling of VTANG F-16C and F-35A aircraft operations at BTV. Based on inputs provided by the VTANG, F-16C flight profiles from the EIS were updated to better reflect operation of the aircraft at BTV during 2018. F-35A flight profiles developed for the EIS were carried forward for use in the 2023 NEM. Approval of noise model flight profile data was provided by the VTANG on August 8, 2018[36].

6.4 Aircraft Operations

Civilian and transient military aircraft operations are based on a twelve month data sample obtained from Vector Airport Systems, LLC, covering the period of November 1, 2017 through October 31, 2018. These 2017/2018 operations counts were scaled to the FAA Terminal Area Forecast (TAF) for 2018 and 2023 to determine the operations totals for the NEM study years. Due to the expected retirement of MD-88 aircraft, operations by these aircraft were assigned to Airbus 319 aircraft for the 2023 case.

Based military operations were developed from multiple sources. Forecast F-35A operations for 2023 were taken from the modeling data used in the USAF EIS "ANG Scenario 1", and existing F-16C operations for 2018 were developed based on input from the VTANG. Because the USAF EIS modeling data used 228 annual flying days, average daily F-35A operations were scaled to represent 365 annual operating days according to 14 CFR Part 150s definition of average annual day for the purposes of an NEM. Both the NEM and the USAF EIS assume the same number of annual operations for the F-35A aircraft. Existing 2018 and forecast 2023 operations for the UH-72 and HH-60M helicopter were provided by the Vermont Army National Guard (VTARNG).

Table 7 and Table 8 provide summaries of operations for the baseline and forecast years. The operations are condensed into categories specified by FAA Order 7210.3 "Facility Operation and Administration"; namely Air Carrier (AC), Air Taxi (AT), General Aviation (GA), and Military (ML). AC and AT are commercial categories distinguished by aircraft capacity, while GA includes all non-commercial, non-military operations.

Among civilian aircraft, TAF anticipates a notable shift from smaller AT aircraft to larger AC aircraft over the course of the study period. This results in a decrease of more than 20% in total commercial operations, while passenger numbers are forecast to increase moderately.

[36] Email communication from Colonel Christopher Tumilowicz USAF 158 OG, subject "VT ANG", August 8, 2018

Table 7. Existing 2018 Annual Operations Summary and Comparison

Sources: FAA, HMMH, VTANG, and VTARNG (2018)

FAA Category [1]		2018 Modeled Operations	2017 Reported (OPSNET)	2018 Forecast (TAF)
Itinerant	Air Carrier	12,612	12,941	12,612
	Air Taxi	15,758	13,873	15,759
	GA	22,481	18,747	22,481
	Military [2,3]	4,748	4,242	3,357
Local	GA	11,138	10,833	11,138
	Military [2,3]	1,305	1,365	1,789
Total		68,042	62,001	67,136

Notes:

1 Operational Categories are those defined in FAA Order 7210.3AA at Chapter 12, Section 12-1-5 (September 12, 2017). See report footnote 43.

2 Military operations were developed using the TFMSC, OPSNET, USAF EIS, and input from the Vermont Air and Army National Guard.

3 Modeled military operations account for the fact that the tower may consider multiple military aircraft flying in formation as a single count. This practice is documented in FAA Order 7210.3Y at Chapter 12, Section 12-2-1 (April 3, 2014) and verified with FAA staff. Typically 2 or more aircraft take off in formation (single count) and then returning individually (2 or more counts). Over the course of a year, for every 100 tower counts for the based F-16s, there are approximately 142 actually operations. As a result, total modeled military aircraft operations numbers exceed those reported in the TAF.

Table 8. Forecast 2023 Annual Operations Summary and Comparison

Sources: FAA, HMMH, VTANG, VTARNG (2018)

FAA Category [1]		2023 Modeled Operations [3]	2023 Forecast (TAF)
Itinerant	Air Carrier	17,378	17,378
	Air Taxi	5,087	5,087
	GA	22,636	22,636
	Military [2,3]	6,846	3,357
Local	GA	11,138	11,133
	Military [2,3]	1,458	1,789
Total		64,543	61,380

Notes:

1 Operational Categories are those defined in FAA Order 7210.3AA at Chapter 12, Section 12-1-5 (September 12, 2017). See report footnote 43.

2 Military operations were developed using the TFMSC, OPSNET, USAF EIS, and input from the Vermont Air and Army National Guard.

3 Modeled military operations account for the fact that the tower may consider multiple military aircraft flying in formation as a single count. This practice is documented in FAA Order 7210.3Y at Chapter 12, Section 12-2-1 (April 3, 2014) and verified with FAA staff. Typically 2 or more aircraft take off in formation (single count) and then returning individually (2 or more counts). Over the course of a year, for every 100 tower counts for the based VTANG aircraft, there are approximately 142 actually operations. As a result, total modeled military aircraft operations numbers exceed those reported in the TAF.

Table 9 and Table 10 present the detailed aircraft modeling fleet mixes for the 2018 Existing Conditions NEM (Table 9) and the 2023 Forecast NEM (Table 10). The tables present fleet mix detail broken down by type of operation (departures, arrivals, and touch and go cycles), the DNL "day" and "night" time periods (7:00 a.m. – 10:00 p.m. and 10:00 p.m. – 7:00 a.m., respectively, and as discussed in Section 3.1.6), and AEDT database aircraft types. The day/night breakdown is critical to the calculation of DNL, because the metric weights night operations by a factor of 10 (mathematically equivalent to adding ten decibels to the noise level produced by aircraft operating at night). Within the AEDT model departures are further subdivided by stage length, the distance to the first destination. AEDT uses stage length to determine the aircraft's flight profile, because the fuel load required to fly a given distance is a major determinant of aircraft weight and, therefore the climb rate, speed, power setting, and noise emissions associated with a given departure.

Table 9. Modeled 2018 Annual Aircraft Operations

Sources: FAA, HMMH, VTANG, VTARNG (2018)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
Air Carrier	Jet	A319	4930	A319-131	142	80	133	89	-	-	445
		A320	4900	A320-232	91	132	147	76	-	-	447
		B712	88	717200	52	137	39	150	-	-	377
		B737	4861	737700	11	69	20	60	-	-	160
		B738	5294	737800	87	86	119	53	-	-	345
		B739	2502	737800	5	47	8	44	-	-	104
		B752	2512	757PW	243	-	238	5	-	-	487
		CRJ7	4211	CRJ9-ER	708	132	718	122	-	-	1,681
		CRJ9	2548	CRJ9-ER	773	566	882	457	-	-	2,679
		E170	3070	EMB170	128	16	139	6	-	-	289
		E190	4288	EMB190	968	438	1,005	400	-	-	2,811
		E75L	3071	EMB175	484	225	469	240	-	-	1,417
		E75S	3816	EMB175	487	120	395	212	-	-	1,213
		MD88	2074	MD83	13	38	6	46	-	-	104
	Turbine Propeller	DH8D	4778	DHC830	27	-	27	-	-	-	55
Air Carrier Totals					**4,221**	**2,085**	**4,346**	**1,960**	**-**	**-**	**12,612**

Note: Totals and subtotals may not match due to rounding.

Table 9. Modeled 2018 Annual Aircraft Operations (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
Air Taxi	Jet	BE40	5296	MU3001	110	-	110	-	-	-	220
		C560	4929	CNA560U	28	-	26	1	-	-	56
		C56X	4794	CNA560XL	154	6	156	4	-	-	321
		C680	5184	CNA680	39	1	38	3	-	-	81
		C68A	5347	CNA680	74	5	77	3	-	-	159
		C750	1314	CNA750	73	-	73	-	-	-	146
		CL30	4856	CL600	98	3	101	-	-	-	202
		CL35	5345	CL600	105	6	111	-	-	-	222
		CL60	4805	CL601	23	-	23	-	-	-	45
		CRJ2	1250	CL600	2,669	212	2,555	326	-	-	5,761
		E145	2557	EMB14L	1,362	112	1,413	62	-	-	2,949
		E45X	4874	EMB145	1,337	82	1,276	143	-	-	2,838
		E55P	4917	CNA55B	96	3	96	3	-	-	197
		F2TH	4804	CNA750	19	1	20	-	-	-	40
		F900	4034	CNA750	45	6	49	3	-	-	104
		GLEX	3734	BD-700-1A10	24	-	24	-	-	-	48
	Turbine Propeller	B350	1539	DHC6	114	1	110	5	-	-	230
		BE99	4918	DHC6	78	-	78	-	-	-	157
		BE9L	4918	DHC6	21	-	21	-	-	-	43
		E110	1498	DHC6	605	-	605	-	-	-	1,209
		PC12	3122	CNA208	329	37	328	38	-	-	732
Air Taxi Totals					**7,403**	**476**	**7,289**	**590**	**-**	**-**	**15,759**

Note: Totals and subtotals may not match due to rounding.

Table 9. Modeled 2018 Aircraft Operations (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
General Aviation	Jet	BE40	5296	MU3001	53	5	50	8	-	-	116
		C25A	3974	CNA525C	131	10	125	16	-	-	281
		C25B	3974	CNA525C	407	5	330	82	-	-	824
		C25C	4276	CNA525C	100	3	103	-	-	-	206
		C525	3974	CNA525C	75	3	78	-	-	-	156
		C550	4327	CNA55B	148	5	146	8	-	-	306
		C560	4929	CNA560U	53	-	50	3	-	-	105
		C56X	4794	CNA560XL	332	23	340	15	-	-	708
		C680	5184	CNA680	181	18	193	5	-	-	397
		C750	1314	CNA750	43	3	40	5	-	-	90
		CL30	4856	CL600	48	-	48	-	-	-	95
		CL60	4805	CL601	60	3	63	-	-	-	126
		E35L	5351	CNA55B	40	-	40	-	-	-	80
		E50P	4902	CNA510	95	3	95	3	-	-	196
		E55P	4917	CNA55B	53	-	53	-	-	-	105
		F2TH	4804	CNA750	50	3	47	5	-	-	105
		F900	4034	CNA750	65	-	65	-	-	-	131
		G280	4198	IA1125	105	-	98	8	-	-	211
		GL5T	3732	BD-700-1A11	108	13	118	3	-	-	241
		GLF4	5267	GIV	63	5	68	-	-	-	136
		GLF5	4858	GV	116	5	115	5	-	-	241
		H25B	2014	LEAR35	70	18	83	5	-	-	176
		H25C	4758	LEAR35	50	3	53	-	-	-	105
		LJ45	4843	LEAR35	40	3	40	3	-	-	85
		LJ60	2033	LEAR35	241	5	224	22	-	-	492
		WW24	1973	IA1125	95	13	92	16	-	-	216
	Turbine Propeller	AA5	1532	GASEPF	50	-	50	-	-	-	100
		B350	1539	DHC6	88	-	88	-	-	-	176
		BE20	3790	DHC6	216	8	215	9	-	-	447
		BE9L	4918	DHC6	153	8	155	5	-	-	322
		C441	1287	CNA441	163	-	155	9	-	-	327
		P46T	1465	GASEPF	70	-	65	5	-	-	141
		PC12	3122	CNA208	285	71	266	90	-	-	713
		TBM7	1533	CNA208	85	-	85	-	-	-	171
		TBM8	2580	CNA441	68	-	68	-	-	-	136
		TBM9	4677	CNA208	45	3	48	-	-	-	95

Note: Totals and subtotals may not match due to rounding.

Table 9. Modeled 2018 Aircraft Operations (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
General Aviation	Piston Propeller	BE33	1271	GASEPV	60	-	60	-	-	-	121
		BE35	1271	GASEPV	75	-	73	3	-	-	151
		BE36	1276	CNA208	264	3	258	8	-	-	533
		BE58	1196	BEC58P	279	-	274	5	-	-	558
		C150	1882	GASEPF	40	-	40	-	-	-	80
		C172	1267	CNA172	3,414	88	3,409	92	10,187	137	17,327
		C180	1271	GASEPV	53	-	53	-	-	-	105
		C182	1262	CNA182	234	-	234	-	-	-	467
		C206	3172	CNA206	72	4	70	5	-	-	151
		C340	2116	BEC58P	98	5	103	-	-	-	206
		C414	2119	BEC58P	58	3	58	3	-	-	121
		DA40	1271	GASEPV	63	-	63	-	-	-	126
		M20P	1271	GASEPV	146	-	146	-	-	-	291
		P28A	3178	PA28	217	4	219	3	-	-	442
		P28R	1271	GASEPV	352	5	357	-	728	4	1,446
		P32R	1271	GASEPV	40	3	43	-	-	-	85
		PA24	1901	GASEPV	55	-	55	-	81	-	191
		PA27	1194	BEC58P	35	5	35	5	-	-	80
		PA28	2102	GASEPF	103	-	103	-	-	-	206
		PA31	779	BEC58P	216	28	224	20	-	-	487
		PA32	1271	GASEPV	40	-	40	-	-	-	80
		PA34	2103	BEC58P	47	6	48	5	-	-	105
		PA46	1271	GASEPV	88	-	88	-	-	-	176
		S22T	1325	COMSEP	98	-	98	-	-	-	196
		SR22	1325	COMSEP	650	13	643	20	-	-	1,326
General Aviation Totals					**10,844**	**397**	**10,742**	**498**	**10,996**	**142**	**33,619**

Note: Totals and subtotals may not match due to rounding.

Table 9. Modeled 2018 Aircraft Operations (Concluded)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
Based Military	Jet	F16	N/A	N/A	1,535	-	1,535	-	307	-	3,377
	Helicopter	H72	N/A	N/A	211	18	229	-	-	-	458
		H60	N/A	N/A	324	133	361	96	-	-	914
Transient Military	Jet	B752	2512	757PW	16	-	16	-	96	-	128
		C17	1401	C17	11	-	11	-	72	-	94
		K35R	1981	KC135R	11	-	11	-	72	-	94
		DC10	1349	DC1030	5	-	5	-	30	-	40
		C560	4929	CNA560U	19	1	19	1	125	7	172
		GLF5	4858	GV	18	1	19	-	120	4	162
	Turbine Propeller	BE20	3790	DHC6	10	-	10	-	66	-	86
		C130	1203	C130	27	-	25	2	176	8	238
		CN35	42	SF340	11	-	11	-	72	-	94
		DH8C	4778	DHC830	10	-	10	-	66	-	86
		C208	4677	CNA208	3	-	3	-	20	-	26
	Piston Propeller	C206	3172	CNA206	9	-	9	-	58	-	76
		C421	1287	CNA441	1	-	1	-	6	-	8
Based Military Total					**2,070**	**151**	**2,125**	**96**	**307**	**-**	**4,749**
Transient Military Total					**151**	**2**	**150**	**3**	**979**	**19**	**1,304**
Overall Totals					**24,689**	**3,111**	**24,652**	**3,147**	**12,282**	**161**	**68,042**

Note: Totals and subtotals may not match due to rounding.

Table 10. Modeled 2023 Annual Aircraft Operations

Sources: FAA, HMMH, VTANG, VTARNG (2018)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
Air Carrier	Jet	A319	4930	A319-131	196	110	183	123	-	-	613
		A320	4900	A320-232	126	182	203	105	-	-	616
		B712	88	717200	71	188	54	206	-	-	520
		B737	4861	737700	16	95	28	82	-	-	221
		B738	5294	737800	120	118	164	73	-	-	476
		B739	2502	737800	6	65	10	61	-	-	143
		B752	2512	757PW	335	-	329	7	-	-	671
		CRJ7	4211	CRJ9-ER	976	182	990	168	-	-	2,316
		CRJ9	2548	CRJ9-ER	1,066	780	1,216	630	-	-	3,691
		E170	3070	EMB170	177	22	191	8	-	-	398
		E190	4288	EMB190	1,333	603	1,385	551	-	-	3,873
		E75L	3071	EMB175	666	310	646	330	-	-	1,952
		E75S	3816	EMB175	671	165	544	292	-	-	1,671
		MD88	2074	MD83	19	53	8	64	-	-	143
	Turbine Propeller	DH8D	4778	DHC830	38	-	38	-	-	-	75
Air Carrier Totals					**5,816**	**2,873**	**5,989**	**2,700**	**-**	**-**	**17,378**

Note: Totals and subtotals may not match due to rounding.

Table 10. Modeled 2023 Annual Aircraft Operations (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
Air Taxi	Jet	BE40	5296	MU3001	35	-	35	-	-	-	71
		C560	4929	CNA560U	9	-	9	-	-	-	18
		C56X	4794	CNA560XL	50	2	50	1	-	-	104
		C680	5184	CNA680	13	-	12	1	-	-	26
		C68A	5347	CNA680	24	2	25	1	-	-	51
		C750	1314	CNA750	24	-	24	-	-	-	47
		CL30	4856	CL600	32	1	33	-	-	-	65
		CL35	5345	CL600	34	2	36	-	-	-	72
		CL60	4805	CL601	7	-	7	-	-	-	15
		CRJ2	1250	CL600	861	68	825	105	-	-	1,860
		E145	2557	EMB14L	440	36	456	20	-	-	952
		E45X	4874	EMB145	431	27	412	46	-	-	916
		E55P	4917	CNA55B	31	1	31	1	-	-	64
		F2TH	4804	CNA750	6	-	7	-	-	-	13
		F900	4034	CNA750	15	2	16	1	-	-	33
		GLEX	3734	BD-700-1A10	8	-	8	-	-	-	15
	Turbine Propeller	B350	1539	DHC6	37	-	35	2	-	-	74
		BE99	4918	DHC6	25	-	25	-	-	-	51
		BE9L	4918	DHC6	7	-	7	-	-	-	14
		E110	1498	DHC6	195	-	195	-	-	-	390
		PC12	3122	CNA208	106	12	106	12	-	-	236
Air Taxi Totals					**2,390**	**154**	**2,353**	**190**	**-**	**-**	**5,087**

Note: Totals and subtotals may not match due to rounding.

Table 10. Modeled 2023 Annual Aircraft Operations (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
General Aviation	Jet	BE40	5296	MU3001	53	5	51	8	-	-	116
		C25A	3974	CNA525C	132	10	126	16	-	-	283
		C25B	3974	CNA525C	410	5	332	83	-	-	830
		C25C	4276	CNA525C	101	3	104	-	-	-	207
		C525	3974	CNA525C	76	3	78	-	-	-	157
		C550	4327	CNA55B	149	5	147	8	-	-	309
		C560	4929	CNA560U	53	-	50	3	-	-	106
		C56X	4794	CNA560XL	334	23	342	15	-	-	713
		C680	5184	CNA680	182	18	194	5	-	-	400
		C750	1314	CNA750	43	3	40	5	-	-	91
		CL30	4856	CL600	48	-	48	-	-	-	96
		CL60	4805	CL601	61	3	63	-	-	-	126
		E35L	5351	CNA55B	40	-	40	-	-	-	81
		E50P	4902	CNA510	96	3	95	3	-	-	197
		E55P	4917	CNA55B	53	-	53	-	-	-	106
		F2TH	4804	CNA750	51	3	48	5	-	-	106
		F900	4034	CNA750	66	-	66	-	-	-	132
		G280	4198	IA1125	106	-	99	8	-	-	212
		GL5T	3732	BD-700-1A11	109	13	119	3	-	-	243
		GLF4	5267	GIV	63	5	68	-	-	-	137
		GLF5	4858	GV	116	5	116	6	-	-	243
		H25B	2014	LEAR35	71	18	83	5	-	-	177
		H25C	4758	LEAR35	51	3	53	-	-	-	106
		LJ45	4843	LEAR35	40	3	40	3	-	-	86
		LJ60	2033	LEAR35	243	5	226	22	-	-	496
		WW24	1973	IA1125	96	13	92	16	-	-	218
	Turbine Propeller	AA5	1532	GASEPF	51	-	51	-	-	-	101
		B350	1539	DHC6	89	-	89	-	-	-	177
		BE20	3790	DHC6	218	8	216	9	-	-	450
		BE9L	4918	DHC6	154	8	157	5	-	-	324
		C441	1287	CNA441	164	-	156	9	-	-	329
		P46T	1465	GASEPF	71	-	66	5	-	-	142
		PC12	3122	CNA208	287	72	268	91	-	-	718
		TBM7	1533	CNA208	86	-	86	-	-	-	172
		TBM8	2580	CNA441	68	-	68	-	-	-	137
		TBM9	4677	CNA208	46	3	48	-	-	-	96

Note: Totals and subtotals may not match due to rounding.

Table 10. Modeled 2023 Annual Aircraft Operations (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
General Aviation	Piston Propeller	BE33	1271	GASEPV	61	-	61	-	-	-	121
		BE35	1271	GASEPV	76	-	73	3	-	-	152
		BE36	1276	CNA208	266	3	260	8	-	-	536
		BE58	1196	BEC58P	281	-	276	5	-	-	561
		C150	1882	GASEPF	40	-	40	-	-	-	81
		C172	1267	CNA172	3,437	89	3,433	93	10,187	137	17,376
		C180	1271	GASEPV	53	-	53	-	-	-	106
		C182	1262	CNA182	235	-	235	-	-	-	470
		C206	3172	CNA206	72	4	71	5	-	-	152
		C340	2116	BEC58P	99	5	104	-	-	-	207
		C414	2119	BEC58P	58	3	58	3	-	-	121
		DA40	1271	GASEPV	63	-	63	-	-	-	126
		M20P	1271	GASEPV	147	-	147	-	-	-	293
		P28A	3178	PA28	219	4	220	3	-	-	445
		P28R	1271	GASEPV	354	5	359	-	728	4	1,450
		P32R	1271	GASEPV	40	3	43	-	-	-	86
		PA24	1901	GASEPV	56	-	56	-	81	-	193
		PA27	1194	BEC58P	35	5	35	5	-	-	81
		PA28	2102	GASEPF	104	-	104	-	-	-	207
		PA31	779	BEC58P	218	28	225	20	-	-	491
		PA32	1271	GASEPV	40	-	40	-	-	-	81
		PA34	2103	BEC58P	47	6	48	5	-	-	106
		PA46	1271	GASEPV	89	-	89	-	-	-	177
		S22T	1325	COMSEP	99	-	99	-	-	-	197
		SR22	1325	COMSEP	655	13	647	20	-	-	1,335
General Aviation Totals					**10,919**	**399**	**10,816**	**502**	**10,996**	**142**	**33,774**

Note: Totals and subtotals may not match due to rounding.

Table 10. Modeled 2023 Annual Aircraft Operations (Concluded)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local (Touch and Go)		Total
					Day	Night	Day	Night	Day	Night	
Based Military	Jet	F35	N/A	N/A	2,520	-	2,520	-	446	-	5,486
	Helicopter	H72	N/A	N/A	211	18	229	-	-	-	458
		H60	N/A	N/A	324	133	361	96	-	-	914
Transient Military	Jet	F16	N/A	N/A	64	-	64	-	14	-	142
		B752	2512	757PW	16	0	16	0	96	0	128
		C17	1401	C17	11	0	11	0	72	0	94
		K35R	1981	KC135R	11	0	11	0	72	0	94
		DC10	1349	DC1030	5	0	5	0	30	0	40
		C560	4929	CNA560U	19	1	19	1	125	7	172
		GLF5	4858	GV	18	1	19	0	120	4	162
	Turbine Propeller	BE20	3790	DHC6	10	0	10	0	66	0	86
		C130	1203	C130	27	0	25	2	176	8	238
		CN35	42	SF340	11	0	11	0	72	0	94
		DH8C	4778	DHC830	10	0	10	0	66	0	86
		C208	4677	CNA208	3	0	3	0	20	0	26
	Piston Propeller	C206	3172	CNA206	9	0	9	0	58	0	76
		C421	1287	CNA441	1	0	1	0	6	0	8
Based Military Total					**3,055**	**151**	**3,110**	**96**	**446**	**0**	**6,858**
Transient Military Total					**215**	**2**	**214**	**3**	**993**	**19**	**1,446**
Overall Totals					**22,395**	**3,579**	**22,482**	**3,491**	**12,435**	**161**	**64,543**

Note: Totals and subtotals may not match due to rounding.

6.5 Runway Utilization

The primary factor affecting runway use at airports is weather, in particular, the wind direction and wind speed. Additional factors that may affect runway use include the position of the facility or ramp relative to the runways or operational proficiency training for military units. There are no anticipated changes to the runway utilization expected from 2018 to 2023.

Runway utilization percentages, that is the percent of time a runway is used, were based upon a radar sample covering November 1, 2017 through October 31, 2018. Military aircraft were mostly excluded from the data sample.

Table 12, Table 13 and Table 14 present the modeled runway use for arrival, departure, and pattern operations, respectively, for the 2018 and 2023 NEM contours.

Table 11. Arrival Operation Runway Utilization for 2018 and 2023 Noise Exposure Map Contours

Source: Vector Airport Systems, LLC radar sample covering November 1, 2017 through October 31, 2018

Aircraft Category	Runway End			
	15	33	01	19
Air Carrier Cargo Jet	66%	34%	0%	0%
Air Carrier Passenger Jet	59%	41%	0%	0%
Air Carrier Passenger Turbine Propeller	45%	55%	0%	0%
Air Taxi Jet	54%	46%	0%	0%
Air Taxi Turbine Propeller	49%	44%	1%	6%
General Aviation Jet	53%	47%	0%	0%
General Aviation Piston Propeller	18%	37%	17%	28%
General Aviation Turbine Propeller	46%	40%	4%	10%
Military (Fixed wing) Based	50%	50%	0%	0%
Military (Fixed wing) Transient	53%	47%	0%	0%

Table 12. Departure Operation Runway Utilization for 2018 and 2023 Noise Exposure Map Contours

Source: Vector Airport Systems, LLC radar sample covering November 1, 2017 through October 31, 2018

Aircraft Category	Runway End			
	15	33	01	19
Air Carrier Cargo Jet	30%	70%	0%	0%
Air Carrier Passenger Jet	52%	48%	0%	0%
Air Carrier Passenger Turbine Propeller	35%	65%	0%	0%
Air Taxi Jet	50%	50%	0%	0%
Air Taxi Turbine Propeller	38%	57%	0%	5%
General Aviation Jet	44%	56%	0%	0%
General Aviation Piston Propeller	13%	37%	11%	38%
General Aviation Turbine Propeller	35%	48%	5%	12%
Military (Fixed wing) Based	50%	50%	0%	0%
Military (Fixed wing) Transient	44%	56%	0%	0%

Table 13. Touch and Go Operation Runway Utilization Rates for 2018 and 2023 Noise Exposure Map Contours

Source: Vector Airport Systems, LLC radar sample covering November 1, 2017 through October 31, 2018

Aircraft Category	Runway End			
	15	33	01	19
General Aviation Piston Propeller	10%	37%	12%	40%
Military (Fixed wing) Based	50%	50%	0%	0%

The Army Aviation Support Facility/Readiness Center apron, located on the northwest side of the Airport property, is the location for all military helicopter arrivals and departures. The location is denoted with an "H" on various figures in this document.

6.6 Flight Track Geometry and Utilization

A standard input for the AEDT includes representative aircraft flight tracks. Flight tracks are typically associated with a runway and there are separate flight tracks for arrivals, departures and touch and goes. Flight tracks are defined as the ground path that the aircraft flies, while the flight track utilization defines how often that track is flown. All utilization rates for this Part 150 are defined relative to the runway end. The number of operations using each runway end can be determined for the respective study years by multiplying the operations presented in Section 6.4 by the runway use presented in Section 6.5 for each individual aircraft type.

Flight track modeling inputs for this NEM update utilize those developed from the radar data analysis conducted for the 2015 NEM. The flight operations radar data analyzed included information on aircraft tracks over the ground and aircraft altitudes. The data also included flight identification information (such as aircraft type, flight origin or destination, tail number, etc.) for aircraft operating under a flight plan filed with the FAA.

Flight operation tracks were grouped by runway, operation type, and aircraft category. These groups were then loaded into the AEDT for model track creation.

The flight track data obtained were used to develop both flight track geometry and percent utilization of each track for civilian and military transient operations. The utilization rates were calculated on a runway-end basis for each track group; i.e., for each type of operation, runway-end and aircraft category group, the track utilization rates add up to 100%.

The military based flight track geometry and utilization were developed from the USAF EIS modeling data. The NOISEMAP study used for the BTV NEM modeling includes flight track geometry and utilization provided in the USAF EIS analysis. Table 15 presents the arrival track utilization rates, Table 16 presents the departure track utilization rates, and Table 17 presents the pattern track utilization rates.

Figure 16 and Figure 17 present generalized depictions of all the flight tracks and operations used to develop the 2018 contours. Rather than presenting every individual track equally, these “flight track density plots” use color gradations to depict the flight track geometry, dispersion, and the relative frequency of flights over specific geographical areas (called density). The color ranges are assigned based on the relative density of aircraft operations within the data set. Note that flight track density plots do not by themselves, indicate noise exposure nor do they provide aircraft altitude information, something which strongly influences noise exposure.

The modeled flight tracks are plotted in Figure 18 through Figure 25. Figure 18 through Figure 24 are plotted at the same scale and have the same base map as the NEMs presented in Figure 12 and Figure 13 and therefore conform to Part 150 requirements. Figure 25 presents the modeled taxiway tracks, and is plotted at a larger scale to allow clear display of the track geometries.

The same tracks and utilization rates apply to day and night operations in both the 2018 and 2023 cases unless otherwise noted.

Table 14. Aircraft Arrival Flight Track Utilization Rates

Sources: 2015 BTV NEM

Operation Type	RWY	Flight Track ID	Flight Track Utilization Percentages by Runway								
			Jet				Propeller				
							Turbine			Piston	
			Air Carrier Passenger	Air Carrier Cargo	Air Taxi	General Aviation	Air Carrier	Air Taxi	General Aviation	Air Taxi	General Aviation
Arrival	15	15A01	15%	87%	39%	18%					
		15A02	85%	4%	57%	59%					
		15A03		9%	2%	15%					
		15A04			3%	9%					
		15A05						29%	10%		12%
		15A06						8%			
		15A07					37%	6%	24%		
		15A08I					13%	12%	24%	50%	14%
		15A08V					50%	39%	38%	50%	38%
		15A09						5%	3%		
		15A12									12%
		15A13I									8%
		15A13V									15%
	33	33A01	9%	25%	24%	10%					
		33A02	43%		34%	20%					
		33A03	2%	25%	13%	10%					
		33A04	43%	25%	23%	18%					
		33A05			1%	6%					
		33A06	3%	25%	3%	16%					
		33A07			2%	18%					
		33A09						45%	58%	60%	34%
		33A10					38%	18%	8%	20%	17%
		33A11					17%	30%	17%		23%
		33A12					46%	7%	17%		11%
		33A17								20%	14%
	01	01A01						30%	30%	30%	30%
		01A02						70%	70%	70%	70%
	19	19A01						25%	18%	25%	18%
		19A02						25%	29%	25%	29%
		19A03						25%	21%	25%	21%
		19A04						25%	32%	25%	32%

Table 15. Departure and Pattern Flight Track Utilization Rates

Sources: 2015 BTV NEM

Operation Type	RWY	Flight Track ID	Flight Track Utilization Percentages by Runway								
			Jet				Propeller				
							Turbine			Piston	
			Air Carrier Passenger	Air Carrier Cargo	Air Taxi	General Aviation	Air Carrier	Air Taxi	General Aviation	Air Taxi	General Aviation
Departure	15	15D01	13%		29%	12%					
		15D02	1%	60%	12%	17%					
		15D03	76%		48%	42%					
		15D04	8%		8%	9%					
		15D06	2%	40%	1%	4%					
		15D05			1%	17%					
		15D07					100%	60%	83%	75%	49%
		15D08						40%	17%	25%	51%
	33	33D01	2%	14%	2%						
		33D02	13%	5%	34%	3%					
		33D03	2%	64%	13%	24%					
		33D04	83%	18%	51%	74%					
		33D06					19%	5%	26%		12%
		33D07					78%	38%	58%	50%	47%
		33D08					3%	10%		25%	12%
		33D05						40%	11%	25%	19%
		33D09						8%	5%		
		33D11									10%
	19	19D01						14%	20%	14%	20%
		19D02						29%	40%	29%	40%
		19D04						57%	21%	57%	21%
		19D03							20%		20%
Touch & Go (Pattern)	15	01T1				50%			50%		50%
		01T2				50%			50%		50%
	33	15T1				50%			50%		50%
		15T2				50%			50%		50%
	1	19T1				40%			40%		40%
		19T2				60%			60%		60%
	19	33T1				29%			29%		29%
		33T2				71%			71%		71%

Table 16. Vermont Air National Guard Operation Flight Track Utilization Rates

Sources: USAF EIS (2013), VTANG (2018)

Operation Type	RWY	Flight Track ID	Vermont Air National Guard	
			F-16C	F-35A
Departure	15	15D1	80%	10%
		15D3	20%	23%
		15D4		57%
		15D5		10%
	33	33D1	80%	53%
		33D2		10%
		33D3	20%	10%
		33D4		27%
Arrival	15	15A1	41%	41%
		15A3	5%	5%
		15A4	50%	50%
		15A5	4%	4%
	33	33A1	41%	41%
		33A2	5%	5%
		33A3	4%	
		33A3b		4%
		33A5	50%	50%
Pattern	15	15C1	100%	100%
	33	33C1	100%	100%

Table 17. Vermont Army National Guard Operation Flight Track Utilization Rates

Sources: VTARNG (2018)

Operation Type	Pad Location	Flight Track ID	Vermont Army National Guard	
			UH-72	HH-60M
Departure	VTARNG Ramp	AG-DA	20%	20%
		AG-DC	15%	15%
		AG-DD	20%	20%
		AG-DF	1%	1%
	Taxiway E	AG-DB	10%	10%
	Taxiway C	AG-DG	30%	30%
	Taxiway L	AG-DE	4%	4%
Arrival	VTARNG Ramp	AG-AA	20%	20%
		AG-AC	15%	15%
		AG-AD	20%	20%
		AG-AF	1%	1%
	Taxiway E	AG-AB	10%	10%
	Taxiway C	AG-AG	30%	30%
	Taxiway L	AG-AE	4%	4%

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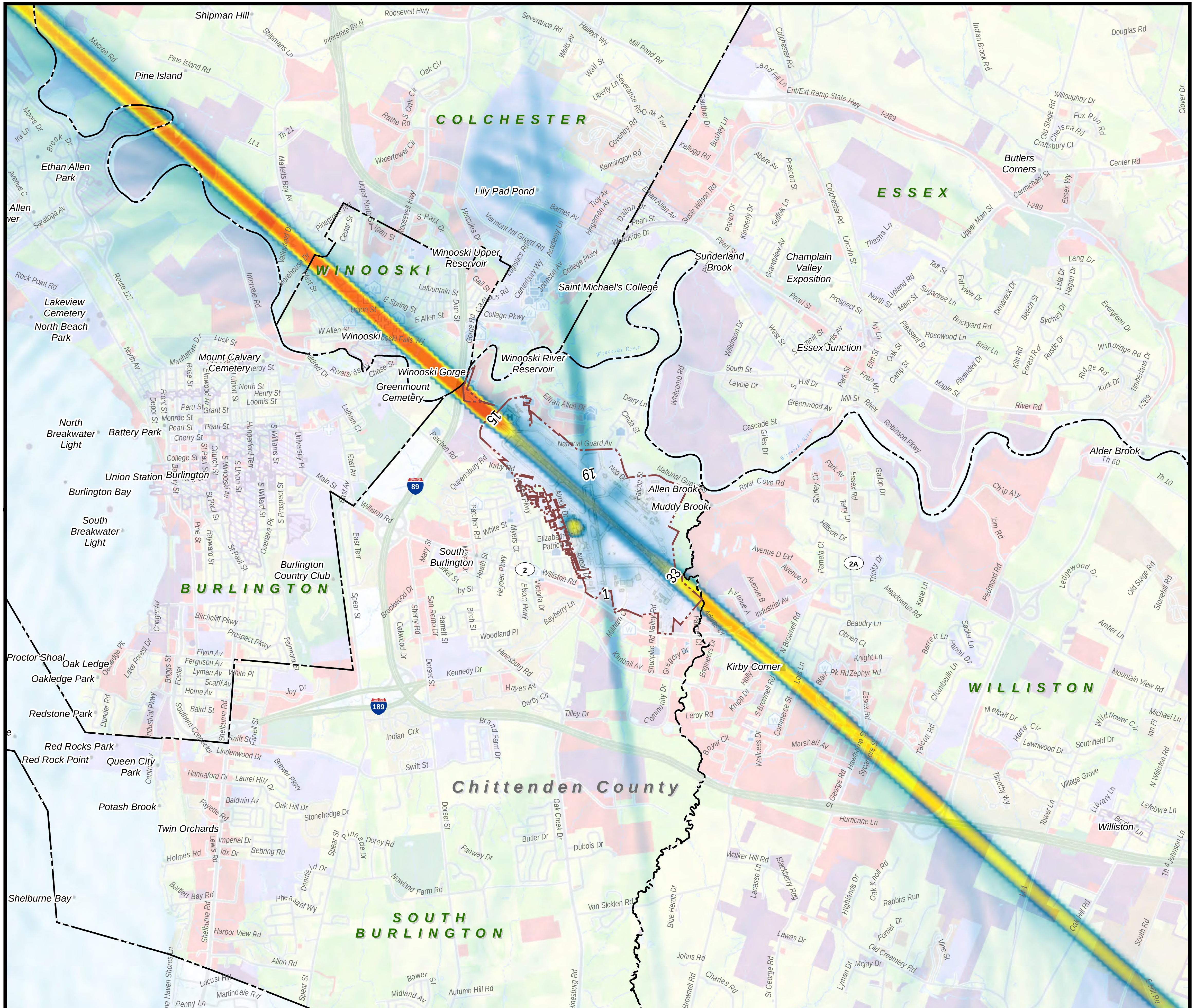
BURLINGTON INTERNATIONAL AIRPORT

Part 150 - Noise Exposure Map Update

Figure 16
Radar Sample Arrival Tracks



Radar Track Density

Low — Medium — High

Airport Property Boundary		Town Boundary	
Helicopter Pad			
Highways	Major Roads	Local Roads	
Education	Place of Worship	Residential	
Health Care	Public Gathering		
National Register Historic District		National Register Historic Site	

Land Use

- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

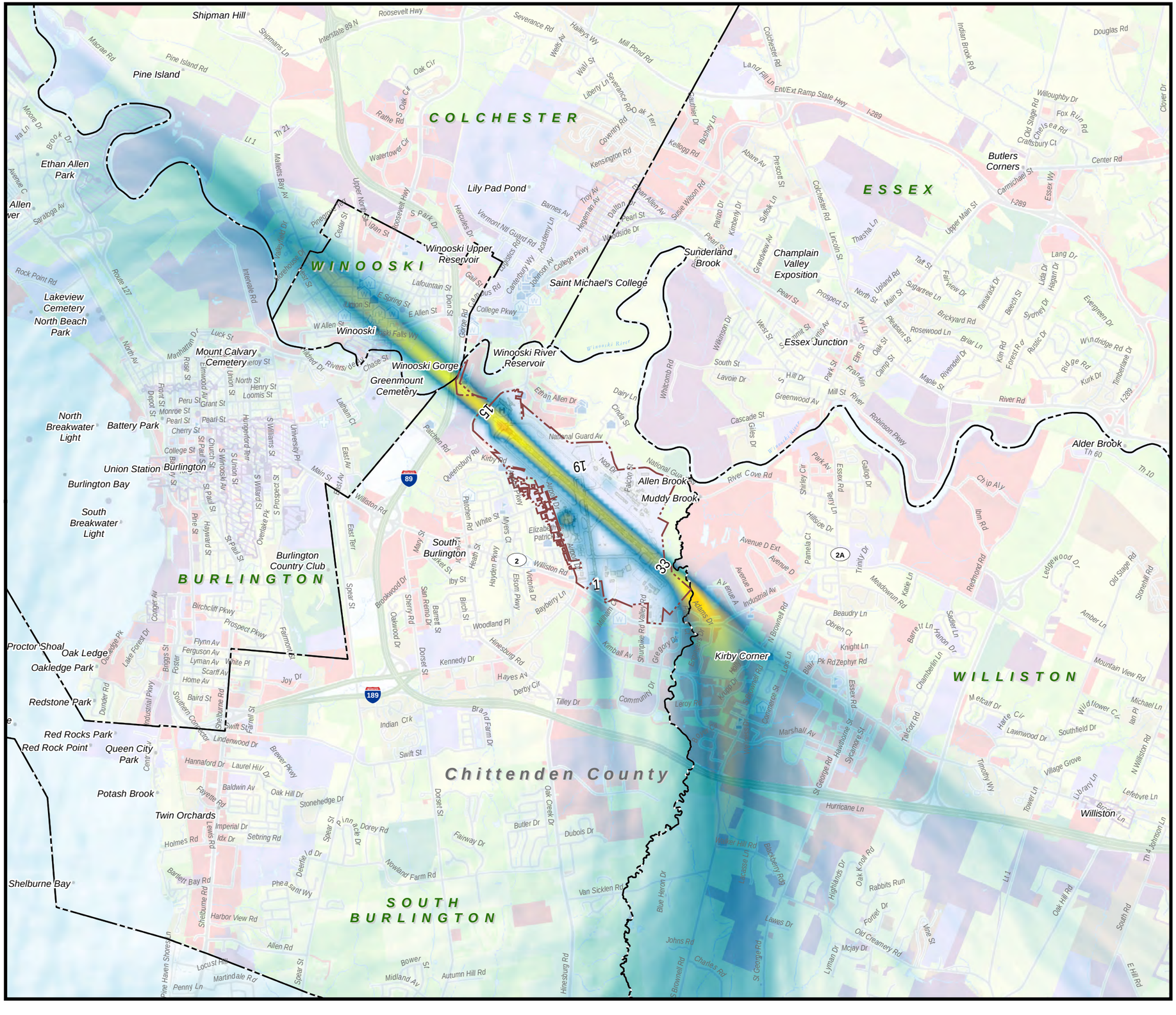
0 2,000 4,000 8,000 Feet

North

BURLINGTON
INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 17
Radar Sample Departure Tracks



Radar Track Density

Low — Medium — High

- Airport Property Boundary
- Town Boundary
- Helicopter Pad
- Highways
- Major Roads
- Local Roads
- Education
- Place of Worship
- Residential
- Health Care
- Public Gathering
- National Register Historic District
- National Register Historic Site

Land Use

- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 — 2,000 — 4,000 — 8,000 Feet

North

BURLINGTON
INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 18
Civilian and Transient Military Modeled Tracks for Runway 1

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Airport Property Boundary
- Helicopter Pad

Dispersed Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Town Boundary

- Highways
- Major Roads
- Local Roads

Land Use
- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

hmmh

jp

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BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 19
Civilian and Transient Military Modeled Tracks for Runway 19

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Airport Property Boundary
- Helicopter Pad
- Highways
- Major Roads
- Local Roads

Dispersed Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Town Boundary

Land Use
- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

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BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 20
Civilian and Transient Military Modeled Tracks for Runway 15

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Airport Property Boundary
- Helicopter Pad

Dispersed Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Town Boundary

- Highways
- Major Roads
- Local Roads

Land Use
- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

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BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 21
Civilian and Transient Military Modeled Tracks for Runway 33

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Airport Property Boundary
- Helicopter Pad

Dispersed Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Town Boundary

- Highways
- Major Roads
- Local Roads

Land Use
- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

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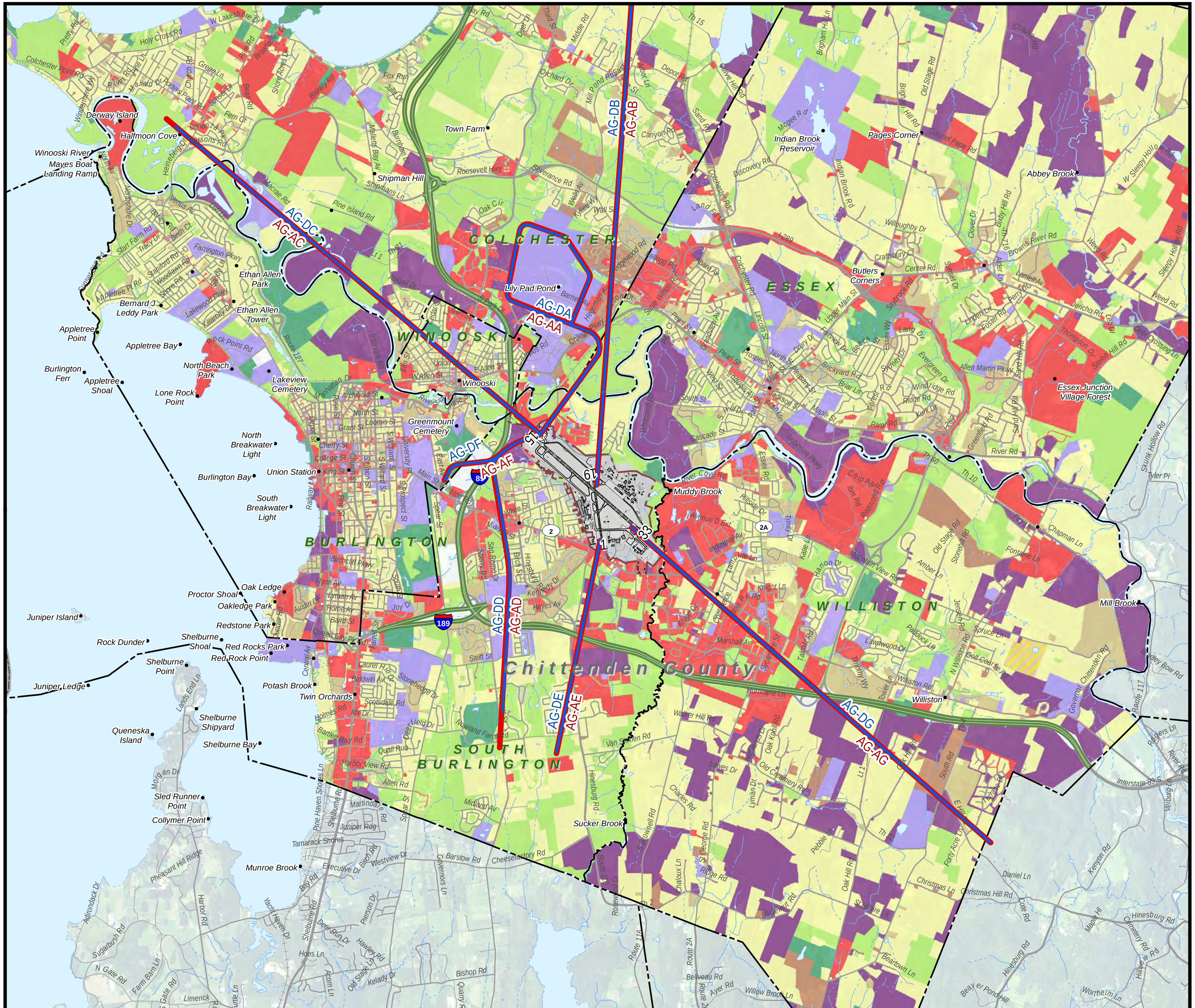

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BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 22
Vermont Army National Guard Helicopter Modeled Tracks

Backbone Model Tracks

- Arrival Model Tracks
- Departure Model Tracks

- Airport Property Boundary
- Town Boundary
- Helicopter Pad
- Highways
- Major Roads
- Local Roads

Land Use

- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

BURLINGTON
INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 23
Vermont Air National Guard F-16 and F-35 Modeled Tracks for Runway 15

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Airport Property Boundary
- Town Boundary
- Helicopter Pad
- Highways
- Major Roads
- Local Roads

Land Use
- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

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BURLINGTON
INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 24
Vermont Air National Guard F-16 and F-35 Modeled Tracks for Runway 33

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks
- Airport Property Boundary
- Town Boundary
- Helicopter Pad
- Highways
- Major Roads
- Local Roads

Land Use
- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 0.5 1 2 Nautical Miles

North

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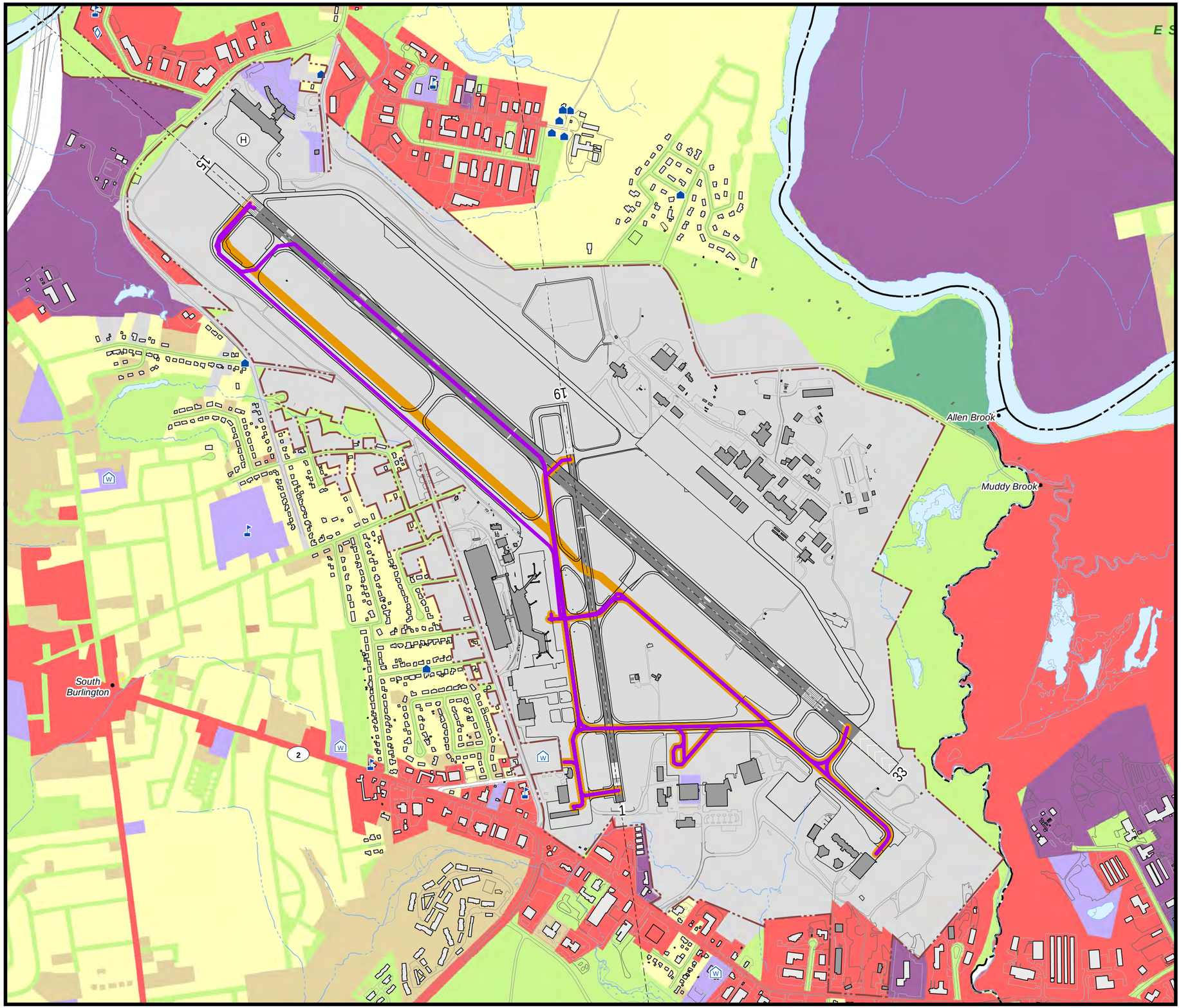


BURLINGTON INTERNATIONAL AIRPORT

Part 150 - Noise Exposure Map Update

Figure 25
Taxi Model Tracks

2018 Taxi Model Tracks
2023 Taxi Model Tracks

Airport Property Boundary
Town Boundary
Helicopter Pad
Highways
Major Roads
Local Roads
Education
Place of Worship
Residential
Health Care
Public Gathering
National Register Historic District
National Register Historic Site

Land Use

- Single Family Residential
- Multi Family Residential
- Other Residential
- Mixed Use
- Public Use
- Airport
- Transportation
- Commercial Use
- Manufacturing & Production
- Recreational
- Open Space

Data Sources:
Chittenden County Regional Planning Commission, Vermont Center for Geographic Information, Inc. (VCGI), United States Census Bureau, Burlington International Airport, Campbell & Paris Engineers P.C., Harris Miller Miller & Hanson Inc.

0 500 1,000 2,000 Feet

North

hmmh

jp

Path: G:\Projects\308XX\308770_BTV_Noise_Mitigation_Program\GIS\308770_BTV_Figure25_Taxi_Model_Tracks_LandUse_V2.mxd

6.7 Ground Noise

Ground noise includes the aircraft noise not associated with airborne (i.e. arrivals, departures or touch and go) operations. While the AEDT automatically includes the ground roll portion of airborne operations (e.g. departing aircraft accelerating down the runway, arrival aircraft apply thrust reversers), the models do not automatically include taxing noise or maintenance run-up operations.

This NEM includes taxiway noise and maintenance run-up operations as documented below.

6.7.1 Taxiway Noise

Taxiway noise is associated with aircraft taxiing to and from the runways and their respective parking areas or gates on the ramp. The taxiing may also include a queue time, where the aircraft is stationary, awaiting clearance to proceed, and the engines are at idle.

Five primary ramp areas modeled are:

- Terminal Gates,
- Cargo area,
- South West general aviation ramp, and
- South East general aviation ramp.

Details of the FAA-approved taxiway noise modeling are provided in Appendix B. AEDT was used for all taxiway modeling. Only civil aircraft types were included in taxiway modeling.

Figure 25 shows the modeled taxiway tracks for both 2018 and 2023. The 2018 taxipaths reflect the existing airport layout. The 2023 taxipaths represent the anticipated runway layout in 2023, including the extended Taxiway G.[37]

6.7.2 Maintenance Run-Ups

Maintenance run-ups are usually performed by stationary aircraft to test various functions of the aircraft. The maintenance run-up information for this Part 150 was collected from the USAF EIS modeling data and from various interviews. Several organizations at BTV, both military and civilian, perform engine maintenance and therefore conduct run-ups on a regular basis. Six run-up areas were modeled and include:

- Three flight line check spots on the Air National Guard ramp;
- Air National Guard “hush-house”, located on the south east side of the ANG base;
- Commercial hanger area west of Runway 1-19 and south of the terminal building; and
- Taxiway K, near the intersection with Taxiway C.

6.8 Meteorological Conditions

AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include average annual temperature, barometric pressure, and relative humidity at the airport. AEDT holds the following values for annual-average weather conditions at Burlington International Airport:

- Temperature: 45.0° Fahrenheit

[37] Section 4.1.1 provides additional discussion related to Taxiway G.

- Sea-level Pressure: 1015.9 milibars
- Relative humidity: 68.08 percent.
- Dew Point: 36.01°F
- Wind Speed: 7.14 Knots

For consistency, the same weather data used in the AEDT study was used in the BTV NEM NOISEMAP study.

6.9 Terrain

Terrain data describes the elevation of the ground within and surrounding airport property. If the AEDT user selects the use of terrain data, AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not affect the aircraft's performance or noise levels, but does affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects noise propagation assumptions about how noise propagates over ground. The terrain data were obtained from the United States Geological Survey (USGS) National Map Viewer and was used with the terrain feature of the AEDT in generating the noise contours for the BTV NEM.

7 Public Consultation

The City of Burlington prepared this Noise Exposure Map update with public consultation including the following principal elements:

- A month-long opportunity, starting on May 29, 2019 and ending on June 31, 2019, was provided for public review and comment of the draft Noise Exposure Map.
- The draft NEM document and notification of meetings were made available through the Burlington International Airport's Sound Mitigation Program website: http://www.btvsound.com/. Copies of the draft document were also available for public review at the airport offices.
- Airport staff held meetings with officials from South Burlington, Winooski, Williston, Colchester, Essex, and the Chittenden County Regional Planning Council and verbally briefed them about the draft NEM.
- The draft Noise Exposure Map was presented at public workshops from 5:00 p.m. to 7:00 p.m. on May 29, 2019 at Burlington International Airport and on May 30, 2019 at the O'Brien Community Center in Winooski. The sign-in sheets included 192 and 176 individuals, respectively.
    - The meeting was advertised in the Colchester Sun, Essex Reporter, Seven Days, and Williston Observer newspapers.
    - The meeting was also announced by Front Porch Forum post, which goes out via email to communities, and a Facebook event.
    - Staff from BTV, The Jones Payne Group, and HMMH were present to answer questions about the presentation boards which displayed information on the results of the study.
    - Copies of the draft Noise Exposure Map were available for attendees to review at the workshop.
    - Comment sheets were provided for individuals to fill out and submit to BTV, at the meeting or by the end of the comment period.

Appendix C contains the public notice for the workshop, the sign-in sheets, the presentation, and boards used for the workshop.

The Airport staff accepted written comments via email, mail, or at the workshop. A total of 134 written comments were submitted by members of the public, elected officials, and representatives of municipal organizations.

Appendix D presents copies of all comments received at the Airport's offices or website by June 31, 2019.

In the spirit of Part 150 requirements, copies of any additional "written comments received during consultation" will be filed with the FAA, including comments received after the deadline.

Appendix A- Non-Standard Noise Modeling Substitution Request

HMMH memorandum "Nonstandard AEDT Modeling Request for the 2018 BTV Noise Exposure Map Update Study" dated May 14, 2019. This memorandum describes the contractor's recommended non-standard modeling methodology, prepared in accordance to FAA July 2009 guidance.
https://www.faa.gov/airports/environmental/policy_guidance/media/nonstd-inm-modeling.pdf

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

Office of Environment and Energy

800 Independence Ave., S.W.
Washington, D.C. 20591

5/30/2019

Richard Doucette
Airports Division
Federal Aviation Administration,
New England Region
1200 District Ave #3
Burlington, MA 01803

Dear Richard,

The Office of Environment and Energy (AEE) has received the memo from Jones Payne Group and HMMH on behalf of Burlington International Airport (BTV), dated May 14th 2019. This memo references the Noise Exposure Map study update at BTV in Burlington, VT and requests approval for non-standard AEDT aircraft substitutions and a taxiway modeling methodology.

Aircraft Substitutions:
AEE has reviewed the proposed substitutions and approves all **except** for the Mooney M-20C Ranger. A close variant of this aircraft is available in the AEDT2d database as noted in the table below. Additionally, the Cessna Citation Latitude and Bombardier Challenger 350 are available as standard aircraft in AEDT2d and do not required AEE approval.

Taxiway Modeling:
AEE approves the aircraft taxiway modeling methodology outlined in the May 14th request memo, but defers to APP-400 and New England Region ADO for a justification of need for the utilization of this methodology including the requested omission of F-16C and F-35A taxi noise as described in section 3.3.

Proposed				FAA AEE Approved Substitution			
Aircraft Designator	Aircraft Type	AEDT EQUIP_ID	AEDT ANP	AEDT Airframe	AEDT EQUIP_ID	AEDT ANP	AEE Note
E75L	Embraer 175 (Long Wing)	3071	EMB175	Embraer ERJ175-LR	3071	EMB175	Approved
E75S	Embraer 175 (Short Wing)	3816	EMB175	Embraer ERJ175	3816	EMB175	Approved
C68A	Cessna Citation Latitude	5347	CNA680	Cessna 680-A Citation Latitude	5347	CNA680	AEDT Standard[1]
CL35	Bombardier Challenger 350	5345	CL600	Bombardier Challenger 350	5345	CL600	AEDT Standard[2]
DA40	Diamond Club Star DA40	1271	GASEPV	Piper PA-32 Cherokee Six	1271	GASEPV	Approved
M20P	Mooney M-20C Ranger	1271	GASEPV	**Mooney M20-K**	**1898**	**GASEPV**	**Update EQUIP_ID[3]**
P28R	Piper Cherokee Arrow	1271	GASEPV	Piper PA-32 Cherokee Six	1271	GASEPV	Approved
PA46	Piper Malibu	1271	GASEPV	Piper PA-32 Cherokee Six	1271	GASEPV	Approved

[1] The Cessna Citation Latitude is available as a standard aircraft in AEDT2d and does not require further AEE approval as a non-standard aircraft substitution

[2] The Bombardier Challenger 350 is available as a standard aircraft in AEDT2d and does not require further AEE approval as a non-standard aircraft substitution

[3] The Mooney M20-K is available as a standard aircraft in AEDT2d and is the approved substitution for Mooney M20 family of aircraft.

Please understand that this approval is limited to this particular Noise Exposure Map update at BTV and for use with AEDT 2d only. Further non-standard AEDT inputs for additional projects at this or any other site will require separate approval.

Sincerely,

Donald Scata
Acting Manager
AEE-100/Noise Division

cc: Jim Byers, Frank Smigelski APP-400

HMMH
77 South Bedford Street
Burlington, Massachusetts 01803
781.229.0707
www.hmmh.com

TECHNICAL MEMORANDUM

To:	Richard Doucette, FAA 1200 District Ave #3 Burlington MA 01803
From:	Brandon Robinette, Principal Consultant Scott McIntosh, Consultant
Date:	May 14, 2019
Subject:	Nonstandard AEDT Modeling Request for the 2018 BTV Noise Exposure Map Update Study
Reference:	HMMH Project Number 308770.008

1. Introduction

Burlington International Airport (BTV) has contracted Jones Payne Group (JPG) and HMMH to perform an update of the Noise Exposure Map (NEM) for base year 2018 and forecast year 2023. HMMH is performing the modeling for this study primarily using AEDT version 2d. Due to substantial military activity at BTV by based units of the Vermont Air National Guard (VTANG) and Vermont Army National Guard (VTARNG), modeling of operations by these aircraft is carried out in NMap. The NMap result grids are imported into AEDT and combined with AEDT results for civilian and transient military aircraft to generate the final NEM for the study.

This memo describes and requests approval for nonstandard inputs and/or techniques in the NEM modeling. These topics are:

- Nonstandard aircraft noise and performance data substitutions
- Taxiway modeling

2. Aircraft Substitutions

HMMH obtained operations data for activity at BTV through the FAA's Traffic Flow Management System Counts (TFMSC), which identifies aircraft by their aircraft identifiers that are defined in FAA Order 7360.1D "Aircraft Type Designators" and ICAO document 8643. Table 1 shows aircraft type designators that do not appear in AEDT's FltActypeToUniqueEquipMap table in the FLEET database. Approval is requested for the use of the Aircraft Noise Performance (ANP) types shown in Table 1 based on the following considerations:

E75L, E75S – Embraer 175: These are new aircraft type designators for this aircraft. Prior to the introduction of designators E75L and E75S, Embraer 175s were included in the broader type designator E170. The Embraer 175 ANP data are in AEDT, but not associated with the E75L and E75S type designators.

C68A – Cessna Citation Latitude: Variant of the Cessna 680 Citation Sovereign (designator C680), which is a standard AEDT aircraft with ANP type CNA680.

CL35 – Bombardier Challenger 350: Use of the ANP type CL600 was approved by AEE 9/13/2016 for the Bombardier Challenger 350 for the Draft Environmental Assessment for Proposed Improvements 2016-2020 at Baltimore/Washington International Airport (BWI DEA).

DA40 – Diamond Club Star DA-40: Use of ANP type GASEPV was approved for the BWI DEA.

M20P – Mooney M-20C Ranger: Use of the ANP type GASEPV was approved by AEE 3/23/2015 for the Mooney M-20C Ranger for the Draft Environmental Assessment for Southern California Optimization of Airspace and Procedures in the Metroplex (SoCal OAPM).

P28R – Piper Cherokee Arrow: Use of GASEPV was a standard substitution for this aircraft defined INM 7.0d (INM 7.0d identifier PA28CA).

PA46 – Piper Malibu: Use of GASEPV is a standard substitution for this aircraft in INM 7.0d (INM 7.0d identifier PA46).

Table 1. ICAO Identifiers Not In FltActypeToUniqueEquipMap

Aircraft Designator	Aircraft Description	Proposed AEDT Equipment ID	Proposed ANP Type
E75L	Embraer 175 (Long Wing)	3071	EMB175
E75S	Embraer 175 (Short Wing)	3816	EMB175
C68A	Cessna Citation Latitude	5347	CNA680
CL35	Bombardier Challenger 350	5345	CL600
DA40	Diamond Club Star DA40	1271	GASEPV
M20P	Mooney M-20C Ranger	1271	GASEPV
P28R	Piper Cherokee Arrow	1271	GASEPV
PA46	Piper Malibu	1271	GASEPV

3. Taxiway modeling

3.1 Methodology overview

BTV has expressed the desirability of taxiway modeling in their NEM studies due to community interest in this aspect of airport-related noise. Although taxiway modeling is not a built-in feature of AEDT, HMMH has developed methodology to implement taxiing activity in AEDT, consistent with the guidance outlined in the INM 7.0 User's Guide, Section 9.8.7. This methodology has been used with FAA approval for previous BTV NEM updates in 2006 and 2015, as well as the 2014 NEM for Portsmouth International Airport. HMMH requests re-approval of this methodology for the current study.

Taxi tracks have been constructed connecting four parking locations (terminal, cargo, and two GA ramps) to the four runway ends. These tracks reflect the current taxiway configuration (accounting for construction closures) for the current conditions case, and the planned realignment/connections of Taxiways G and K for the forecast conditions case. These track layouts are shown in Figure 1.

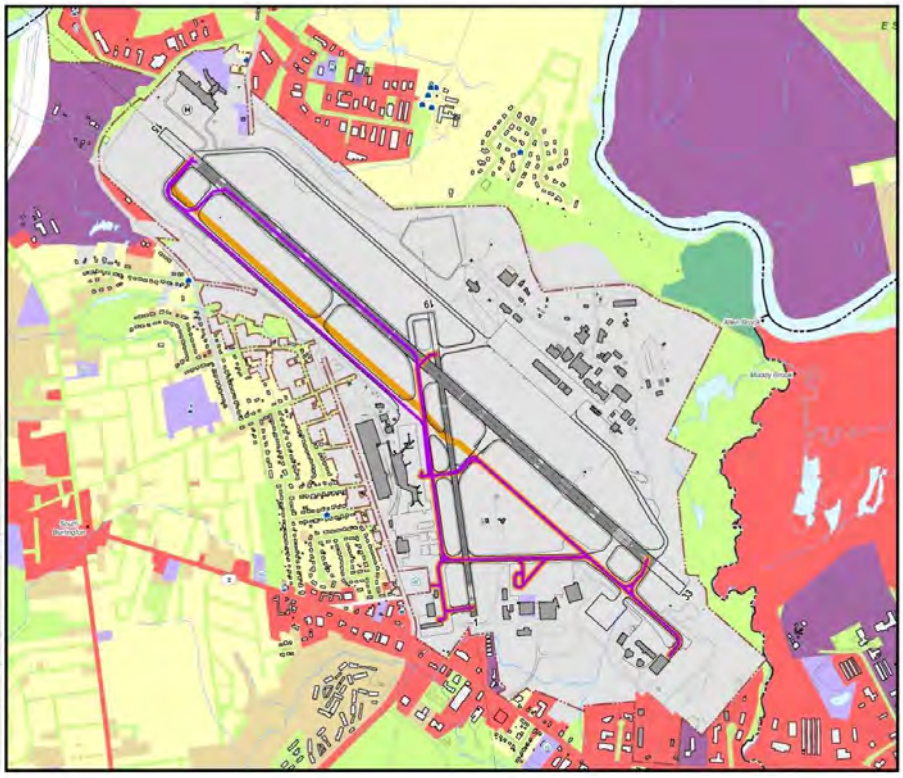


Figure 1: Modeled 2018 (Purple) and 2023 (Orange) Taxi Tracks

Figure 2 shows modeled DNL 65 dB contours for 2018 conditions with and without taxiway activity. The taxiway activity expands the contour near the Runway 1 end due to activity on Taxiways A and C.

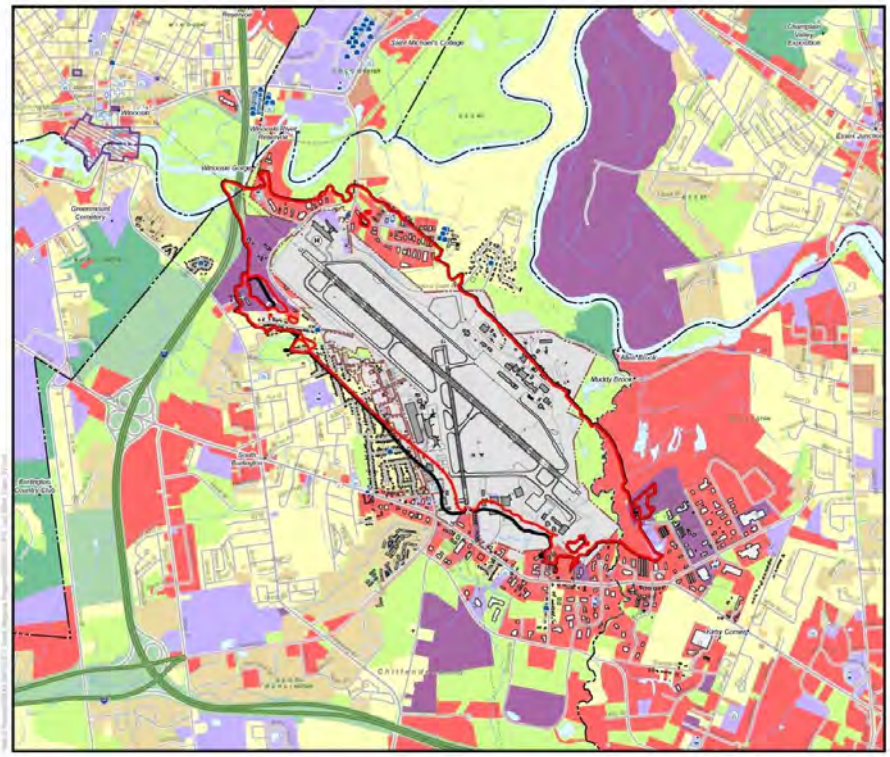


Figure 2: Modeled 2018 DNL 65 dB Contours With (black) and Without (red) Taxiway Activity

Figure 3 shows the DNL 65 dB contours for 2023 with and without taxiway activity. In this case, with the larger overall contour, the change in extent of the contour is smaller, but since more of the contour is in areas of noncompatible land use, the inclusion of taxiway noise potentially results in greater impact.

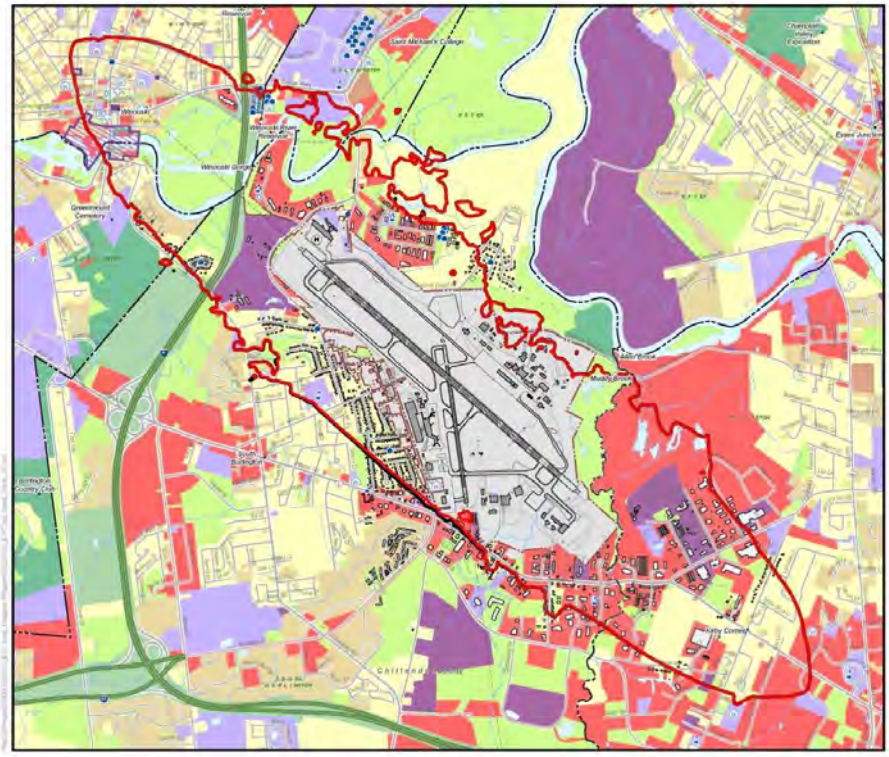


Figure 2: Modeled 2023 DNL 65 dB Contours With (black) and Without (red) Taxiway Activity

Several overflight profiles are used to represent the operations for the taxiways in this project, all of which are described below. These profiles include various stationary segments where appropriate. These stationary segments include:[1]

- Five and a half minute taxi hold/queue (based on data provided by US Department of Transportation, Bureau of Transportation Statistics, database: "Airline On-Time Performance Data" and interviews[2])
- Two minute idle warm-up
- One minute hold for crossing Runway 1/19 (HMMH experience)

As per the INM 7.0 User's Guide, the stationary positions are modeled as slow moving aircraft through the area. This slow movement representation is used because the INM/AEDT overflight profiles cannot model 0 velocity profile segments, and the slow movement area represents multiple "average annual" positions at which individual aircraft may actually stop.

Each ANP aircraft type used in this study has up to forty-eight unique proposed overflight profiles which correspond to the correct length and speeds of the particular taxi-way ground track and the parameters for the particular aircraft (although not all ANP aircraft will use all of the profiles). Therefore, the following profile description uses variables to describe several of the parameters.

In summary, all of the profiles use an overflight operation type and an altitude of 10 ft[3]. The taxiing portion (i.e. moving) of the profile will be at a constant speed (10 knots) at an idle power setting defined as 10% of the static thrust for that aircraft[4]. The stationary positions are represented with several profile points and are described below.

Each stationary position portion of the profile is represented with six points entered in the FLT_ANP_PROFILE_POINTS table, as described in

Table 2. The points represent the deceleration from 10 knots to "0 knots" over 50 ft., slow movement over a respective distance to represent the desired stationary time and aircraft movement through that same area at 10 knots, and then acceleration from "0 knots" to 10 knots. The acceleration portions include segments at 30% of the static thrust value for the respective aircraft. The derivation of using 30% of the static thrust value is provided in Section 3.2.

Table 3 presents the profile points for taxi after arrival. These profiles are much simpler, with only two points. The aircraft taxi with a constant speed of 10 knots and idle thrust for the full length of the profile.

---

[1] Data are consistent with the 2015 NEM taxiway modeling unless otherwise noted.

[2] Interviews during the 2006 NEM preparation with airport staff and FAA indicate that aircraft turn off their engines if they queue for more than 10 minutes. In addition, estimates indicate that without queuing, aircraft need approximately seven minutes for idle warm-up and taxi from the terminal to the departure threshold. Therefore, the individual "TaxiOut" times provided in the "Airline On-Time Performance Data" was bound between seven minutes (taxiout, no queue) and seventeen minutes (taxi out, maximum duration queue with engines on) and then averaged. Data used was 5,216 individual operations listed from 08/01/2012 through 07/31/2013 that did not have DepTime = NULL. The Airline On-Time Performance Data is available at http://www.transtats.bts.gov/Tables.asp?DB_ID=120&DB_Name=Airline%20On-Time%20Performance%20Data&DB_Short_Name=On-Time

[3] Previous analyses have shown no effect for small changes in elevation. Therefore, the analysis was simplified by assuming all engines were 10 ft above airport elevation.

[4] When the aircraft thrust in the noise-power-distance curves is not expressed in pounds (as determined from the THR_SET field in the FLT_ANP_AIRPLANE_NPD_CURVES table), the thrust is modeled using 10% of the highest thrust value in the noise-power-distance curves.

Table 2: Profile Points for Taxi to Departure

OP_TYPE	PROF_ID1	PT_NUM	DISTANCE (ft)	ALTITUDE (ft)	SPEED (Knots)	THR_SET
V	[TX]	1	0	10	0.1	[IDLE]
V	[TX]	2	11	10	0.1	[IDLE]
V	[TX]	3	21	10	0.1	[ACL]
V	[TX]	4	71	10	10	[ACL]
V	[TX]	5	81	10	10	[IDLE]
V	[TX]	6	[START]-50	10	10.0	[IDLE]
V	[TX]	7	[START]	10	[AS]	[IDLE]
V	[TX]	8	[END]-10	10	[AS]	[IDLE]
V	[TX]	9	[END]	10	[AS]	[ACL]
V	[TX]	10	[END]+50	10	10.0	[ACL]
V	[TX]	11	[END]+60	10	10.0	[IDLE]
V	[TX]	12	[S]	10	10.0	[IDLE]

[TX] = Name of the taxi way track

[START] = Profile distance to beginning of stationary area (ft)

[END] = Profile distance to end of stationary area (ft)

[S] = The length of the taxiway track.

[AS] = Adjust speed – speed that will provide the desired stationary time in the stationary area and the necessary time to taxi through the area at 10 knots.

[IDLE] = Idle thrust setting represented by 10% of the aircraft's static thrust; for aircraft with NPD curves where the thrust is not expressed in lbs, 10% of the highest thrust in the departure NPD curves

[ACL] = Accelerating thrust for taxi, 0 to 10 knots in 50 ft., 30% of the static thrust associated with the aircraft; for aircraft with NPD curves where the thrust is not expressed in lbs, 30% of the highest thrust in the departure NPD curves.

Table 3: Profile Points for Taxi from Arrival

OP_TYPE	PROF_ID1	PT_NUM	DISTANCE (ft)	ALTITUDE (ft)	SPEED (Knots)	THR_SET
V	[TX]	1	0	10	10.0	[IDLE]
V	[TX]	2	[START]-50	10	10.0	[IDLE]
V	[TX]	3	[START]	10	[AS]	[IDLE]
V	[TX]	4	[END]-10	10	[AS]	[IDLE]
V	[TX]	5	[END]	10	[AS]	[ACL]
V	[TX]	6	[END]+50	10	10.0	[ACL]
V	[TX]	7	[END]+60	10	10.0	[IDLE]
V	[TX]	8	[S]	10	10.0	[IDLE]

[TX] = Name of the taxi way track

[START] = Profile distance to beginning of stationary area (ft)

[END] = Profile distance to end of stationary area (ft)

[S] = The length of the taxiway track.

[AS] = Adjust speed – speed that will provide the desired stationary time in the stationary area and the necessary time to taxi through the area at 10 knots.

[IDLE] = Idle thrust setting represented by 10% of the aircraft's static thrust; for aircraft with NPD curves where the thrust is not expressed in lbs, 10% of the highest thrust in the departure NPD curves

[ACL] = Accelerating thrust for taxi, 0 to 10 knots in 50 ft., 30% of the static thrust associated with the aircraft; for aircraft with NPD curves where the thrust is not expressed in lbs, 30% of the highest thrust in the departure NPD curves.

3.2 Derivation of taxiing acceleration thrust

The derivation of accelerating thrust uses basic physics and some simplifying assumptions. This analysis assumes that aerodynamic drag and wheel friction are negligible, that the aircraft is on a level surface, and the only force (thrust) required is to accelerate the mass of the aircraft to the desired speed and within the desired distance. This analysis also assumes that an aircraft's maximum static thrust is approximately 30% of the aircraft weight[5]. The result of the analysis is that approximately 30% static thrust is required to accelerate the aircraft from 0 to 10 knots (16.88 ft/s) within 50 ft.

Equation 1 represents one of the equations of motion and relates acceleration and distance to a change in velocity.

$$Velocity_{final}^2 = Velocity_{initial}^2 + 2*Acceleration*Distance \quad (1)$$

Equation 2 uses Equation 1 and expresses the acceleration required to change velocity from 0 to 10 knots (16.88 ft/s) within 50 ft. This is the desired acceleration.

$$Acceleration_{Desired} = (16.88\ ft/s)^2/(2*50\ ft) = 2.85\ ft/s^2 \quad (2)$$

Equation 3 represents the relationship between force, mass and acceleration (Newton's Second Law of Motion).

$$Force = Mass*Acceleration \quad (3)$$

[5] Estimated by comparison of static thrust and maximum take-off weights for various INM types used in this study, as provided in the AEDT fleet database.

Equation 4 relates the weight of the aircraft to its mass based on Equation 3 and the acceleration of gravity (32.17 ft/s^2)

$$\text{Weight} = \text{Mass} * 32.17 \text{ ft/s}^2 \quad (4)$$

Equation 5 is based on Equation 3 and relates the desired thrust to the desired acceleration.

$$\text{Thrust}_{\text{Desired}} = \text{Mass} * \text{Acceleration}_{\text{Desired}} \quad (5)$$

Equation 6 replaces the mass in Equation 5 with the relationship presented in equation 4.

$$\text{Thrust}_{\text{Desired}} = (\text{Weight}/32.17 \text{ ft/s}^2) * \text{Acceleration}_{\text{Desired}} \quad (6)$$

Equation 7 presents the observed relationship between the static thrust and aircraft weight, based on comparison of relevant aircraft in the AEDT fleet database.

$$\text{Thrust}_{\text{Static}} = 0.30 * \text{Weight} \quad (7)$$

Equation 8 replaces the weight in equation 6 with the function of static thrust given in equation 7, yielding the final relationship between the desired thrust and static thrust.

$$\text{Thrust}_{\text{Desired}} = ((\text{Thrust}_{\text{Static}}/0.30)/32.17 \text{ ft/s}^2) * \text{Acceleration}_{\text{Desired}} \quad (8)$$

$$\text{Thrust}_{\text{Desired}} = ((\text{Thrust}_{\text{Static}}/0.30)/32.17 \text{ ft/s}^2) * 2.85 \text{ ft/s}^2$$

$$\text{Thrust}_{\text{Desired}} = 0.30 * \text{Thrust}_{\text{Static}}$$

3.3 Omission of F-16C and F-35A Aircraft from Taxiway Modeling

AEDT modeling for the 2018 and 2023 NEMs excludes taxiway modeling for VTANG F-16C and F-35A aircraft. This differs from the modeling conducted for the 2015 and 2020 NEMs, which included INM taxiway modeling of VTANG F-16C aircraft for both years. Taxiway modeling of the F-35A aircraft is not currently possible as AEDT 2d does not contain noise data for the F-35A aircraft. In order to maintain consistent modeling methodology across existing and forecast for this NEM update, taxiway modeling of VTANG F-16C aircraft has been omitted from the AEDT modeling for 2018 as well.

Appendix B- Airport Layout and Operations Assumptions for Existing and Forecast Conditions

HMMH memorandum "Noise Exposure Map Study for Burlington International Airport - Base and Forecast Year Modeling Inputs and Assumptions" dated May 14, 2019. This memorandum describes the runway layout and aircraft operations assumptions for the noise contours for calendar year 2018, and the forecast noise contours for calendar year 2023.

HMMH
77 South Bedford Street
Burlington, Massachusetts 01803
781.229.0707
www.hmmh.com

TECHNICAL MEMORANDUM

To:	Richard Doucette, FAA Federal Aviation Administration 1200 District Ave Burlington MA 01803
From:	Brandon Robinette, Principal Consultant Scott McIntosh, Consultant
Date:	May 14, 2019
Subject:	Noise Exposure Map Study for Burlington International Airport - Base and Forecast Year Modeling Inputs and Assumptions
Reference:	HMMH Project Number 308770

1. Background

This memo describes and requests approval for the data inputs and assumption developed for the Burlington International Airport Noise Exposure Map Update modeling.

HMMH is assisting the Burlington Airport Commission and Jones Payne Group in a Noise Exposure Map (NEM) update for Burlington International Airport (BTV). The memorandum summarizes the aircraft noise modeling assumptions and inputs for the BTV base year (calendar year 2018) and forecast year (calendar year 2023). HMMH will use the Federal Aviation Administration's (FAA) Aviation Environmental Design Tool, Version 2d, (AEDT 2d) to calculate aircraft noise exposure levels from civilian and transient military operations for the BTV 2018 NEM base year and 2023 forecast year. The Vermont Air and Army National Guard's aircraft operations will be evaluated with the Department of Defense's Noisemap software, Version 7.3 (NMap 7.3). The noise grid outputs of these models will be combined to generate the 2018 and 2023 annual Day-Night Average Sound Level (DNL) contours for the NEM update.

This memo primarily addresses the development of civilian and transient military operations data for modeling in the AEDT. The subsequent sections address the required data inputs for the AEDT noise model:

- 2. Physical Description of the Airport Layout
- 3. Aircraft Operations
- 4. Aircraft Noise and Performance Characteristics
- 5. Runway utilization
- 6. Flight track geometry and use
- 7. Ground noise
- 8. Meteorological conditions
- 9. Terrain data

2. Physical Description of the Airport Layout

BTV is located in Chittenden County and the city of South Burlington, north and west of Interstate 89 and south of the Winooski River. The airfield layout comprises two runways, primary Runway 15/33 and crosswind Runway 1/19. Figure 1 shows the current airport diagram and Table 1 provides the runway information used in modeling the 2018 base year and 2023 forecast year. Runway length, runway width, instrumentation, and declared distances affect which runway an aircraft will use and under what conditions, and therefore, will determine the use of a runway relative to the other runways at the airport.

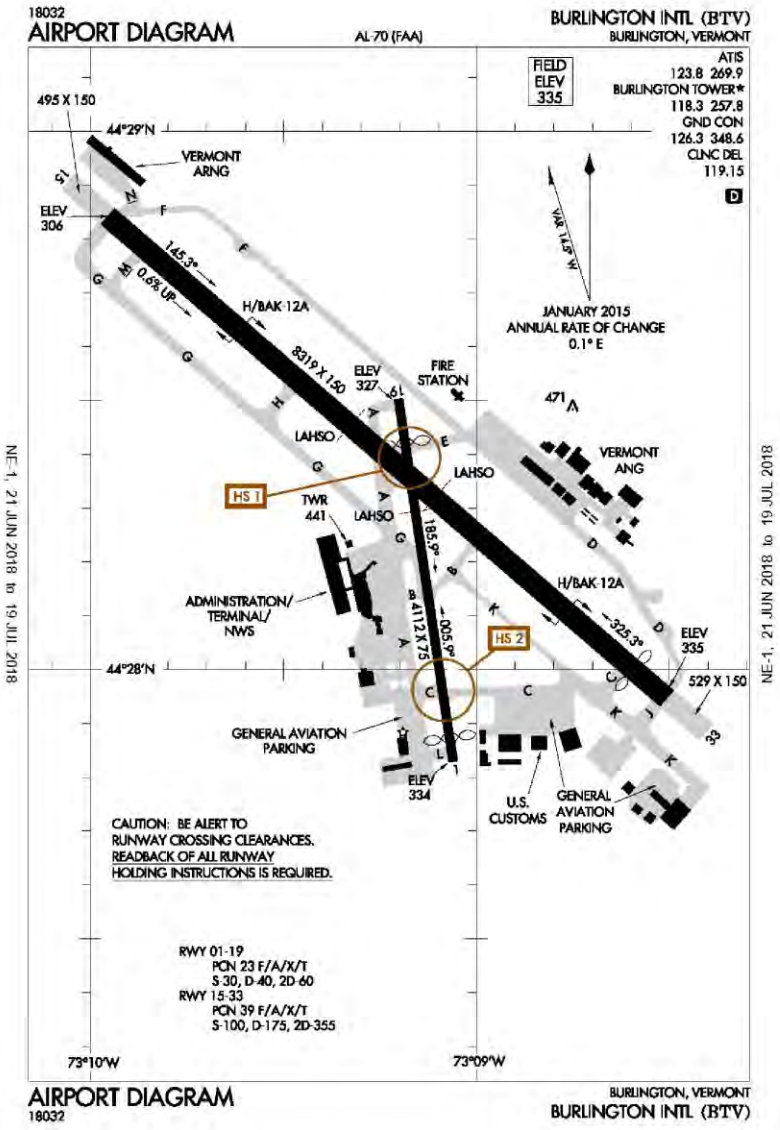


Figure 1: Base Year Airport Diagram

Source: FAA, effective, 21 June 2018 to 19 July 2018

Table 1: Current Runway Data

Source: FAA 5010

Runway End	Latitude	Longitude	Elevation (ft. MSL)	Length (ft.)	Approach Angle (degrees)	Displaced Threshold (ft)
01	44.463826	-73.151003	333.7	4,112	3.5	225
19	44.474978	-73.153352	326.8	4,112	3.0	500
15	44.480674	-73.165879	305.5	8,319	3.0	0
33	44.465758	-73.141763	334.2	8,319	3.2	500

3. Aircraft Operations

Civilian and transient military aircraft operations are based on a twelve month data sample obtained from Vector Airport Systems, LLC, covering the period of November 1, 2017 through October 31, 2018. These 2017/2018 operations counts were scaled to the FAA Terminal Area Forecast (TAF) for 2018 and 2023 to determine the operations totals for the NEM study years. Due to the expected retirement of MD-88 aircraft, operations by these aircraft were assigned to Airbus 319 aircraft for the 2023 case.

Table 2 and Table 3 provide summaries of operations for the baseline and forecast years. The operations are condensed into categories specified by FAA Order 7210.3 "Facility Operation and Administration"; namely Air Carrier (AC), Air Taxi (AT), General Aviation (GA), and military (ML). AC and AT are commercial categories distinguished by aircraft capacity, while GA includes all non-commercial, non-military operations.

Among civilian aircraft, TAF anticipates a notable shift from smaller AT aircraft to larger AC aircraft over the course of the study period. This results in a decrease of more than 20% in total commercial operations, while passenger numbers are forecast to increase moderately.

Operations by military aircraft based at BTV were determined through extensive consultation with the operating units, the Vermont Air National Guard (VTANG) and Vermont Army National Guard (VTARNG). The following process was followed in determining transient military totals for the two study years:

- A representative fleet mix was determined from the 2017/2018 radar data sample, 2017 TFMSC data, and input from BTV personnel.
- 2017 operations reported by the based units were compared to OPSNET military totals for 2017. The difference was assumed to be from transient aircraft.
- Transient totals for the 2018 study year were determined by scaling the 2017 totals by the ratio of the 2018 TAF to the 2017 OPSNET, with separate scaling for itinerant and local operations.
- The TAF totals for 2018 and 2023 are identical. However, the VTANG expects 128 itinerant and 14 local operations per year by transient F-16C aircraft for training exercises with the VTANG F-35A fleet. These operations are added to the 2018 transient totals for the 2023 study. Otherwise the transient operations are identical for both study years.

Modeled based military operations account for the fact that the tower may consider multiple military aircraft flying in formation as a single count. This practice is documented in FAA Order 7210.3Y at Chapter 12, Section 12-2-1 (April 3, 2014) and verified with FAA staff. Typically 2 or more aircraft take off in formation (single count) and then returning individually (2 or more counts). Over the course of a year, for every 100 tower counts for the based VTANG aircraft, there are approximately 142 actually operations. As a result, total modeled military aircraft operations numbers exceed those reported in the TAF.

Table 2: BTV Operations Summary for Calendar Year 2018

Category		Itinerant						Local			Modeling Totals			TAF Totals
		Arrivals			Departures			Closed Patterns						
		Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Grand	
Civil	AC	4,221	2,085	6,306	4,346	1,960	6,306	-	-	-	8,567	4,045	12,612	12,612
	AT	7,403	476	7,879	7,289	590	7,879	-	-	-	14,692	1,066	15,758	15,759
	GA	10,844	397	11,241	10,742	498	11,240	10,996	142	11,138	32,582	1,037	33,619	33,619
Military	VTANG	1,535	-	1,535	1,535	-	1,535	307	-	307	3,377	-	3,377	5,146
	VTARNG	535	151	686	590	96	686	-	-	-	1,125	247	1,372	
	Transient	151	2	153	150	3	153	979	19	998	1,280	24	1,304	
Civil Total		**22,468**	**2,958**	**25,426**	**22,377**	**3,048**	**25,425**	**10,996**	**142**	**11,138**	**55,841**	**6,148**	**61,989**	**61,990**
Military Total		**2,221**	**153**	**2,374**	**2,275**	**99**	**2,374**	**1,286**	**19**	**1,305**	**5,782**	**271**	**6,053**	**5,146**
Combined Totals		**24,689**	**3,111**	**27,800**	**24,652**	**3,147**	**27,799**	**12,282**	**161**	**12,443**	**61,623**	**6,419**	**68,042**	**67,136**

Note: TAF totals based on 2018 TAF for calendar year 2018

Table 3: BTV Operations Summary for Calendar Year 2023

Category		Itinerant						Local			Totals			TAF Totals
		Arrivals			Departures			Closed Patterns						
		Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Total	Day (0700-2200)	Night (2200-0700)	Grand	
Civil	AC	5,816	2,873	8,689	5,989	2,700	8,689	-	-	-	11,805	5,573	17,378	17,378
	AT	2,390	154	2,544	2,353	190	2,543	-	-	-	4,743	344	5,087	5,087
	GA	10,919	399	11,318	10,816	502	11,318	10,996	142	11,138	32,731	1,043	33,774	33,769
Military	VTANG	2,520	-	2,520	2,520	-	2,520	446	-	446	5,486	-	5,486	5,146
	VTARNG	535	151	686	590	96	686	-	-	-	1,125	247	1,372	
	Transient	215	2	217	214	3	217	993	19	1,012	1,422	24	1,446	
Civil Total		**19,125**	**3,426**	**22,551**	**19,158**	**3,392**	**22,550**	**10,996**	**142**	**11,138**	**49,279**	**6,960**	**56,239**	**56,234**
Military Total		**3,270**	**153**	**3,423**	**3,324**	**99**	**3,423**	**1,439**	**19**	**1,458**	**8,033**	**271**	**8,304**	**5,146**
Combined Totals		**22,395**	**3,579**	**25,974**	**22,482**	**3,491**	**25,973**	**12,435**	**161**	**12,596**	**57,312**	**7,231**	**64,543**	**61,380**

Note: TAF totals based on 2018 TAF for calendar year 2023

Table 4 and Table 5 provide detailed operations counts for each ICAO aircraft type within the three categories.

Table 4: BTV Annual Flight Operations for 2018

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
Air Carrier (AC)	Jet	A319	4930	A319-131	142	80	133	89	-	-	445
		A320	4900	A320-232	91	132	147	76	-	-	447
		B712	88	717200	52	137	39	150	-	-	377
		B737	4861	737700	11	69	20	60	-	-	160
		B738	5294	737800	87	86	119	53	-	-	345
		B739	2502	737800	5	47	8	44	-	-	104
		B752	2512	757PW	243	-	238	5	-	-	487
		CRJ7	4211	CRJ9-ER	708	132	718	122	-	-	1,681
		CRJ9	2548	CRJ9-ER	773	566	882	457	-	-	2,679
		E170	3070	EMB170	128	16	139	6	-	-	289
		E190	4288	EMB190	968	438	1,005	400	-	-	2,811
		E75L	3071	EMB175	484	225	469	240	-	-	1,417
		E75S	3816	EMB175	487	120	395	212	-	-	1,213
		MD88	2074	MD83	13	38	6	46	-	-	104
	Turbine Propeller	DH8D	4778	DHC830	27	-	27	-	-	-	55
Air Carrier Totals					**4,221**	**2,085**	**4,346**	**1,960**	-	-	**12,612**

Table 4: BTV Annual Flight Operations for 2018 (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
Air Taxi (AT)	Jet	BE40	5296	MU3001	110	-	110	-	-	-	220
		C560	4929	CNA560U	28	-	26	1	-	-	56
		C56X	4794	CNA560XL	154	6	156	4	-	-	321
		C680	5184	CNA680	39	1	38	3	-	-	81
		C68A	5347	CNA680	74	5	77	3	-	-	159
		C750	1314	CNA750	73	-	73	-	-	-	146
		CL30	4856	CL600	98	3	101	-	-	-	202
		CL35	5345	CL600	105	6	111	-	-	-	222
		CL60	4805	CL601	23	-	23	-	-	-	45
		CRJ2	1250	CL600	2,669	212	2,555	326	-	-	5,761
		E145	2557	EMB14L	1,362	112	1,413	62	-	-	2,949
		E45X	4874	EMB145	1,337	82	1,276	143	-	-	2,838
		E55P	4917	CNA55B	96	3	96	3	-	-	197
		F2TH	4804	CNA750	19	1	20	-	-	-	40
		F900	4034	CNA750	45	6	49	3	-	-	104
		GLEX	3734	BD-700-1A10	24	-	24	-	-	-	48
	Turbine Propeller	B350	1539	DHC6	114	1	110	5	-	-	230
		BE99	4918	DHC6	78	-	78	-	-	-	157
		BE9L	4918	DHC6	21	-	21	-	-	-	43
		E110	1498	DHC6	605	-	605	-	-	-	1,209
		PC12	3122	CNA208	329	37	328	38	-	-	732
Air Taxi Totals					**7,403**	**476**	**7,289**	**590**	**-**	**-**	**15,759**

Table 4: BTV Annual Flight Operations for 2018 (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
General Aviation (GA)	Jet	BE40	5296	MU3001	53	5	50	8	-	-	116
		C25A	3974	CNA525C	131	10	125	16	-	-	281
		C25B	3974	CNA525C	407	5	330	82	-	-	824
		C25C	4276	CNA525C	100	3	103	-	-	-	206
		C525	3974	CNA525C	75	3	78	-	-	-	156
		C550	4327	CNA55B	148	5	146	8	-	-	306
		C560	4929	CNA560U	53	-	50	3	-	-	105
		C56X	4794	CNA560XL	332	23	340	15	-	-	708
		C680	5184	CNA680	181	18	193	5	-	-	397
		C750	1314	CNA750	43	3	40	5	-	-	90
		CL30	4856	CL600	48	-	48	-	-	-	95
		CL60	4805	CL601	60	3	63	-	-	-	126
		E35L	5351	CNA55B	40	-	40	-	-	-	80
		E50P	4902	CNA510	95	3	95	3	-	-	196
		E55P	4917	CNA55B	53	-	53	-	-	-	105
		F2TH	4804	CNA750	50	3	47	5	-	-	105
		F900	4034	CNA750	65	-	65	-	-	-	131
		G280	4198	IA1125	105	-	98	8	-	-	211
		GL5T	3732	BD-700-1A11	108	13	118	3	-	-	241
		GLF4	5267	GIV	63	5	68	-	-	-	136
		GLF5	4858	GV	116	5	115	5	-	-	241
		H25B	2014	LEAR35	70	18	83	5	-	-	176
		H25C	4758	LEAR35	50	3	53	-	-	-	105
		LJ45	4843	LEAR35	40	3	40	3	-	-	85
		LJ60	2033	LEAR35	241	5	224	22	-	-	492
		WW24	1973	IA1125	95	13	92	16	-	-	216
	Turbine Propeller	AA5	1532	GASEPF	50	-	50	-	-	-	100
		B350	1539	DHC6	88	-	88	-	-	-	176
		BE20	3790	DHC6	216	8	215	9	-	-	447
		BE9L	4918	DHC6	153	8	155	5	-	-	322
		C441	1287	CNA441	163	-	155	9	-	-	327
		P46T	1465	GASEPF	70	-	65	5	-	-	141
		PC12	3122	CNA208	285	71	266	90	-	-	713
		TBM7	1533	CNA208	85	-	85	-	-	-	171
		TBM8	2580	CNA441	68	-	68	-	-	-	136
		TBM9	4677	CNA208	45	3	48	-	-	-	95

Table 4: BTV Annual Flight Operations for 2018 (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
General Aviation (GA)	Piston Propeller	BE33	1271	GASEPV	60	-	60	-	-	-	121
		BE35	1271	GASEPV	75	-	73	3	-	-	151
		BE36	1276	CNA208	264	3	258	8	-	-	533
		BE58	1196	BEC58P	279	-	274	5	-	-	558
		C150	1882	GASEPF	40	-	40	-	-	-	80
		C172	1267	CNA172	3,414	88	3,409	92	10,187	137	17,327
		C180	1271	GASEPV	53	-	53	-	-	-	105
		C182	1262	CNA182	234	-	234	-	-	-	467
		C206	3172	CNA206	72	4	70	5	-	-	151
		C340	2116	BEC58P	98	5	103	-	-	-	206
		C414	2119	BEC58P	58	3	58	3	-	-	121
		DA40	1271	GASEPV	63	-	63	-	-	-	126
		M20P	1271	GASEPV	146	-	146	-	-	-	291
		P28A	3178	PA28	217	4	219	3	-	-	442
		P28R	1271	GASEPV	352	5	357	-	728	4	1,446
		P32R	1271	GASEPV	40	3	43	-	-	-	85
		PA24	1901	GASEPV	55	-	55	-	81	-	191
		PA27	1194	BEC58P	35	5	35	5	-	-	80
		PA28	2102	GASEPF	103	-	103	-	-	-	206
		PA31	779	BEC58P	216	28	224	20	-	-	487
		PA32	1271	GASEPV	40	-	40	-	-	-	80
		PA34	2103	BEC58P	47	6	48	5	-	-	105
		PA46	1271	GASEPV	88	-	88	-	-	-	176
		S22T	1325	COMSEP	98	-	98	-	-	-	196
		SR22	1325	COMSEP	650	13	643	20	-	-	1,326
General Aviation Totals					**10,844**	**397**	**10,742**	**498**	**10,996**	**142**	**33,619**

Table 4: BTV Annual Flight Operations for 2018 (Concluded)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
Based Military (ML)*	Jet	F16	N/A	N/A	1,535	-	1,535	-	307	-	3,377
	Helicopter	H72	N/A	N/A	211	18	229	-	-	-	458
		H60	N/A	N/A	324	133	361	96	-	-	914
Transient Military (ML)	Jet	B752	2512	757PW	16	0	16	0	96	0	128
		C17	1401	C17	11	0	11	0	72	0	94
		K35R	1981	KC135R	11	0	11	0	72	0	94
		DC10	1349	DC1030	5	0	5	0	30	0	40
		C560	4929	CNA560U	19	1	19	1	125	7	172
		GLF5	4858	GV	18	1	19	0	120	4	162
	Turbine Propeller	BE20	3790	DHC6	10	0	10	0	66	0	86
		C130	1203	C130	27	0	25	2	176	8	238
		CN35	42	SF340	11	0	11	0	72	0	94
		DH8C	4778	DHC830	10	0	10	0	66	0	86
		C208	4677	CNA208	3	0	3	0	20	0	26
	Piston Propeller	C206	3172	CNA206	9	0	9	0	58	0	76
		C421	1287	CNA441	1	0	1	0	6	0	8
Based Military Total					**2,070**	**151**	**2,125**	**96**	**307**	**-**	**4,749**
Transient Military Total					**151**	**2**	**150**	**3**	**979**	**19**	**1,304**
Overall Totals					**24,689**	**3,111**	**24,652**	**3,147**	**12,282**	**161**	**68,042**

Note: Totals and sub-totals may not match due to rounding

* Based military aircraft modeled with Noisemap (NMap 7.3)

Table 5. BTV Annual Flight Operations for 2023

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
Air Carrier (AC)	Jet	A319	4930	A319-131	196	110	183	123	-	-	613
		A320	4900	A320-232	126	182	203	105	-	-	616
		B712	88	717200	71	188	54	206	-	-	520
		B737	4861	737700	16	95	28	82	-	-	221
		B738	5294	737800	120	118	164	73	-	-	476
		B739	2502	737800	6	65	10	61	-	-	143
		B752	2512	757PW	335	-	329	7	-	-	671
		CRJ7	4211	CRJ9-ER	976	182	990	168	-	-	2,316
		CRJ9	2548	CRJ9-ER	1,066	780	1,216	630	-	-	3,691
		E170	3070	EMB170	177	22	191	8	-	-	398
		E190	4288	EMB190	1,333	603	1,385	551	-	-	3,873
		E75L	3071	EMB175	666	310	646	330	-	-	1,952
		E75S	3816	EMB175	671	165	544	292	-	-	1,671
		MD88	2074	MD83	19	53	8	64	-	-	143
	Turbine Propeller	DH8D	4778	DHC830	38	-	38	-	-	-	75
Air Carrier Totals					**5,816**	**2,873**	**5,989**	**2,700**	-	-	**17,378**

Table 5: BTV Annual Flight Operations for 2023 (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
Air Taxi (AT)	Jet	BE40	5296	MU3001	35	-	35	-	-	-	71
		C560	4929	CNA560U	9	-	9	-	-	-	18
		C56X	4794	CNA560XL	50	2	50	1	-	-	104
		C680	5184	CNA680	13	-	12	1	-	-	26
		C68A	5347	CNA680	24	2	25	1	-	-	51
		C750	1314	CNA750	24	-	24	-	-	-	47
		CL30	4856	CL600	32	1	33	-	-	-	65
		CL35	5345	CL600	34	2	36	-	-	-	72
		CL60	4805	CL601	7	-	7	-	-	-	15
		CRJ2	1250	CL600	861	68	825	105	-	-	1,860
		E145	2557	EMB14L	440	36	456	20	-	-	952
		E45X	4874	EMB145	431	27	412	46	-	-	916
		E55P	4917	CNA55B	31	1	31	1	-	-	64
		F2TH	4804	CNA750	6	-	7	-	-	-	13
		F900	4034	CNA750	15	2	16	1	-	-	33
		GLEX	3734	BD-700-1A10	8	-	8	-	-	-	15
	Turbine Propeller	B350	1539	DHC6	37	-	35	2	-	-	74
		BE99	4918	DHC6	25	-	25	-	-	-	51
		BE9L	4918	DHC6	7	-	7	-	-	-	14
		E110	1498	DHC6	195	-	195	-	-	-	390
		PC12	3122	CNA208	106	12	106	12	-	-	236
Air Taxi Totals					**2,390**	**154**	**2,353**	**190**	**-**	**-**	**5,087**

Table 5: BTV Annual Flight Operations for 2023 (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
General Aviation (GA)	Jet	BE40	5296	MU3001	53	5	51	8	-	-	116
		C25A	3974	CNA525C	132	10	126	16	-	-	283
		C25B	3974	CNA525C	410	5	332	83	-	-	830
		C25C	4276	CNA525C	101	3	104	-	-	-	207
		C525	3974	CNA525C	76	3	78	-	-	-	157
		C550	4327	CNA55B	149	5	147	8	-	-	309
		C560	4929	CNA560U	53	-	50	3	-	-	106
		C56X	4794	CNA560XL	334	23	342	15	-	-	713
		C680	5184	CNA680	182	18	194	5	-	-	400
		C750	1314	CNA750	43	3	40	5	-	-	91
		CL30	4856	CL600	48	-	48	-	-	-	96
		CL60	4805	CL601	61	3	63	-	-	-	126
		E35L	5351	CNA55B	40	-	40	-	-	-	81
		E50P	4902	CNA510	96	3	95	3	-	-	197
		E55P	4917	CNA55B	53	-	53	-	-	-	106
		F2TH	4804	CNA750	51	3	48	5	-	-	106
		F900	4034	CNA750	66	-	66	-	-	-	132
		G280	4198	IA1125	106	-	99	8	-	-	212
		GL5T	3732	BD-700-1A11	109	13	119	3	-	-	243
		GLF4	5267	GIV	63	5	68	-	-	-	137
		GLF5	4858	GV	116	5	116	6	-	-	243
		H25B	2014	LEAR35	71	18	83	5	-	-	177
		H25C	4758	LEAR35	51	3	53	-	-	-	106
		LJ45	4843	LEAR35	40	3	40	3	-	-	86
		LJ60	2033	LEAR35	243	5	226	22	-	-	496
		WW24	1973	IA1125	96	13	92	16	-	-	218
	Turbine Propeller	AA5	1532	GASEPF	51	-	51	-	-	-	101
		B350	1539	DHC6	89	-	89	-	-	-	177
		BE20	3790	DHC6	218	8	216	9	-	-	450
		BE9L	4918	DHC6	154	8	157	5	-	-	324
		C441	1287	CNA441	164	-	156	9	-	-	329
		P46T	1465	GASEPF	71	-	66	5	-	-	142
		PC12	3122	CNA208	287	72	268	91	-	-	718
		TBM7	1533	CNA208	86	-	86	-	-	-	172
		TBM8	2580	CNA441	68	-	68	-	-	-	137
		TBM9	4677	CNA208	46	3	48	-	-	-	96

Table 5: BTV Annual Flight Operations for 2023 (Continued)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
General Aviation (GA)	Piston Propeller	BE33	1271	GASEPV	61	-	61	-	-	-	121
		BE35	1271	GASEPV	76	-	73	3	-	-	152
		BE36	1276	CNA208	266	3	260	8	-	-	536
		BE58	1196	BEC58P	281	-	276	5	-	-	561
		C150	1882	GASEPF	40	-	40	-	-	-	81
		C172	1267	CNA172	3,437	89	3,433	93	10,187	137	17,376
		C180	1271	GASEPV	53	-	53	-	-	-	106
		C182	1262	CNA182	235	-	235	-	-	-	470
		C206	3172	CNA206	72	4	71	5	-	-	152
		C340	2116	BEC58P	99	5	104	-	-	-	207
		C414	2119	BEC58P	58	3	58	3	-	-	121
		DA40	1271	GASEPV	63	-	63	-	-	-	126
		M20P	1271	GASEPV	147	-	147	-	-	-	293
		P28A	3178	PA28	219	4	220	3	-	-	445
		P28R	1271	GASEPV	354	5	359	-	728	4	1,450
		P32R	1271	GASEPV	40	3	43	-	-	-	86
		PA24	1901	GASEPV	56	-	56	-	81	-	193
		PA27	1194	BEC58P	35	5	35	5	-	-	81
		PA28	2102	GASEPF	104	-	104	-	-	-	207
		PA31	779	BEC58P	218	28	225	20	-	-	491
		PA32	1271	GASEPV	40	-	40	-	-	-	81
		PA34	2103	BEC58P	47	6	48	5	-	-	106
		PA46	1271	GASEPV	89	-	89	-	-	-	177
		S22T	1325	COMSEP	99	-	99	-	-	-	197
		SR22	1325	COMSEP	655	13	647	20	-	-	1,335
General Aviation Totals					**10,919**	**399**	**10,816**	**502**	**10,996**	**142**	**33,774**

Table 5: BTV Annual Flight Operations for 2023 (Concluded)

Category	Engine Type	ICAO Code	AEDT Equip. ID	ANP Type	Arrivals		Departures		Local		Total
					Day	Night	Day	Night	Day	Night	
Based Military (ML)*	Jet	F35	N/A	N/A	2,520	-	2,520	-	446	-	5,486
	Helicopter	H72	N/A	N/A	211	18	229	-	-	-	458
		H60	N/A	N/A	324	133	361	96	-	-	914
Transient Military (ML)	Jet	F16	N/A	N/A	64	-	64	-	14	-	142
		B752	2512	757PW	16	0	16	0	96	0	128
		C17	1401	C17	11	0	11	0	72	0	94
		K35R	1981	KC135R	11	0	11	0	72	0	94
		DC10	1349	DC1030	5	0	5	0	30	0	40
		C560	4929	CNA560U	19	1	19	1	125	7	172
		GLF5	4858	GV	18	1	19	0	120	4	162
	Turbine Propeller	BE20	3790	DHC6	10	0	10	0	66	0	86
		C130	1203	C130	27	0	25	2	176	8	238
		CN35	42	SF340	11	0	11	0	72	0	94
		DH8C	4778	DHC830	10	0	10	0	66	0	86
		C208	4677	CNA208	3	0	3	0	20	0	26
	Piston Propeller	C206	3172	CNA206	9	0	9	0	58	0	76
		C421	1287	CNA441	1	0	1	0	6	0	8
Based Military Total					**3,055**	**151**	**3,110**	**96**	**446**	**0**	**6,858**
Transient Military Total					**215**	**2**	**214**	**3**	**993**	**19**	**1,446**
Overall Totals					**22,395**	**3,579**	**22,482**	**3,491**	**12,435**	**161**	**64,543**

Note: Totals and sub-totals may not match due to rounding

* Based military aircraft modeled with Noisemap (NMap 7.3)

4. Aircraft Noise and Performance Characteristics

AEDT requires the use of specific noise and performance data for each aircraft type operating at the airport. Noise data is in the form of Sound Exposure Level (SEL) at a range of distances (from 200 feet to 25,000 feet) from a particular aircraft with engines at a range of thrust levels. Performance data includes thrust, speed and altitude profiles for takeoff and landing operations. The AEDT database contains standard noise and performance data for over 300 different fixed-wing aircraft types, most of which are civilian aircraft.

Within the AEDT database, it is standard for aircraft takeoff or departure profiles to be defined by a range of trip distances identified as "stage lengths." Higher stage lengths (longer trip distances) are associated with a heavier aircraft due to the increase in fuel requirements for the flight. For the BTV NEM, stage lengths are derived using the city-pairs reported in the 2017/2018 radar data sample.

AEDT includes a range of performance profiles specifying thrust, speed and altitude criteria for all operation types. HMMH will use AEDT default profiles, which do not require FAA review, for civilian and transient military operations in the modeling of the BTV NEM.

5. Runway Utilization

Civilian and transient military runway utilization percentages are also based on the twelve month data sample obtained from Vector Airport Systems, LLC, covering the period of November 1, 2017 through October 31, 2018. This data set specified the ICAO aircraft identifier and runway for each operation. The identifier was matched to the fleet mix from Section 3 above to determine proportions of operations by each aircraft type in each category (AC, AT, GA, ML), and an overall runway use percentage was determined for each category.

Tables 6 - 8 provides runway use percentages according to aircraft category and propulsion class. Runway utilization is identical for the base year and forecast year.

Table 6: Arrival Runway Utilization

Aircraft Category	Runway End			
	15	33	01	19
Air Carrier Cargo Jet	66%	34%	0%	0%
Air Carrier Passenger Jet	59%	41%	0%	0%
Air Carrier Passenger Turbine Propeller	45%	55%	0%	0%
Air Taxi Jet	54%	46%	0%	0%
Air Taxi Turbine Propeller	49%	44%	1%	6%
General Aviation Jet	53%	47%	0%	0%
General Aviation Piston Propeller	18%	37%	17%	28%
General Aviation Turbine Propeller	46%	40%	4%	10%
Military (Fixed wing) Based	50%	50%	0%	0%
Military (Fixed wing) Transient	53%	47%	0%	0%

Table 7: Departure Runway Utilization

Aircraft Category	Runway End			
	15	33	01	19
Air Carrier Cargo Jet	30%	70%	0%	0%
Air Carrier Passenger Jet	52%	48%	0%	0%
Air Carrier Passenger Turbine Propeller	35%	65%	0%	0%
Air Taxi Jet	50%	50%	0%	0%
Air Taxi Turbine Propeller	38%	57%	0%	5%
General Aviation Jet	44%	56%	0%	0%
General Aviation Piston Propeller	13%	37%	11%	38%
General Aviation Turbine Propeller	35%	48%	5%	12%
Military (Fixed wing) Based	50%	50%	0%	0%
Military (Fixed wing) Transient	44%	56%	0%	0%

Table 8: Touch and Go (Pattern) Runway Utilization

Aircraft Category	Runway End			
	15	33	01	19
General Aviation Piston Propeller	10%	37%	12%	40%
Military (Fixed wing) Based	50%	50%	0%	0%

6. Flight Track Geometry and Use

Civilian published procedures have not changed since the 2015 NEM. Therefore flight track geometry used the analysis developed for the 2015 NEM. Flight track use for civilian aircraft comes from a combination the 2015 NEM and the 2017 TFMSC data.

During the 2015 NEM, a 42-day 2012 radar flight track data sample was used for developing flight tracks to which operations are assigned for modeling. The radar tracks are separated by operation type (e.g., arrival or departure), runway end and aircraft groups used for the runway use. Next, flight track groups are defined according to origin or destination direction. HMMH analyzed flight tracks with the same operation type, runway end, and origin/destination direction for similar geometry and this resulted in the final flight track bundles used to create model tracks. For example, tracks departing to the west-southwest from Runway 33 were bundled together to create model track 33D02. The dispersion around this backbone track is represented by a set of subtracks, and operations are assigned to these tracks according to the distribution of the original radar track data. Model track 33D02 and its subtracks are shown in Figure 2 for illustration.

Figure 3 through Figure 10 show the complete set of model tracks overlaid with BTV airspace as reference. Only backbone tracks are shown in these figures for clarity, but for modeling, each backbone track is accompanied by a set of subtracks similar to those depicted in in Figure 2. Complete flight tracks, with backbones and sub-tracks are also depicted in the 2015 NEM

Table 9 and Table 10 present track utilization rates for arrivals, departures, and local touch and go operations.

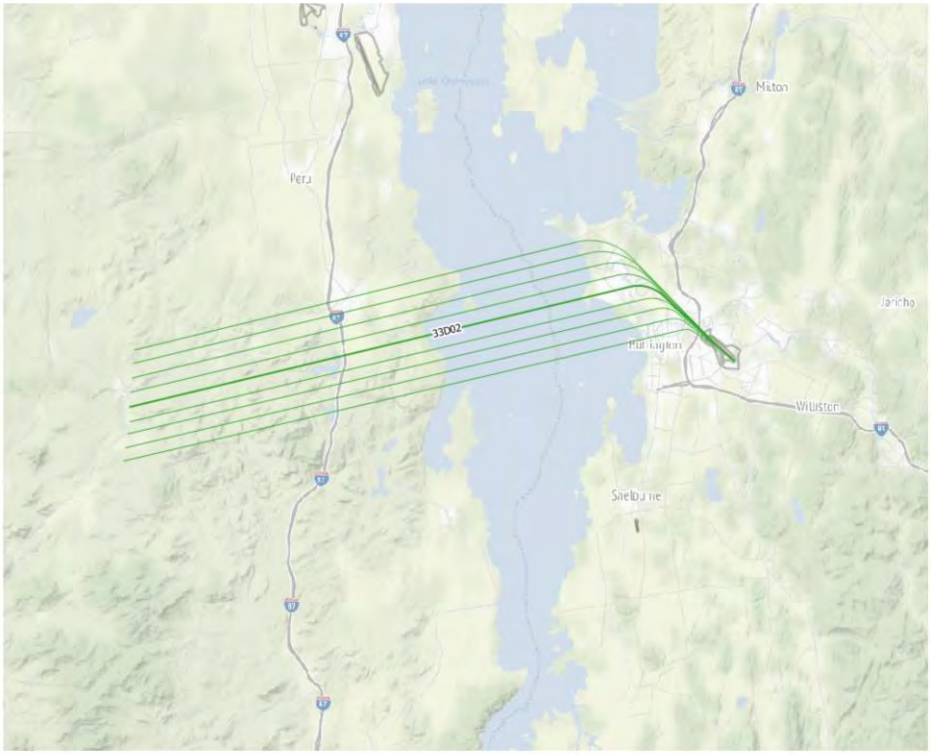


Figure 2: Example Model Track (33D02) with Subtracks

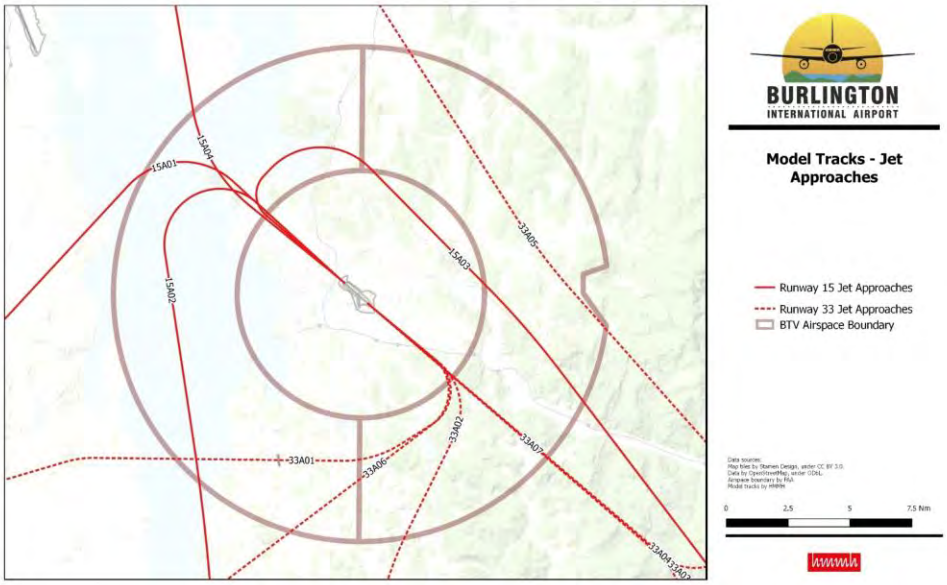


Figure 3: Model Backbone Tracks – Jet Approaches

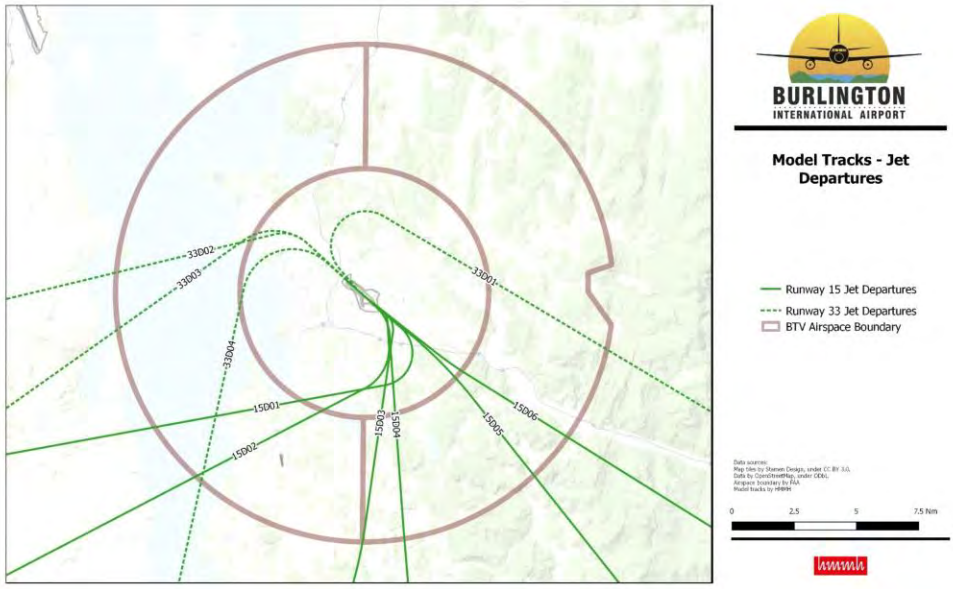


Figure 4: Model Backbone Tracks – Jet Departures

Figure 5: Model Backbone Tracks – Propeller Approaches Runway 15/33

Figure 6: Model Backbone Tracks – Propeller Departures Runway 15 /33

Figure 7: Model Backbone Tracks – Propeller Approaches Runway 01/19

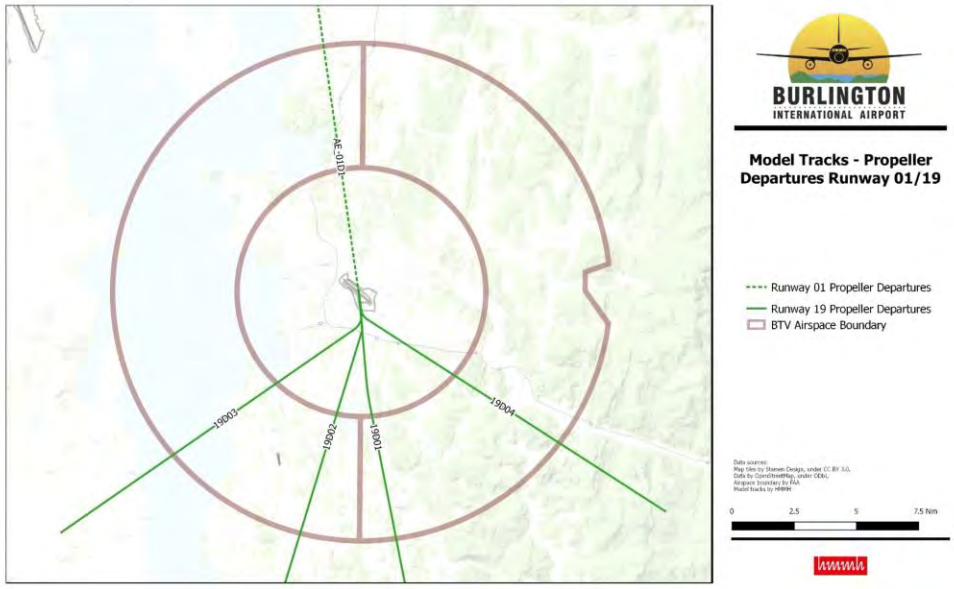


Figure 8: Model Backbone Tracks – Propeller Departures Runway 01/19

Figure 9: Model Backbone Tracks - Closed Patterns Runway 15/33

Figure 10: Model Backbone Tracks - Closed Patterns Runway 01/19

Table 9 Arrival Flight Track Utilization
Source: 2015 BTV NEM

Operation Type	RWY	Flight Track ID	Flight Track Utilization Percentages by Runway								
			Jet				Propeller				
							Turbine			Piston	
			Air Carrier Passenger	Air Carrier Cargo	Air Taxi	General Aviation	Air Carrier	Air Taxi	General Aviation	Air Taxi	General Aviation
Arrival	15	15A01	15%	87%	39%	18%					
		15A02	85%	4%	57%	59%					
		15A03		9%	2%	15%					
		15A04			3%	9%					
		15A05						29%	10%		12%
		15A06						8%			
		15A07					37%	6%	24%		
		15A08I					13%	12%	24%	50%	14%
		15A08V					50%	39%	38%	50%	38%
		15A09						5%	3%		
		15A12									12%
		15A13I									8%
		15A13V									15%
	33	33A01	9%	25%	24%	10%					
		33A02	43%		34%	20%					
		33A03	2%	25%	13%	10%					
		33A04	43%	25%	23%	18%					
		33A05			1%	6%					
		33A06	3%	25%	3%	16%					
		33A07			2%	18%					
		33A09						45%	58%	60%	34%
		33A10					38%	18%	8%	20%	17%
		33A11					17%	30%	17%		23%
		33A12					46%	7%	17%		11%
		33A17								20%	14%
	01	01A01						30%	30%	30%	30%
		01A02						70%	70%	70%	70%
	19	19A01						25%	18%	25%	18%
		19A02						25%	29%	25%	29%
		19A03						25%	21%	25%	21%
		19A04						25%	32%	25%	32%

Table 10 Departure and Touch and Go Flight Track Utilization
Source: 2015 BTV NEM

Operation Type	RWY	Flight Track ID	Flight Track Utilization Percentages by Runway								
			Jet				Propeller				
							Turbine			Piston	
			Air Carrier Passenger	Air Carrier Cargo	Air Taxi	General Aviation	Air Carrier	Air Taxi	General Aviation	Air Taxi	General Aviation
Departure	15	15D01	13%		29%	12%					
		15D02	1%	60%	12%	17%					
		15D03	76%		48%	42%					
		15D04	8%		8%	9%					
		15D06	2%	40%	1%	4%					
		15D05			1%	17%					
		15D07					100%	60%	83%	75%	49%
		15D08						40%	17%	25%	51%
	33	33D01	2%	14%	2%						
		33D02	13%	5%	34%	3%					
		33D03	2%	64%	13%	24%					
		33D04	83%	18%	51%	74%					
		33D06					19%	5%	26%		12%
		33D07					78%	38%	58%	50%	47%
		33D08					3%	10%		25%	12%
		33D05						40%	11%	25%	19%
		33D09						8%	5%		
		33D11									10%
	01	AE_01D1							100%	100%	100%
	19	19D01						14%	20%	14%	20%
		19D02						29%	40%	29%	40%
		19D03							20%		20%
		19D04						57%	21%	57%	21%
Touch & Go (Pattern)	01	01T1				50%			50%		50%
		01T2				50%			50%		50%
	19	19T1				40%			40%		40%
		19T2				60%			60%		60%
	15	15T1				50%			50%		50%
		15T2				50%			50%		50%
	33	33T1				29%			29%		29%
		33T2				71%			71%		71%

7. Ground Noise

7.1 Maintenance Run-ups

Maintenance run-ups are normally performed by stationary aircraft to test functions and performance of the aircraft. Based military run-ups will be modeled separately in Noisemap. Run-ups will be modeled in AEDT at the following locations, shown below in Figure 11:

- 2018 NEM: Taxiway K
- 2023 NEM: Valley West apron and a future holding bay to be constructed at the north end of Taxiway G.

Figure 11: Maintenance Runup Locations

7.2 Taxiway Track Geometry and Use

Aircraft taxiing has historically been included in noise modeling at BTV due to the proximity of several homes to the taxiways and consequent community interest. The analysis performed for the 2015 NEM will be repeated with the exception of modifications to the taxiing tracks due to ongoing taxiway reconstruction. The method constitutes nonstandard modeling and thus requires FAA approval, which has been granted for past NEMs at BTV.

The outline of the method is as follows:

- An overflight operational profile is used, with an altitude of 10 ft to account for engine height.
- All taxiing occurs at a speed of 10 knots.
- Idle power is used for the aircraft at hold points
    - A setting of 30% maximum static thrust is used to briefly to accelerate from hold points to up to the taxing speed of 10 knots.

A taxiway reconstruction project is currently underway at BTV. This project will result in a full-length taxiway parallel to Runway 15/33. The phases of this project are shown in Figure 12:

- Extension of Taxiway K to the intersection with Taxiway B (completed).
- Displacement of Taxiway G to align with the extended Taxiway K (in progress).
- A connecting segment to join Taxiways G and K (future, but expected to be completed before 2023).

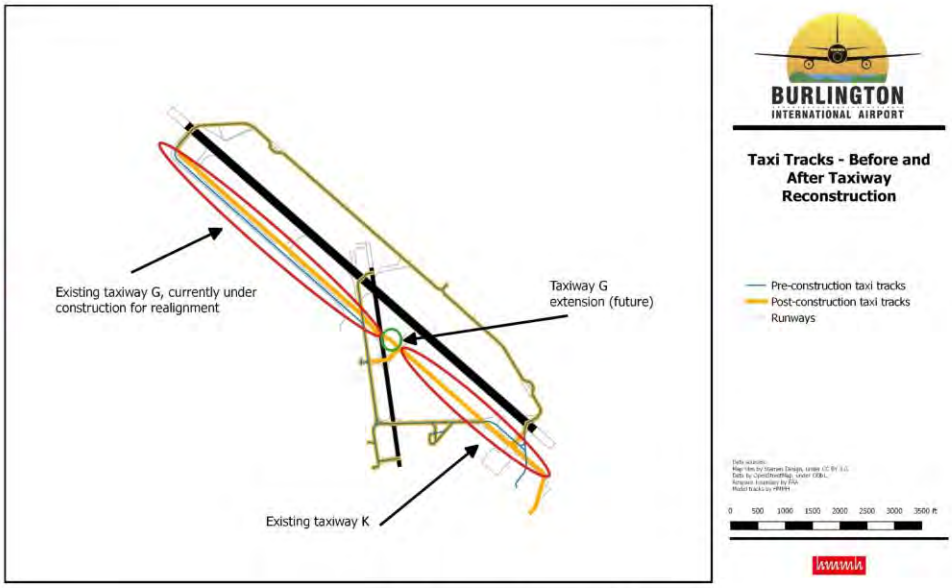


Figure 12: Taxiways and taxiing tracks

8. Meteorological Conditions

AEDT has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include average annual temperature, barometric pressure, and relative humidity at the airport. The AEDT database includes 30-year average data from the National Climatic Data Center (NCDC) for US airports. The annual average weather conditions at BTV are:

- Temperature: 45.0° F
- Sea-level Pressure: 1015.9 millibars
- Relative Humidity 68.08%
- Dew Point: 36.01° F
- Wind Speed: 7.14 Knots

9. Terrain Data

Terrain data describes the elevation of the ground surrounding the airport and on airport property. The AEDT uses terrain data to adjust the ground level under the flight paths. The terrain data does not change the aircraft's performance or noise levels, but does alter the vertical distance between the aircraft and a "receiver" on the ground. HMMH obtained the terrain data from the National Elevation Dataset (NED) via the United States Geological Survey (USGS) National Map Viewer[1].

[1] https://viewer.nationalmap.gov/basic/

Appendix C - Material Related to Public Notice and Participation

C.1 Notices

FOR IMMEDIATE RELEASE
Contact:
Nic Longo
Deputy Director of Aviation
802-343-9909
grichards@btv.aero

May 29, 2019

BURLINGTON INTERNATIONAL AIRPORT ANNOUNCES NOISE EXPOSURE MAP RELEASE

Burlington, VT – Today, Burlington International Airport (BTV) released its Federal Aviation Administration (FAA) regulated and funded Part 150 Noise Exposure Map (NEM). The NEM is a graphical presentation of the specific noise levels (noise contours) around the airport depicted over existing land use. The study, undertaken by The Jones Payne Group and HMMH, depicts noise levels for the current condition, as well as the 2023 forecasted condition. It was completed as part of the ongoing volunteer 14 CFR Part 150 update regulated by the FAA.

The completion of an updated Noise Exposure Map is an instrumental step in securing FAA funding to support BTV's Noise Compatibility Program (NCP). The NCP, which is the next component of BTV's sound mitigation efforts, is a land use planning study that recommends noise mitigation measures and future land use planning initiatives for areas located within the 65 Day-Night Average Sound Level (DNL) and higher noise contour.

"For nearly 30 years, BTV has participated in the Part 150 program," said Nic Longo, C.M., Deputy Director of Aviation, Burlington International Airport. "By participating in this program, we are able to continue accessing federal funds to support the Compatibility Program, as well as continue supporting homeowners' individual needs with potential sound insulation and sales assistance."

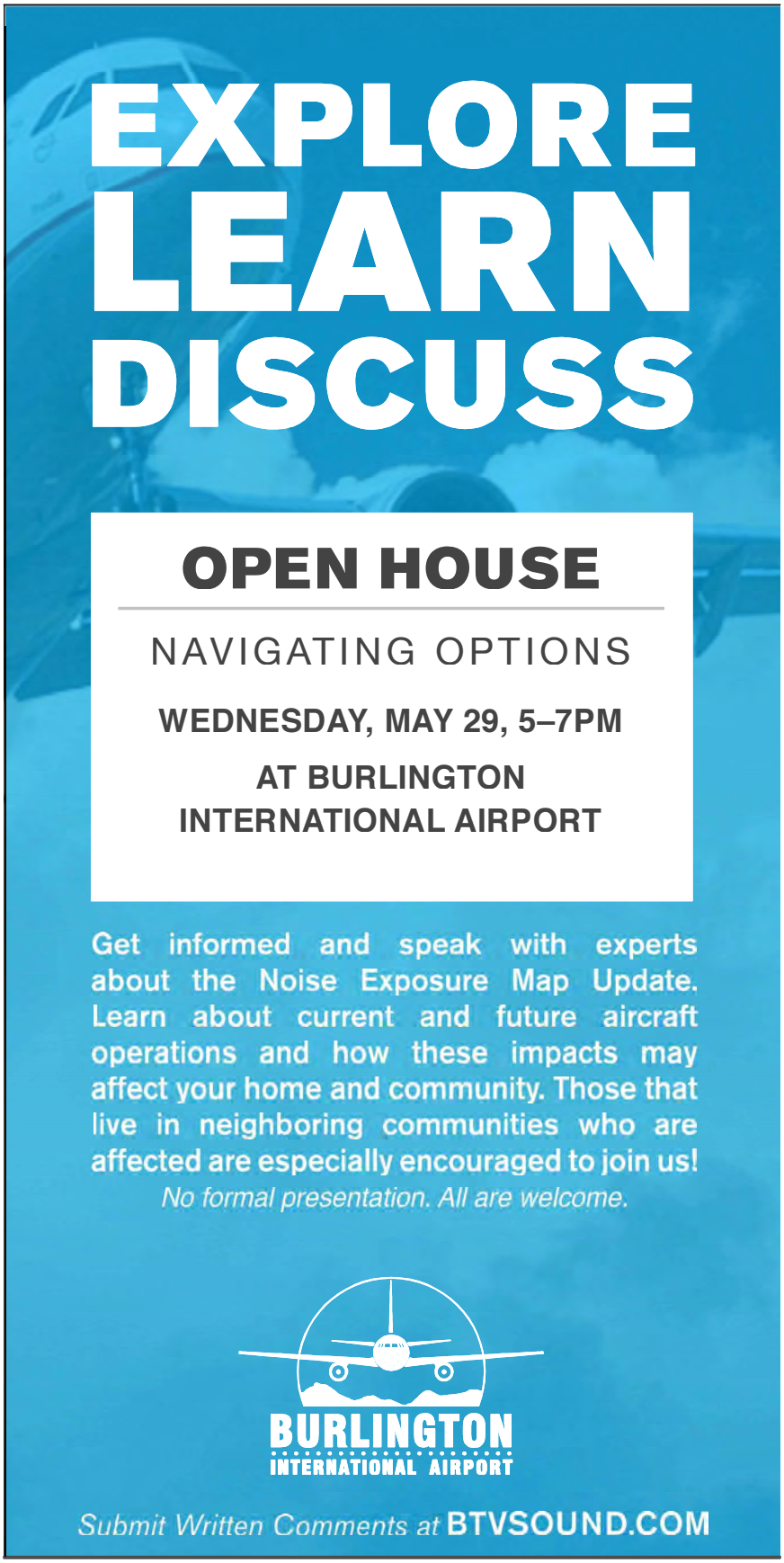
All aircraft operations are displayed on the map. Extensive research and documentation are also included in the NEM release, explaining the process and technical details of the production. Once accepted by the FAA, these maps will replace the previous version, produced in 2015, and will be the basis for how the FAA and BTV participate in sound mitigation efforts. After the completion of the Noise Compatibility Program, which is expected with the help of local municipalities by the end of 2019, implementation of the FAA approved programs will follow.

To learn more about the CFR Part 150 Noise Exposure Map Update, please join the Airport Administration and consultants for an open house at BTV on May 29th from 5:00pm to 7:00pm. Copies of the Noise Exposure Maps will be available beginning May 29th at the Airport Administration office and online at www.BTVsound.com.

###

FOR IMMEDIATE RELEASE
Contact:
Nic Longo
Deputy Director of Aviation
802-343-9909
grichards@btv.aero

About Burlington International Airport: Burlington International Airport (BTV) is northern New England's most convenient and welcoming airport. Located adjacent to Burlington Vermont, BTV is just ten minutes from Lake Champlain. Business and leisure travelers alike appreciate BTV's friendliness, excellent on-schedule record, and direct flights to: **Atlanta** (ATL) via Delta, Charlotte (CLT) via American Airlines, **Chicago** (ORD) via United or American Airlines, **Denver** (DEN) via Frontier or United, **New York City** via United, JetBlue, or Delta, **Orlando** (MCO) via Frontier, **Philadelphia** (PHL) via American Airlines, **Washington** DC (IAD) via United or American Airlines. Book your getaway today at FlyBTV.com.


EXPLORE
LEARN
DISCUSS
OPEN HOUSE
NAVIGATING OPTIONS
WEDNESDAY, MAY 29, 5–7PM
AT BURLINGTON
INTERNATIONAL AIRPORT
Get informed and speak with experts about the Noise Exposure Map Update. Learn about current and future aircraft operations and how these impacts may affect your home and community. Those that live in neighboring communities who are affected are especially encouraged to join us!
No formal presentation. All are welcome.
BURLINGTON
INTERNATIONAL AIRPORT
Submit Written Comments at BTVSOUND.COM

Two important community meetings will be held, on May 29 and May 30, to discuss the updated Burlington International Airport noise exposure map. Winooski residents may be affected by these changes. Both events are free and open to the public. If you need a translator, call or email 802-655-6410 | communications@winooskivt.gov

The City of Winooski
27 West Allen Street
Winooski, VT 05404
winooskivt.gov

No formal presentation. All are welcome.

Laabo kulan oo mu hiima ah, aya la qabanaya malmaha May 29 iyo May 30. Waxan loga hadli doonaa isbadalka cusub ee Burlington International Airport qariirada sawaxanka ama (qayalad diyaradah). Waxan isbadalkas waxa uu dhimaya dadka ku nool xafada Winooski. Labad kulan ba waa lacaga la`aan dadka dhana waa uu fuuranyahay. Hadi aad uu bahanatay turjuban fadalan waca numarka 802-655-6410 ama email uu so dir communications@winooskivt.gov

नेपाली:

यही मे २९ र मे ३० मा बर्लिंगटन इंटर्नेसनल एयरपोर्ट को नयाँ ध्वनि जोखिम नक्शा बारे छलफल गर्न दुई महत्वपूर्ण सामुदायिक बैठक आयोजना हुँदैछ/ यी परिवर्तनहरू ले विनूसकी बासिंदाहरू प्रभावित हून सक्छन्/ दुवै कार्यक्रमहरू सबैका लागी नि:शुल्क र खुल्ला छन्/ यदि तपाईलाई अनुवादक चाहिएमा, फोन वा ईमेल गर्नुहोस ८०२ ६५५ ६४१० /communications@winooskivt.gov

مدينه وينوسكي

سوف تعقد اجتماعات عامه وهامه
في ٢٩ أيار/مايو وفي ٣٠ أيار/مايو لمناقشه خريطه التعرض للضوضاء الحادثه والناتجة من مطار برلنجتون الدولي . وقد يتأثر سكان مدينه وينوسكي بهذه التغييرات. كل الحدثين مجانيه ومفتوحه للجمهور. اذا كنت بحاجه الي مترجم، اتصل بنا علي الهاتف أو البريد إلكتروني

802-655-6410
Communications@winooskivt.gov

MAY
30

BTV Noise Exposure Map Open House (Winooski)

Public · Hosted by City of Winooski and Burlington International Airport - BTV · 1 co-host pending [?]

★ Interested | ✓ Going | ···

Thursday, May 30, 2019 at 5 PM – 7 PM
about 2 months ago

O'Brien Community Center
32 Malletts Bay Ave, Winooski, Vermont 05404 — Show Map

About | Discussion

Details

The Burlington International Airport - BTV will be hosting two open house events regarding the updated CFR Part 150 Noise Exposure Map (NEM):

- Noise Exposure Map (NEM) Open House, May 29th, 5-7PM (Burlington International Airport)

- Noise Exposure Map (NEM) Open House, May 30th, 5 - 7PM (O'Brien Community Center, Winooski)

These events are free and open to all. If you plan on attending the event at the O'Brien Community Center in Winooski and require translation services, please call or email the City of Winooski: 802 655 6410 / communications@winooskivt.gov

See More ▾

MAY
29

Noise Exposure Map (NEM) Open House, May 29th, 5-7PM

Public · Hosted by Burlington International Airport - BTV

★ Interested | ✓ Going | ...

Wednesday, May 29, 2019 at 5 PM – 7 PM
about 2 months ago

Burlington International Airport - BTV
1200 Airport Dr, South Burlington, Vermont 05403 Show Map

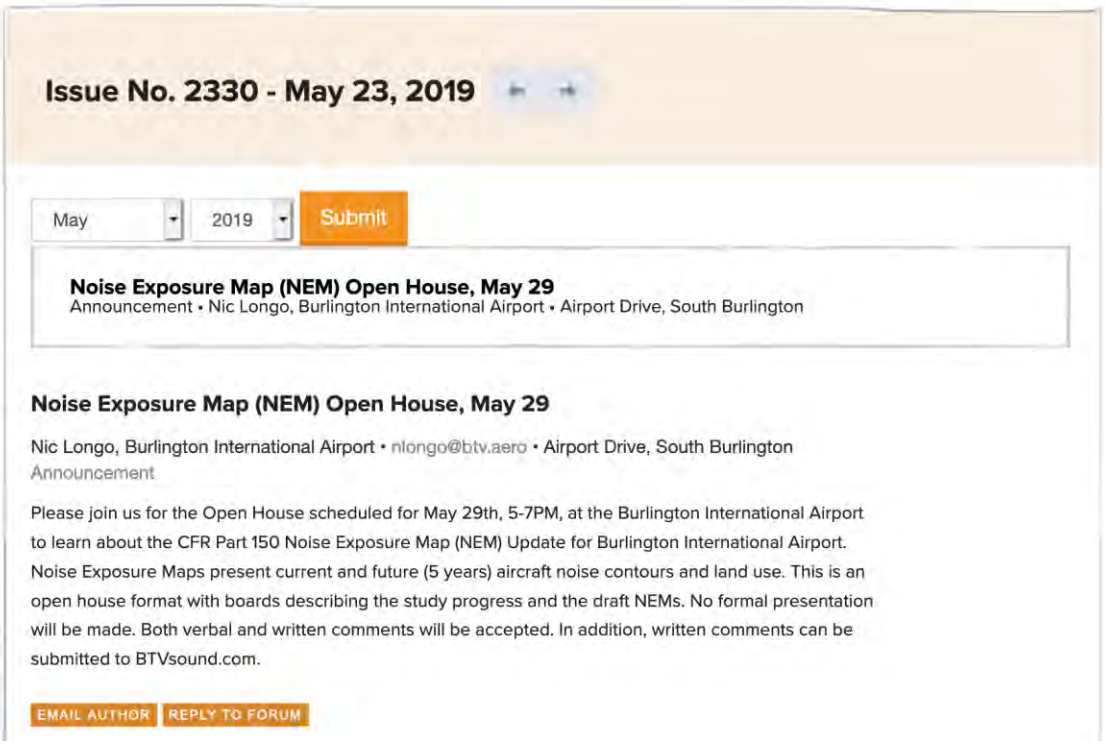
About Discussion

Details

For over 30 years, the Burlington International Airport (BTV) has been committed to participating in the Part 150 program. This voluntary program of assessing noise impacts from the airport and developing a Noise Compatibility Program to minimize those impacts.

Please join us for the Open House scheduled for May 29th, 2019, at the Burlington International Airport to learn about the CFR Part 150 Noise Exposure Map (NEM) Update for Burlington International Airport. Noise Exposure Maps present current and future (5 years) aircraft noise contours and land use. This is an open house format with boards describing the study progress and the draft NEMs. No formal presentation will be made. Both verbal and written comments will be accepted. In addition, written comments can be submitted to BTVsound.com. Copies of the Noise Exposure Maps will be available

See More ▾



Issue No. 2330 - May 23, 2019

May 2019 Submit

Noise Exposure Map (NEM) Open House, May 29
Announcement • Nic Longo, Burlington International Airport • Airport Drive, South Burlington

Noise Exposure Map (NEM) Open House, May 29

Nic Longo, Burlington International Airport • nlongo@btv.aero • Airport Drive, South Burlington
Announcement

Please join us for the Open House scheduled for May 29th, 5-7PM, at the Burlington International Airport to learn about the CFR Part 150 Noise Exposure Map (NEM) Update for Burlington International Airport. Noise Exposure Maps present current and future (5 years) aircraft noise contours and land use. This is an open house format with boards describing the study progress and the draft NEMs. No formal presentation will be made. Both verbal and written comments will be accepted. In addition, written comments can be submitted to BTVsound.com.

EMAIL AUTHOR REPLY TO FORUM

C.2 Public Workshops, May 29th and 30th, 2019

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Public Hearing
DATE: May 29, 2019
LOCATION: Burlington International Airport
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
1	BERNICE GOELSTEIN	30 CLOVER ST So. Burl	863-5824
2	MURRAY GOELSTEIN	30 CLOVER ST So Burl.	863-5824
3	MaryAnn Hegeman	33 Kirby Rd. S. Burl.	9997836
4	KATHY HART TYLER HART	18 KIRBY RD So. Burlington	6581562
5	Richard Doucette	FAA	
6	Douglas Johnson	16 Pleasant St. Winooski	654-7267
7	Lynn Schilling	40 Queensbury So. Burlington	999-4472
8	Pam Opferman	29 Hanover St S. Burl.	802-825-3750
9	Chuck Opferman		↵
10	Frank Phipps	150 Franklin St. Winooski	(317) 496-5476
11	Brad Ferland	2409 St. Albans	802-999-2633
12	Susan Fitzpatrick	4 Elsom, SB.	578-3542
13	Lisa Ventriss	VBRoundtable	8025787504

BURLINGTON INTERNATIONAL AIRPORT

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
14	David O'Vitt	36 Peterson Terrace South Burlington, VT	802-864-5350
15	Jan E Hughes	75 Rhe Tree Terr So Burl	jeh8719@gmail.com
16	Maida Townsend	232 Patchen Rd South Burlington	mftownsend@comcast.net
17	Steve + Judy Rivard	Williston	
18	Kanchan Gurung	south burlington	802 3498654
19	Jagat Gurung	South burlington	8023249437
20	Shanna Callnaire	Winooski	Smcu14854@gmail.com
21	Peter Jacobsen	Burlington	petereric jacobsen @gmail.com
22	Ellen O'Neil	South Burlington	ellen e oneil @gmail.com
23	Ray Davis	So. Burlington	Ray.J.Davis@gmail.com
24	Kevin Cook	So. Burlington	kcookvt@gmail.com
25	F Wilson	S Burlington	
26	David Yovey	So Burl	316-0530

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Public Hearing
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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
27	[illegible] Curtis	7 Thornton St. Winooski VT.	802-655-6548
28	Peggy Curson	7 Thornton St Winooski, VT	802-655-6548
29	JOCELYN BARTON	69 Logwood St S.B., VT 05403	802.658.7904
30	LUKE GARRISON	FAA	(781) 238-7622
31	Ann-Elise Johnson	15 Union St Winooski	anneliseVjohnson@gmail.com
32	RICHARD SHANNON	40 QUEENSBURY RD SOUTH BURLINGTON	mrrick747@gmail.com
33	Sy Daubenspeck	33 Forest St So. Burlington	daubiedad@gmail.com
34	Bob Stevens	33 MOUNTAIN VIEW SO. BURLINGTON	GMANN3@HOTMAIL.com
35	Gordon Lawrence	35 [illegible] So Burl.	863-1620 [illegible]
36	Ruth Drake	37 Bilodeau Ct.	862-1423 Burl.
37	MARY GOVER	79 Kirby Rd S. Burl	802-881-6233
38	Tim Palmer	28 FOREST RUN RD WILLISTON, VT 05495	802.879.3207
39	Jean Hopkins	11 E. Village Dr. Burlington VT	802 863-5359

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
40	Michael + LISA Holmes	5 Elizabeth St So Burlington vt	802 316 7474 mdholmes130@yahoo
41	Paul Conner	575 Dorset St City of South Burlington	pconner@sburl.com
42	Michael Kiely	288 Whitewater Cir Williston, VT	802 922-2943 michael.kiely2@gmail.com
43	Liz Merrill	288 Whitewater Circle Williston	802-343-1904
44	Cindy Cook	166 EAST AVE	ccook@adamantaccord.com
45	Nancy Chamberland	15 Beacon St So Burlington	Nchamberland@gmail.com
46	Fiona Patterson	9 East Village Drive - Burl.	fiona-patterson@uvm.edu
47	Steve Zeno	27 Forest St So Burlington	zenostue@yahoo.com
48	Linda Zeno	27 Forest St So Burlington	zenolinda@yahoo.com
49	JOANNA RANKIN	23 EAST VILLAGE BURLINGTON	JOANNA.RANKIN@UVM.EDU
50	Anita Repon		
51	DARRILYN PETERS	39 OLD SCHOOLHOUSE SO BURLINGTON VT	dpeters@comcast.net
52	Gail & Clayton Holmes	12 LEDOUX Ter	

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
53	Bill Keach	Commuter	on file
54	ANDREW SIMON	54 Locust St. Burl	Sanschagrins @gmail.com
55	Bob McEwing	Essex, VT	mac<piper@aol.com
56	Judy Galloway	Burlington	jwellsg41@gmail.com
57	CHRIS STEL	SoBURL	Chris 6720@ yahoo.com
58	Josie Compton	Winooski	josie_compton@yahoo.com
59	TIM MCCOLE	HERITAGE	914 356 2101
60	Justin Landry	Hanover st. So. Burlington, VT	802-238-7549
61	Karsten Schlenter	23 Duval	316-0542
62	Marc LeBlanc	White St.	crAM0625@yahoo.com
63	Marc Heinzer	Burlington	marc.heinzer@gmail.com
64	Rickie Emerson	Williston	-
65	Diana Arnell	Winooski	dianavarnell@gmail.com

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
66	DORIS BEDINGER	BURLINGTON	———
67	Melinda Lee	Burlington	—
68	Mike Bachand	So. Burl	
69	Susi Taylor	Burlington	
70	Charlie Simpson	Burlington	
71	Lea Terhune	Burlington	leaterhune4@gmail
72	[illegible]	So Burl	———
73	Jennifer Decker	South Burlington	
74	Susan Metcalf	40 Kirby Rd So. Burlington	802-578-8002
75	Irene Russell	Logwood St So Burl	802 238-7884
76	BOB BOUVIER	26 AIRPORT PKWY S.BURL	863-5644
77	Grey EplerWood	369 S. Union Burlington	860-6473
78	Tim Barritt	164 Royal Dr S Burl 05403	—

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
79	Sharry/Gre	5 East Village Dr. BURL	
80	Mike Paustian	S. B., VT.	
81	BECH EVANS	70 LOGWOOD ST.	BEVANS2@UVM.EDU
82	Marguerite Aldrich	100 W. Canal Winooski, VT	518-561-353
83	Brenda Wells	48 Logewood St S. Burlington	
84	Eileen Bourcier	26 Airport Pkwy	-863-5644
85	Paul Aurete Erin	58 Airport pkwy	
86	Robert Ashley	100 W. Canal St Apt 4 Winooski	
87	Michael		
88	Elizabeth Nar	34 North St. WINOOSKI	802 862-7294
89	LESLYE BENTON	WINOOSKI	
90	Christine Selin	5 Duval St So. Burlington	907-230-9707
91	Deb Lovejoy	86 Airport PKWY So Burl.	802-864-2138

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
92	Donna Austree	12 Richard Ter S Burlington	802-578-0417 dmkcrs(at)yahoo.com
93	[illegible]	50 W. Canal St	Winooski
94	Robin Lloyd	300 Maple St	Burl
95	Craig Hilliard	17 Mansion St.	Winooski
96	Amanda Hannaford		amandahannaford@yahoo.com
97	Geoff Urbanik	Town of Colchester 781 Blakely Rd Colchester, VT 05446	gurbanik@colchestervt.gov
98	Jeremy & Jennifer Roberts	37 Victory Drive South Burl.	twgrcs@aol.com
99	Mike Felber	22 Logwood St	mfelber79@gmail.com
100	Pamela Sullivan	155 Weaver St. Winooski	pamsullivan155@gmail.com
101	David Sullivan	155 Weaver St Winooski	dasully999@gmail.com
102	M. Lynn Russell + Craig	40 Peterson Terr S. Burl. VT 05401	mlynnrussell@hotmail.com
103	Frank + Deb Gay	18 Berkley Street S. Burl.	Umainebear@gmail.com
104	Helen Riehle	1559 Hinesburg Rd	hriehle@sburl.com

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
105	Juan Carlos Vallejo	300 Maple St.	jucava@mail.RU
106	Dawn Quinn	24 Logwood St	862-8555
107	N. Kandasi	367 White Birch	216 849 2665
108	Sara Blanchard	29 Myers Ct	802-864-4791
109	Miranda Jarvis	Other Paper	miranda@shelburnenews.com
110	K. McDonald	10 Laporte St. Winooski, VT	
110	Steve & Carrie Savoy	22 Duval St. So. Burlington	castense@comcast.net
112	John Sayer	327 Malletts Bay Ave	831-241-4641
113	Joan Knight	180 East Ave #3 Burl 401	
114	Sal Millichamp	25 Bacon ST #404 South Burlington 05403	millichampsally@gmail.com
115	Sara Dickey	25 Valley Ridge Rd. S. Burlington 05403	
116	Carmine Sargent	21 Elizabeth St. So. Burl.	carmine@myfairpoint.net
117	Amanda Martin	238 White St. South Burlington VT	aauger1102@verizon.net

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
118	Harold & Terry Skorstad	103 Golf Club Dr. E. S.B.	802-865-0426 skorstadh@gmail
119	Jerry Firkey	30 School St. Apt 4 Essex Jct., VT	802-598-0801
120	Bill & Kim Shaw	49 Maryland St. So Burlington	KSwow912@hotmail.com
121	Maria Jakobert	41 Helen ave. S. Burlington)	802-598-7278 mariajakobert5@gmail.com
122	GENE TOFFERI	44 PETERSON TERRACE	802 864 6744 ETOFFERI-421@COMCAST.NET
123	Susan Hills	31 East Village Dr Burlington	(305)710-4055 Suez2inflo@aol.com
124	Mark Crow	1 Mill Street, Burlington, VT	802-658-1318 CrowdTan@thecrowcreative.com
125	Semir Mahmutovic	504 N Brownell Williston VT	802 2494766 malimahmutovic@gmail.com
126	Steve MARRIATT	13 Mills AVE S. Burl	802 862 2820
127	Pat Jordan	Essex Junction	843. 214-3831
128	JOHN NGUYEN	S. Burlington	802. 578-0418
129	Tracy DeVarney	41 Kirby Rd. S. Burlington	802-233-6888
130	Sheila Lefebvre	10 Gilbert St. So. Burlington	82-658-9684

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
131	Spencer Smith	288 Flynn Ave Burlington	sspencersmith92@gmail.com
132	Robin Donovan	49 Kirby Road South Burlington	robin-donovan@comcast.net
133	Shelly DeVarney	8 Elizabeth	—
134	GREG Miller Heide Riley	9 Gilbert St SB	grandmaridess5@yahoo.com
135	Matthew Ennis	49 Hood St Winooski, VT	mennis8@gmail.com
136	Jack Darling	104 Winesap lane	Jad397@aol.com
137	Wayne Darling	385 White Street Walking385@aol.com.	
138	Cathy Pontbriand David Pontbriand	5 Patrick St. So Burl	865-2243
139	Naomi rose chaulot	27 Myers ct SB	264-9636
140	Meaghan Emery	South Burlington city council	memery@sburh.com
141	Charles Finnegan	668 Bean Rd Colchester, VT	
142	Alan Hass	25 Channel Ctr. St. #210 Boston MA	ahass@landrum-brown.com
143	Aide Shepard	37 Darby Road	802-310-9469 Ricknday43@gmail.com

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
1	STAN HILL	30 CIST V. DR	7864231403
2	BERNIE CARVER	25 BACON ST. #404 S/B	310-5594
3	Kara Paige	21 Elizabeth Street	658-1164
4	BRUCE BEVINS	36 Dewey St	863-9686
5	Tom Martin	238 White St.	twmartinevm @gmail.com
6	Sheryl Graves	100 Belkvue St Winooski, VT	
7	WALT LUCHINI	122 PATCHEN RD SO BURL.	658-0879
8	Mary Gerrish	184 MAIN ST WINOOSKI	655-3057
9	Jessie Baker	27 West Allen St Winooski, VT 05404	655-6410
10	RUSTON FETTIG	17 VALLEY RIDGE RD. S. BURLINGTON, VT	
11	SYDNEY MAHNKE	60 Grove St Burl.	
12	LAURA KNAPP	19 PINE TREE TERR, S. BURL	865-2573
13	Greer Krembs	106 Saint Peter St. Winooski	356-0853

BURLINGTON INTERNATIONAL AIRPORT

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
14	Jeanne Keller	27 Bilodeau Pky Burl 05401	kelljonline@gmail.com
15	Frankie Lyon	50 W. Center St. Winooski	FrankieLyon@gmail.com 802 899 0557
16	Dan Albert	BTV	
17	John Patteson	9 East Villasa Drive Burlington	
18	Serena Baker	24 Maryland St So Burl	Serena baker 9.22.17@gmail.com 8023380837
19	Lori Bachand	16 Duval S.B.	802-660-2959
20	Lisa Ilsley	9 Victory Dr S.B.	272-8303
21	Chris House	32 E Village Dr	6033985730
22	Bruce Paquette	46 Suburban Sq.	bpaquette@kelleybros.com
23	Lucy Gluck	51 Blodgett St	lgluck123@gmail.com
24	Jamey Leary	3 Butler Dr	Jolly3@gmail.com
25	Thomas Chittende	1600 Dorset St. So. Burlington	802.233 1913 Thomas.Chittenden@gmail.com
26	David McFeeters	25 Patrick So. Burlington	802-557-8566 dmcfeeters@outlook.com

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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
157	Sheila Quennaille	364 White St So. Burl., VT	Sheila3640@aol.com
158	Donald Quennaille	" "	(802)860-1509
159	Cristine Gay	50 Berkley St So. Burlington	802-658-4758 crissygay1970@gmail.com
160	Marsha Camp	8 Peterson	802-318-8833
161	John Bolton	11 Five Trees Ter	802-865-9639
162	Penny Martin	53 Kirby Rd	802-660-9503
163	Sheila Reid	22 VICTORY DR	———
164	LESLIE BROONE	8 BARBER	802-316-7323
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BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Public Hearing
DATE: May 29, 2019
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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
170	Michelle McCutcheon-Schar	83 Shepard St Winooski, VT	508-745-3152
171	Robert Bauer	83 Shepard St Winooski, VT	607.267.2565
172	Ann Gowing	94 Chase St Burlington VT	802-~~860~~-8508
173	Jerry Poulin	1155 Airport Dr. S Burl	802-658-2817
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BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Open House
DATE: May 30, 2019
LOCATION: O'Brien Community Center - Winooski, VT
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
1	KELLY COFFEY	81 HOOD ST. WINOOSKI	
2	Michele Palardy	81 Hood St. W.nooski Vt.	
3	Joanne Pat Quinn	63 North ST Winooski	
4	Lea Jerkins	63 Copperfield Pl Burlington	
5	MARC ESTROW		mestrow@uvm.com
6	Marguerite Ackman	Winooski	
7	Robert Ackland	100 W. Canal St. Apt. Y Winooski	
8	John Vogel	The Woolen Mill 20 W Canal St, Winooski	
9	NEAL KAMMEL	362 WHITE BIRCH	
10	Jessie Baker	City of Winooski	
11	Judy Lance	Winooski	lancejudith@gmail.com
12	Peter Keating	CCRPC	pkeating@ccrpcvt.org
13	DAVE BOWERS	Main St. Winooski	654-3951

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Open House
DATE: May 30, 2019
LOCATION: O'Brien Community Center - Winooski, VT
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
14	Marshall Distel	CCRPC	802 846 0122
15	L.K. Frangipane	BTV	
16	JOE NUSBAUM	67 Union St. Winooski	
17	Doug Johnson	16 Pleasant St. Winooski	802 654-7267
18	Dr. Ron Stotya	21 BERNARD ST Winooski	
19	Pat Evarts	5 Anita Ct. Winooski	
20	Martha Chadwick	61 Leclair St	802-355-3380
21	Amy Kapiteu John Sayer	397 Malletts Bay Ave, Winooski	518 810 9711
22	TC	West Canal St. Winooski	
23	Kiri Pensen	8 North Winooski	
24	Tem Zigmund	111 West St Winooski	
25	Jason Weinstein	111 West St. Winooski	
26	Jr Blodgett	168 North St Win	

Steve Blodgett

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Open House
DATE: May 30, 2019
LOCATION: O'Brien Community Center - Winooski, VT
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
27	Hal Colston	20 W. Canal St. #214 Winooski, VT 05404	802-922-2908
28	James Lees	32 Butler Dr. S. Burl	0641575
29	Morgan Jones	26 Mayo St Apt 200 Winooski	mlj4823@gmail.com
30	Roger Bourassa	Native of Winooski	233-2934
31	Carol Altobelli	105 Weaver St. Winooski VT	734-5925
32	Michael Myers	47 Bellevue St. Winooski, VT	802-355-5348
33	Donna Bister	58 Pearl St Burlington VT	dlbister@yahoo.com
34	John + Josee Compton	Winooski	Josee_compton@yahoo.com
35	John Compton	Winooski	JohnComptonBurl.com
36	Andy Hand	Chase St BTV	andy.hand@gmail.com
37	Richard Ducette	FAA	
38	Amy Lafayette	37 Gail St. Winooski, VT	8025487704
39	James Dietze	118 Dion St Winooski VT	802-735-7430

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Open House
DATE: May 30, 2019
LOCATION: O'Brien Community Center - Winooski, VT
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
40	Sean Bleything	40 Russell St 05404	dsbyseanvt@gmail.com
41	Stan Marshall	83 Barlow St 205 05404	stan.mail@comcast.net
42	Meg Bronz	10 Richard St 05404	megbronz@gmail.com
43	Bobby Arnell	43 Hood St. 05404	rarnell@gmail.com
44	Jim Duncan	26 Hall St 05404	~~JDMC~~ jduncan@winooskivt.gov
45	Patty Bartle	42 Hood St Winooski	patty.bartle@gmail.com
46	Nancy Miller-DeMercurio AKA Nina Miller	100 W. Canal St #43 Winooski	ninamillervt@gmail.com
47	Susan + Chuck Letourneau	174 North	
48	NILTON POWER>	131 MALLETTS BAY AV.	~~802 489 0371~~ NCMACOSTA@HOTMAIL.COM
49	Charles Simpson	83 Summit Ridge Burlington	
50	Anita Rapone		
51	~~Darrell Desautels~~		
52	Stewart Ledbetter	33 orchard terrace Winooski	363-9950

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Open House
DATE: May 30, 2019
LOCATION: O'Brien Community Center - Winooski, VT
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
53	John Aong	6 High St, Winooski	
54	Joe Ispa-Landa	116 West St. Winooski	
55	KR Decarreau	31 FOREST ST. (Win. Housing Auth)	
56	Cody O'Leary	River St Winooski	
57	Lucy D'Aponte	West Spring St Winooski	
58	Cara Montague	68 West St. Winooski	
59	Janet O'Brien	Williston, VT.	
60	Britta Tonn	56 Maple St. Winooski	
61	J Davidson	152 Hickok Winooski	
62	Teresa Casey	100 West Canal Winooski	
63	Joe Nadeau	15 C Burling ST Winooski,	
64	Liz Dallas	18 Thornton St Winooski	
65	Teresa Moschin	13 Lapointe St. Winooski	

BURLINGTON INTERNATIONAL AIRPORT

Noise Exposure Map Open House
DATE: May 30, 2019
LOCATION: O'Brien Community Center - Winooski, VT
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER/ EMAIL
66	Sr. Arlene Gates	47 West Spring St.	(802) 655-2395 ext 2240
67	Sr MARIE Heintz	"	"
68	Diana Arnell	43 Hood St. Winooski	802-503-8339
69	Jenn Schollmeyer	7 Niquette CT	
70	Ian Metcalf	"	
71	Stefani Us	66 Log Wood St	802 865 9169
72	Carl Severance	18 Thornton St. Winooski	802-598-9856
73			
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BURLINGTON
INTERNATIONAL AIRPORT

WELCOME

to the

NOISE EXPOSURE MAP UPDATE
PUBLIC INFORMATION OPEN HOUSE

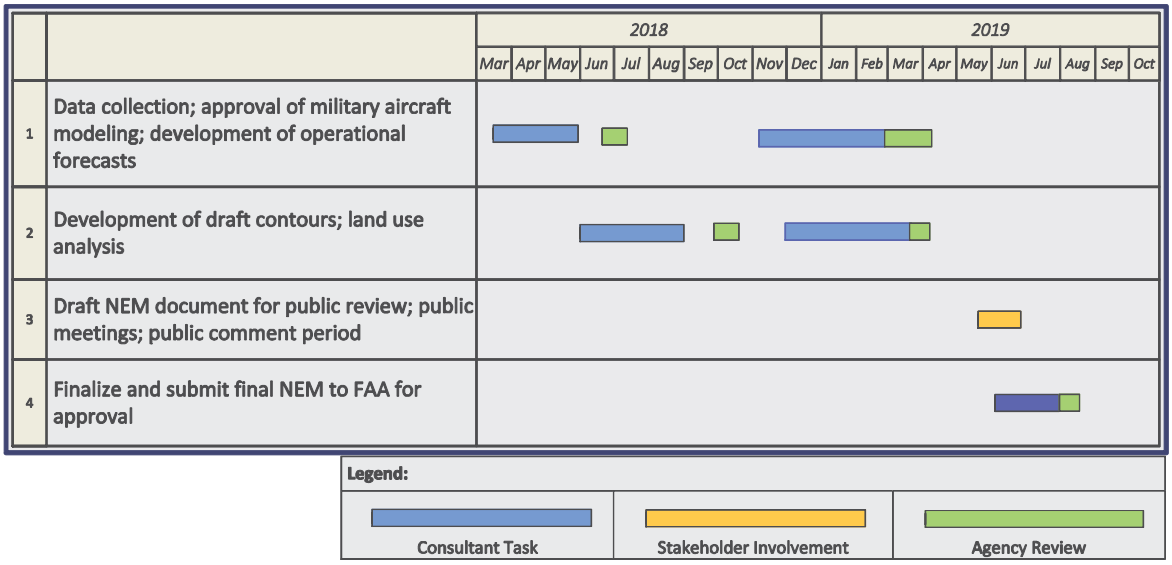
MAY 29, 2019

BURLINGTON
INTERNATIONAL AIRPORT

COMMENTS

Please leave your comments on the sheets provided.

ANTICIPATED NEM UPDATE SCHEDULE



WHAT IS A PART 150 NOISE STUDY?

- Title 14 of the Code of Federal Regulations Part 150 (Part 150) "Airport Noise Compatibility Planning" Sets forth standards for airport operators to use in documenting noise exposure around airports and establishing programs which may be eligible for federal funding to minimize noise-related land use incompatibilities. It is a voluntary process.
- It consists of two parts;
  - **Noise Exposure Map (NEM)**: Detailed description of airport layout, operations, noise exposure, land uses, and noise/land use compatibility for the study year and a forecast year
  - **Noise Compatibility Program (NCP)**: A proposed plan to reduce noise exposure, and identify land use mitigation measures to address existing non-compatible uses and land use control measures to prevent new non-compatible uses

WHAT IS A "NOISE EXPOSURE MAP" (NEM)?

- A noise exposure map is a graphical presentation of the specific aircraft noise levels (noise contours) around an airport depicted over the existing land use. The noise level is expressed as Day-Night Average Sound Level (DNL). The NEM depicts the noise levels for the current condition (2018) and 5 years in the future (2023).

WHAT IS A DNL NOISE CONTOUR?

The Day-Night Average Sound Level (DNL) is the 24-hour cumulative noise exposure, in A-weighted decibels (dBA), resulting from annual average daily aircraft operations.

- It does not represent the noise level heard at any particular time, but rather represents the total noise exposure over a day.
- Aircraft noise occurring between 10 p.m. and 7 a.m. is artificially increased by 10 dB to account for the increased of intrusiveness of noise at night.
- A DNL noise contour is a line on a map that depicts equal levels of noise exposure.
- The FAA requires the use of DNL as the noise metric for the NEM.

WHAT IS A NOISE COMPATIBILITY PROGRAM?

The Noise Compatibility Program (NCP) is a land use planning study that recommends noise mitigation efforts and recommendations future land use planning initiatives for areas located within the 65 DNL and higher noise contour.

The NCP will be updated this summer to reflect new recommendations for noise mitigation.

NCP POTENTIAL LAND USE MEASURES

Sound Insulation

Residential

- Installation of acoustical windows, doors and ventilation in exchange for an aviation easement
- Reduce the interior noise level to 45 dB DNL
- Must have existing interior noise level above 45 dB DNL to qualify - verified by acoustical testing
- Entire process from design through construction is 12 – 18 months depending on grant cycles
- Homes are bundled into a construction contract
- Must be publicly bid
- Construction on individual homes takes 30 -40 days with majority of work in 10 days.
- Owner remains in home during construction

Community Buildings

- Eligible community buildings include schools, churches and nursing homes

NCP POTENTIAL LAND USE MEASURES

Sales Assistance
- Airport assists with the sale of the home on the open market; airport does NOT take possession of property
- Homeowner enters program by signing agreement which includes:
  - Homeowner to list property at Fair Market Value (FMV)
  - Homeowner to convey Avigation Easement prior to sale of home
  - Airport guarantees they will provide a differential to assist in the sale of the property if seller receives an offer of less than FMV
- Owner / Occupant does not receive relocation benefits

Purchase Assurance
- Airport takes possession of property and resells it on the open market
- Homeowner enters program by signing agreement which includes:
  - Homeowner to sell property at appraised Fair Market Value (FMV)
  - Homeowner to convey Avigation Easement prior to sale of home
- Owner / Occupant does not receive relocation benefits
- Airport maintains and preserves property during the sound insulation process

Easement Acquisition for New Development
- Acquire an avigation easement for new development within the 65, 70 and 75 dB DNL contours

Real Estate Disclosure
- Develop a real estate disclosure policy for land uses within the 65 dB DNL through coordination with the local land use jurisdictions

PART 150 HISTORY

Part 150 History:

2008 BTV's most recent NCP was completed and approved by FAA

2015 (December) FAA accepted the updated NEM and noise contours for 2015 and 2020

2017 NCP update commences

2018/2019 BTV anticipates a NEM update following the change in aircraft operations (including, but not limited to, F-35s)

Estimated Residential Population within 2018 and 2023 NEM Contours

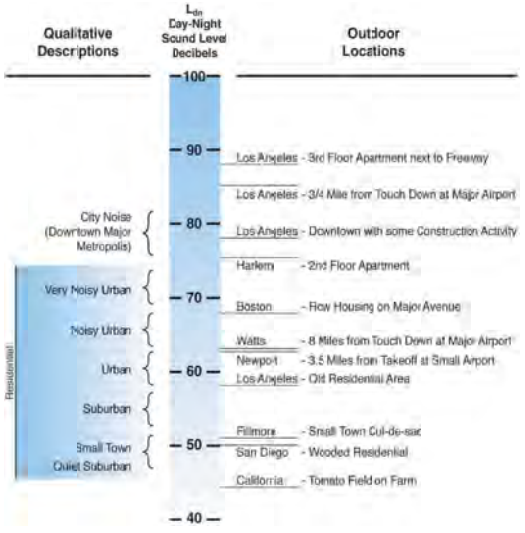
BURLINGTON INTERNATIONAL AIRPORT

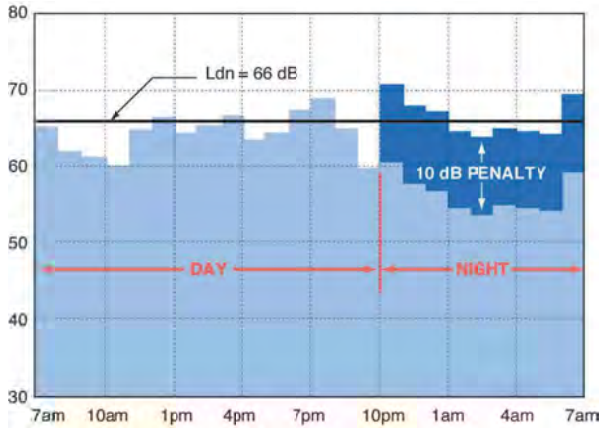
SOUND TERMINOLOGY

- A-weighted decibel (dBA)
  - Reflects the manner humans hear different pitches of sound
  - All federal agencies have adopted dBA for environmental studies
- dBA can be used for different units of measure, like maximum and average
- Day–Night Average Sound Level (DNL or Ldn)
  - Cumulative sound measure
  - Equal to steady level that contains same energy as the actual time-varying sound
  - Increases sounds from 10 p.m. to 7 a.m. 10-fold
  - Used by all federal agencies that deal with aviation noise

BURLINGTON INTERNATIONAL AIRPORT

SOUND TERMINOLOGY



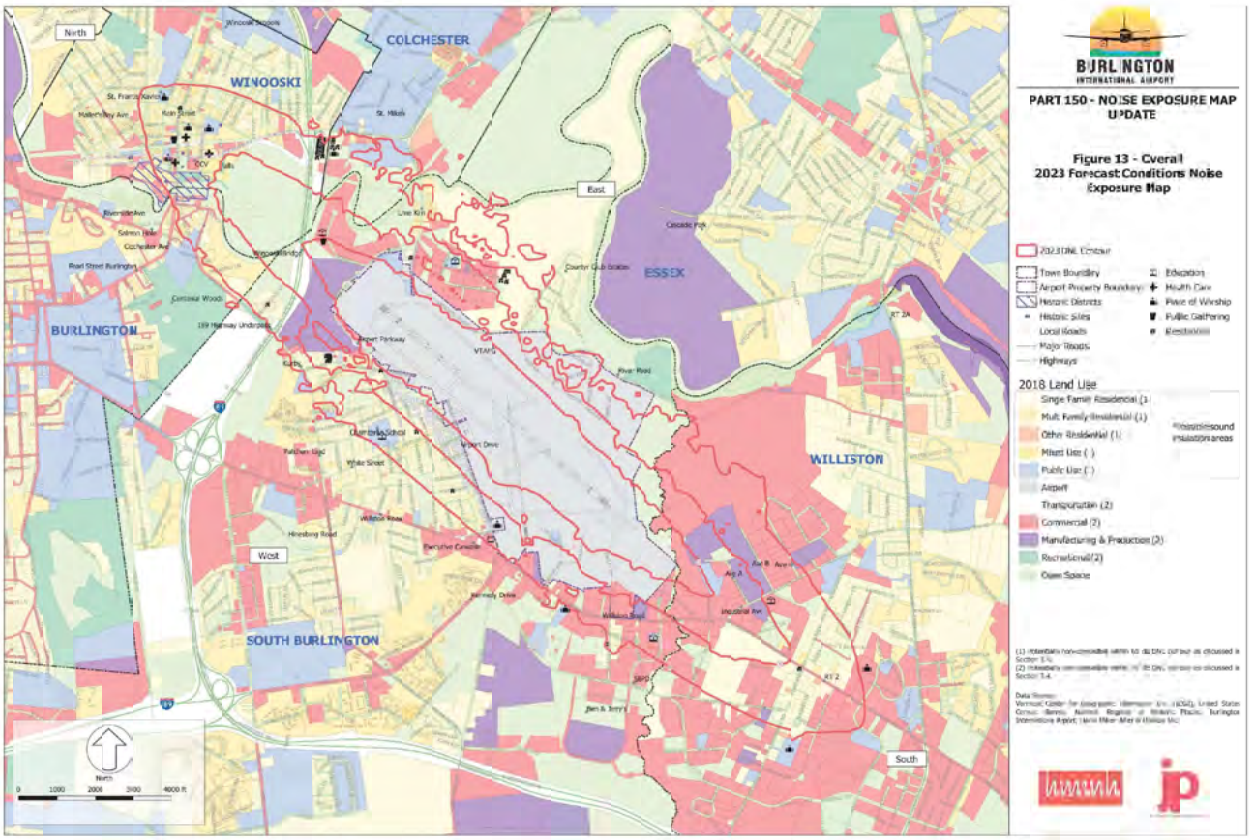


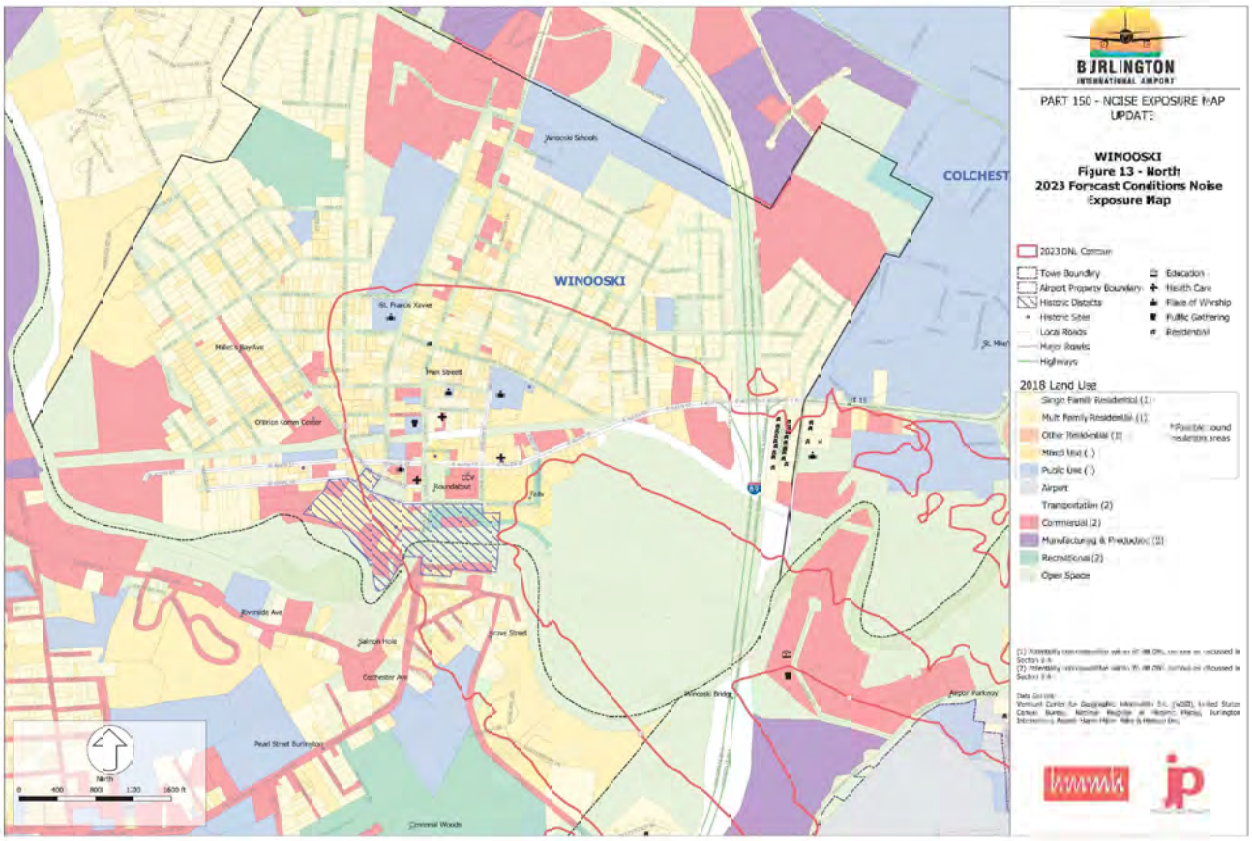
Land Use Compatibility

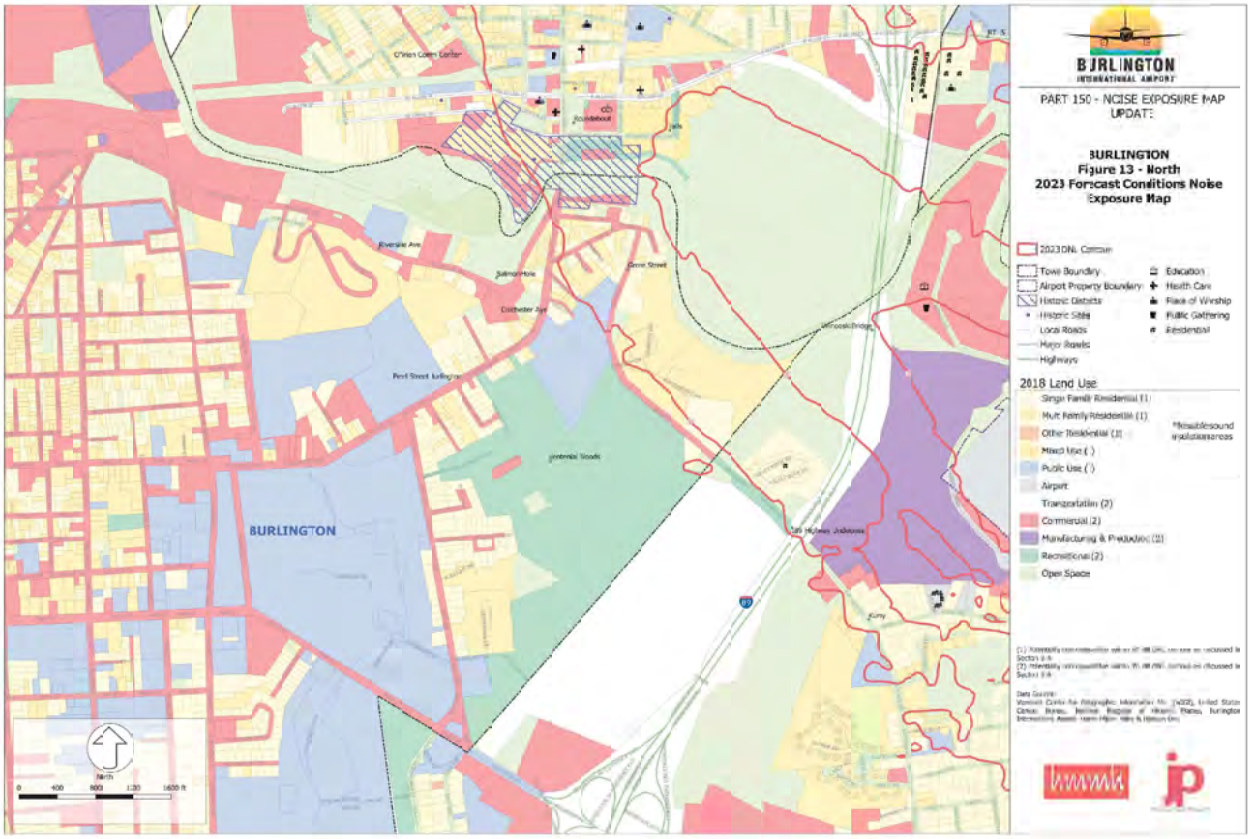
- 14 CFR Part 150 provides guidelines (Appendix A, Table 1) for compatibility based on categories of land use:
  - Residential Use
  - Public Use
  - Commercial Use
  - Manufacturing and Production
  - Recreational
- Note: All land uses are considered compatible by Part 150 if exposed to an annual-average Day-Night Average Sound Level (DNL) of less than 65 dB
- Complete table reproduced in Chapter 1; excerpts follow

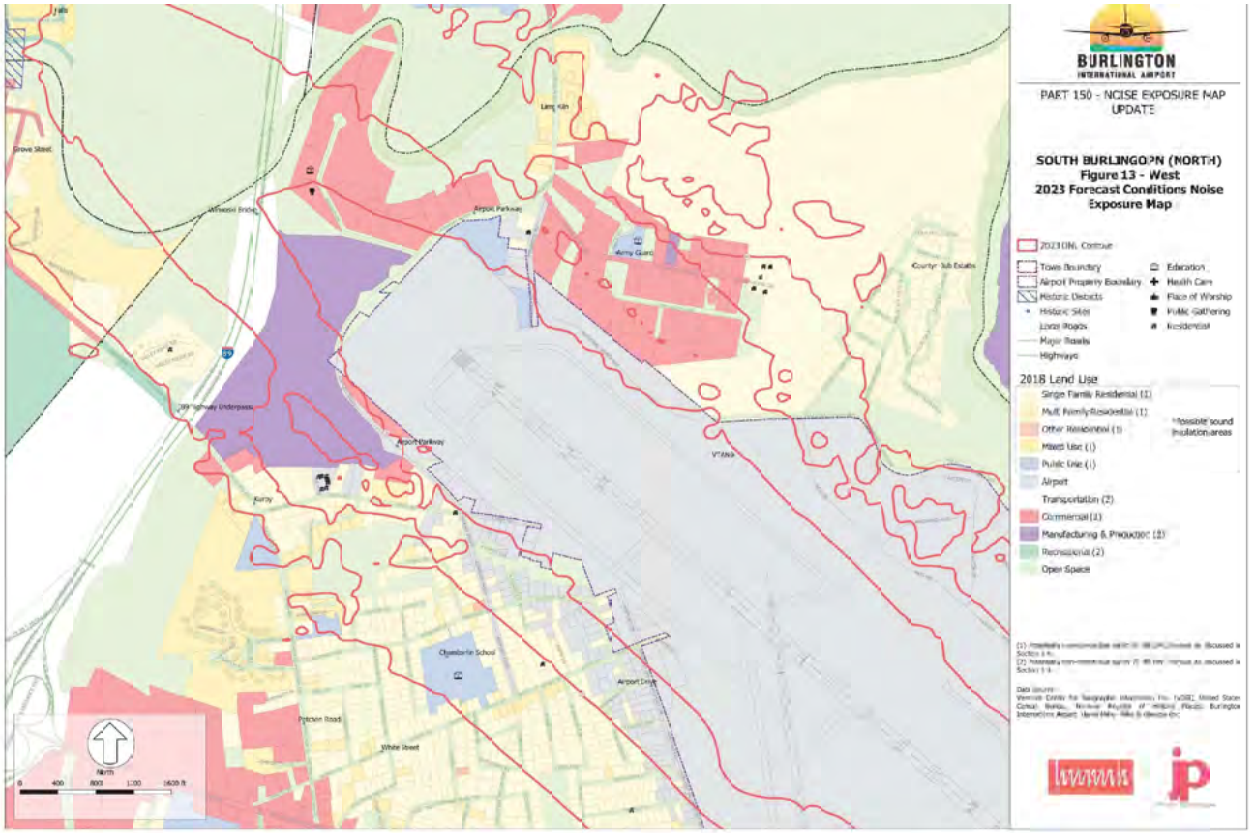
Land Use Compatibility

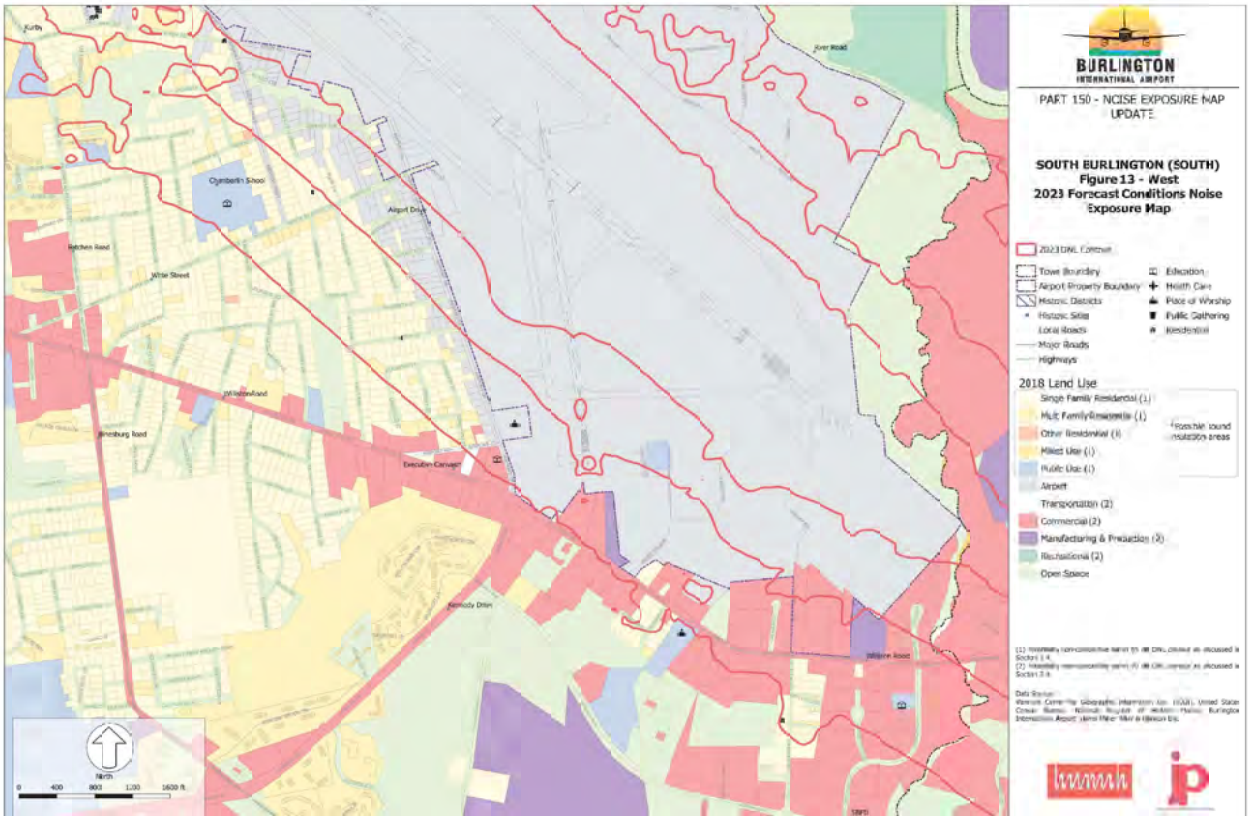
- 14 CFR Part 150 provides guidelines (Appendix A, Table 1) for compatibility based on categories of land use:
  - Residential Use
  - Public Use
  - Commercial Use
  - Manufacturing and Production
  - Recreational
- Note: All land uses are considered compatible by Part 150 if exposed to an annual-average Day-Night Average Sound Level (DNL) of less than 65 dB

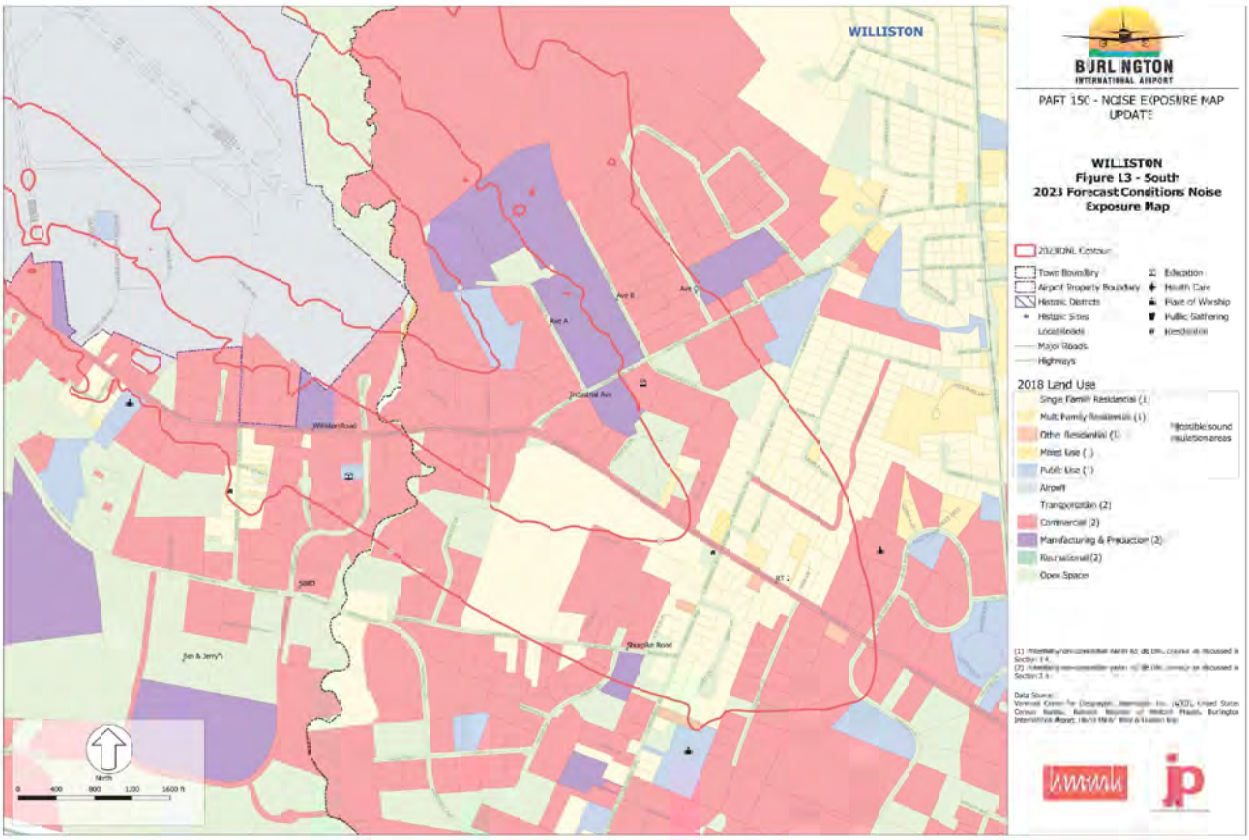

North
COLCHESTER
WINOOSKI
East
ESSEX
BURLINGTON
WILLISTON
West
SOUTH BURLINGTON
South
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
Figure 13 - Overall
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use ( )
Public Use ( )
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Residential sound insulation areas

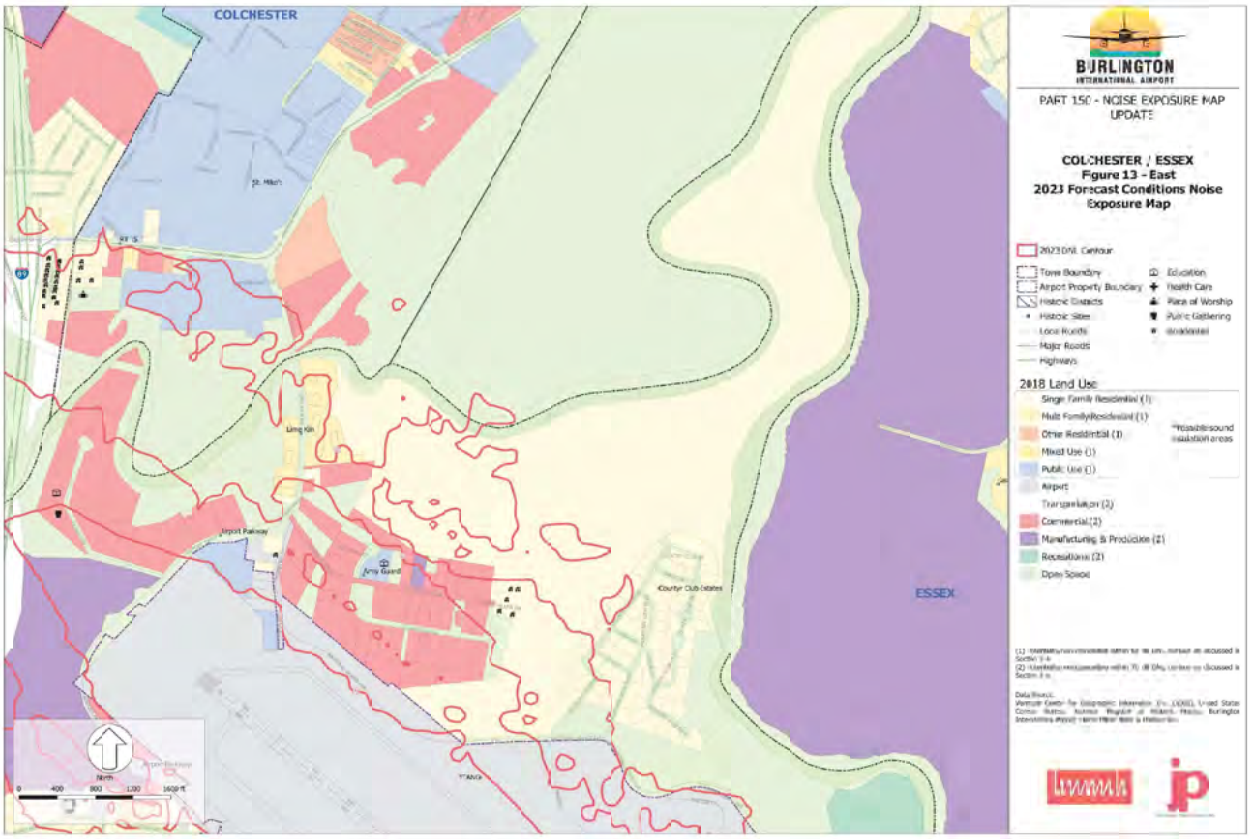

COLCHEST
WINOOSKI
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
WINOOSKI
Figure 13 - North
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use ( )
Public Use ( )
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Residential sound insulation areas

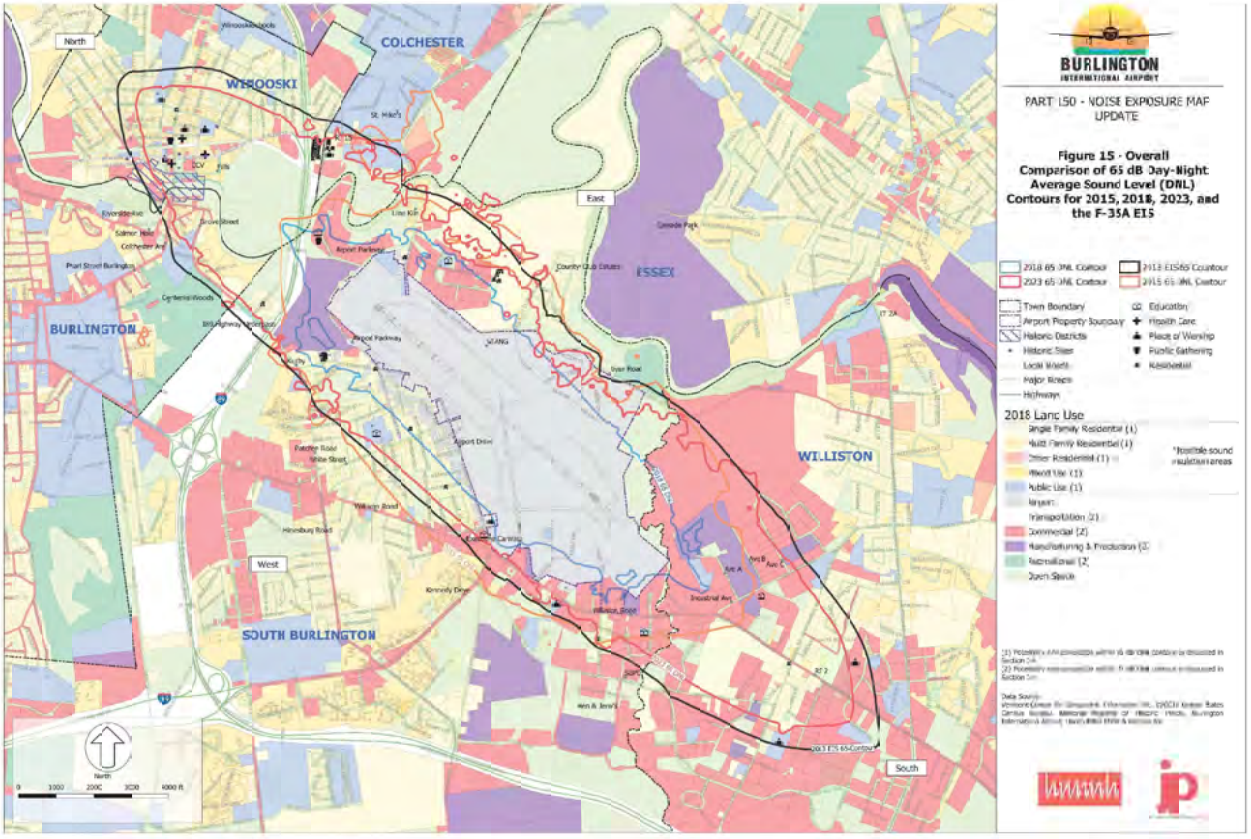

BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
BURLINGTON
Figure 13 - North
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use ( )
Public Use ( )
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
BURLINGTON

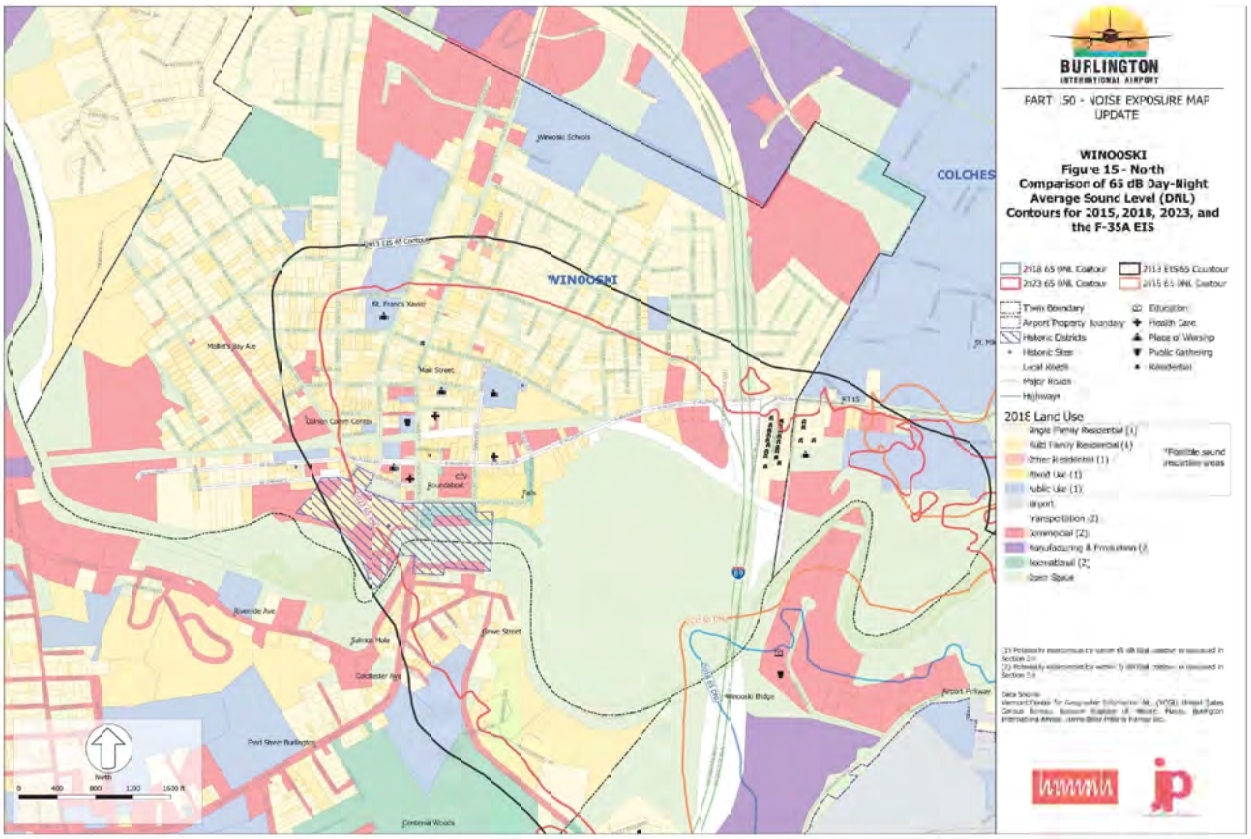

BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
SOUTH BURLINGTON (NORTH)
Figure 13 - West
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use ( )
Public Use ( )
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas

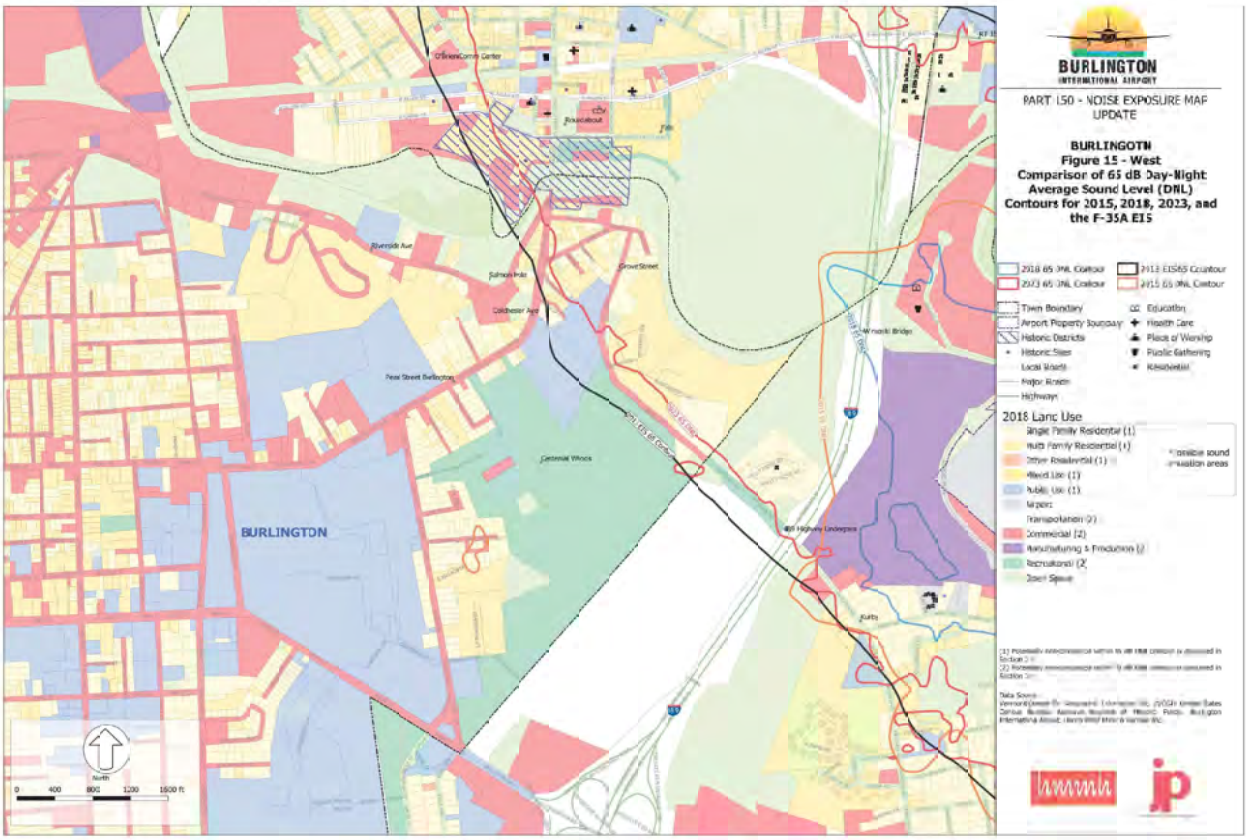

BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
SOUTH BURLINGTON (SOUTH)
Figure 13 - West
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
North
0 400 800 1,200 1600 ft

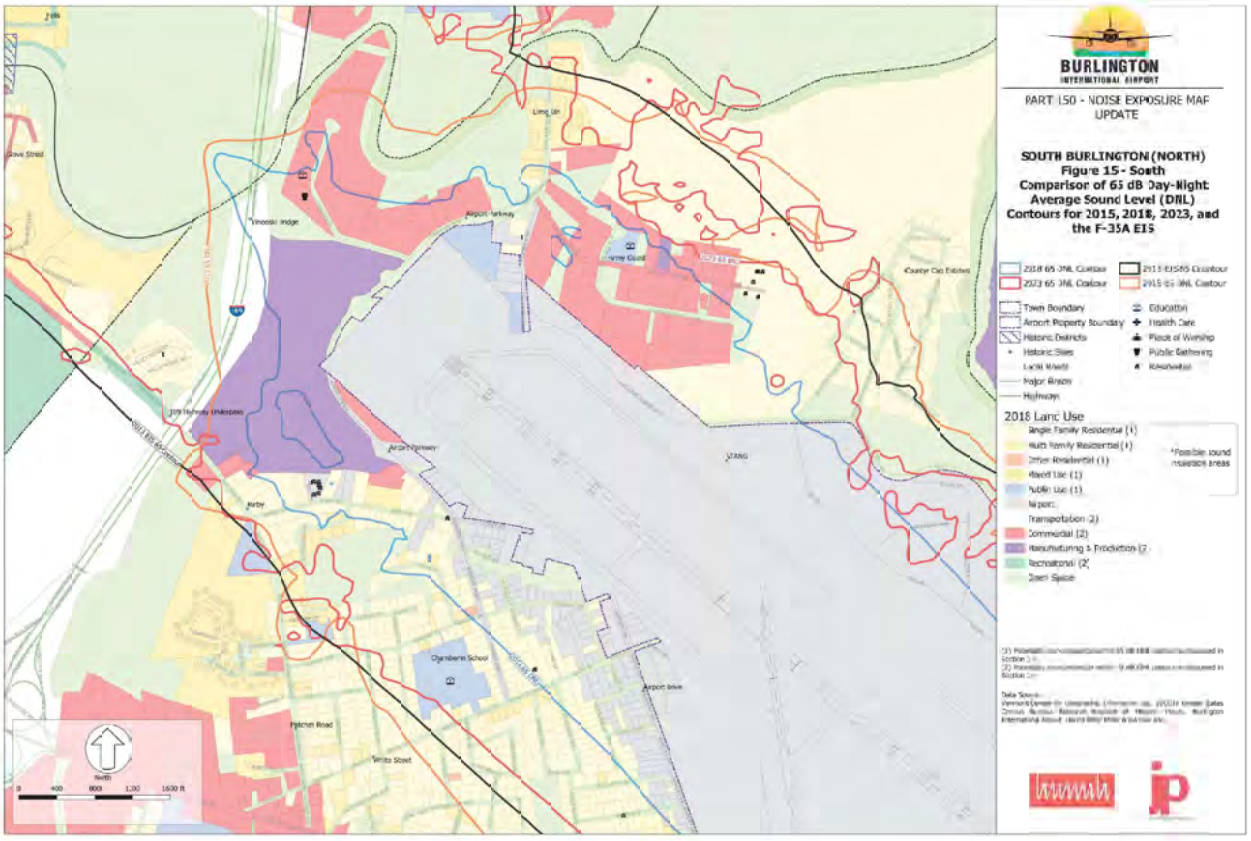

WILLISTON
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
WILLISTON
Figure 13 - South
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
North
0 400 800 1,200 1600 ft

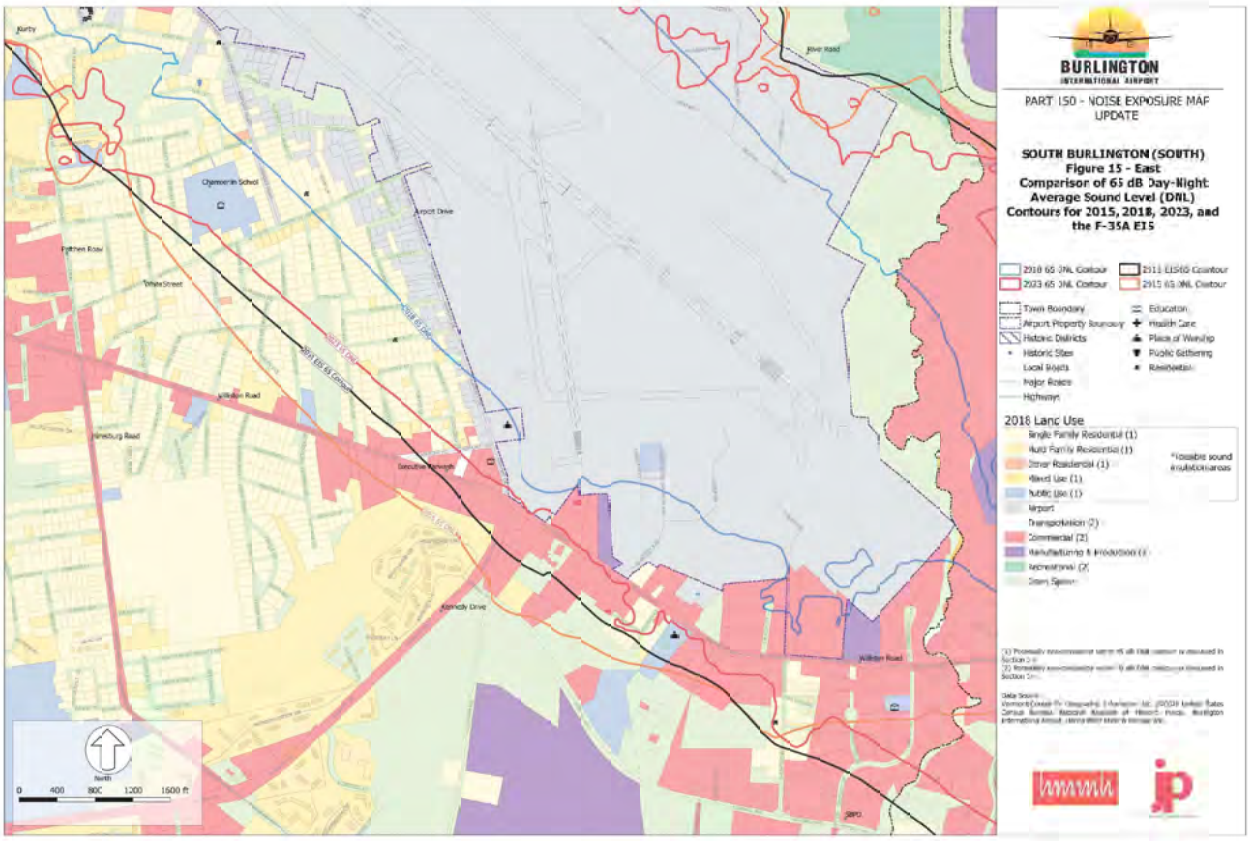

COLCHESTER
ESSEX
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
COLCHESTER / ESSEX
Figure 13 - East
2023 Forecast Conditions Noise Exposure Map
2023 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi FamilyResidential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
North
0 400 800 1200 1600 ft

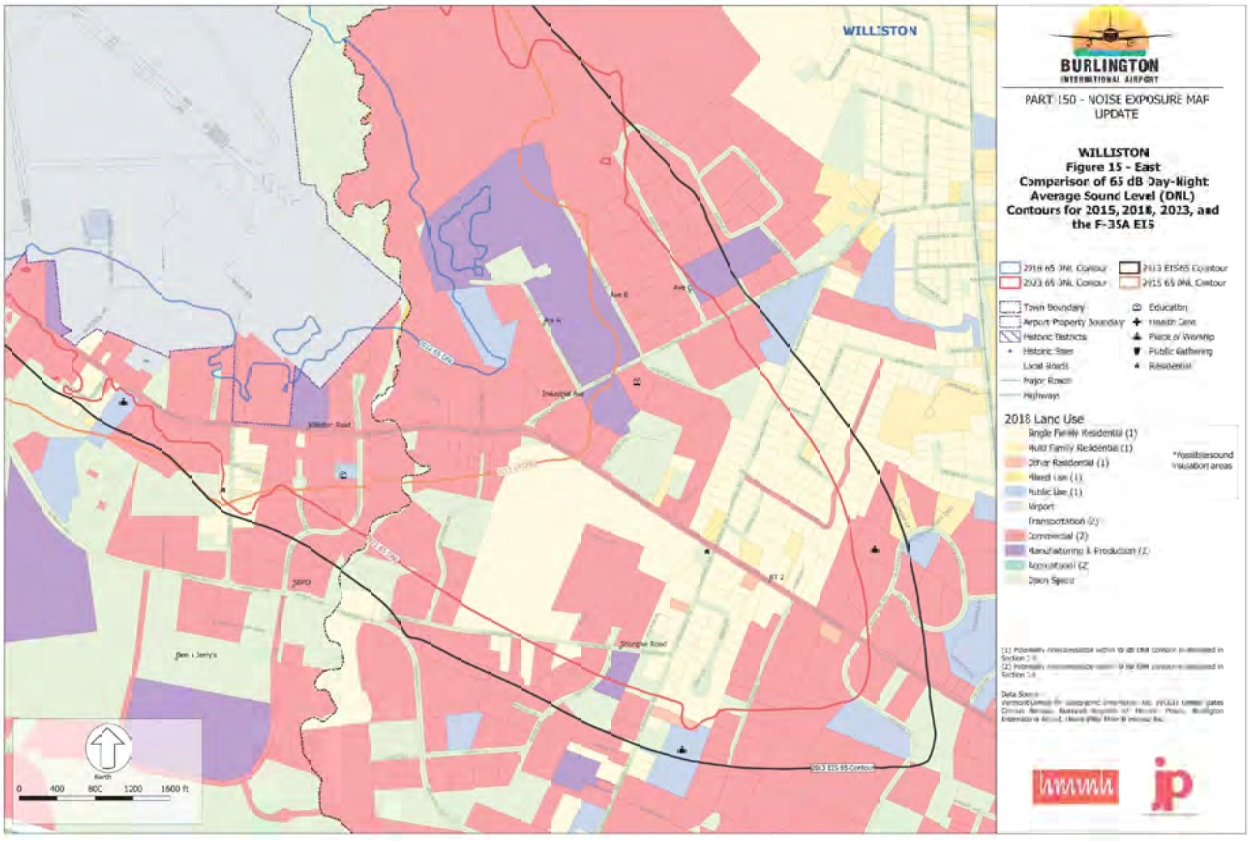

North
COLCHESTER
WINOOSKI
BURLINGTON
ESSEX
WILLISTON
SOUTH BURLINGTON
East
West
South
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
Figure 15 - Overall Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 65 DNL Contour
2023 65 DNL Contour
2018 EIS/65 Contour
2015 65 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
*Possible sound insulation areas
North
0 1000 2000 3000 4000 ft

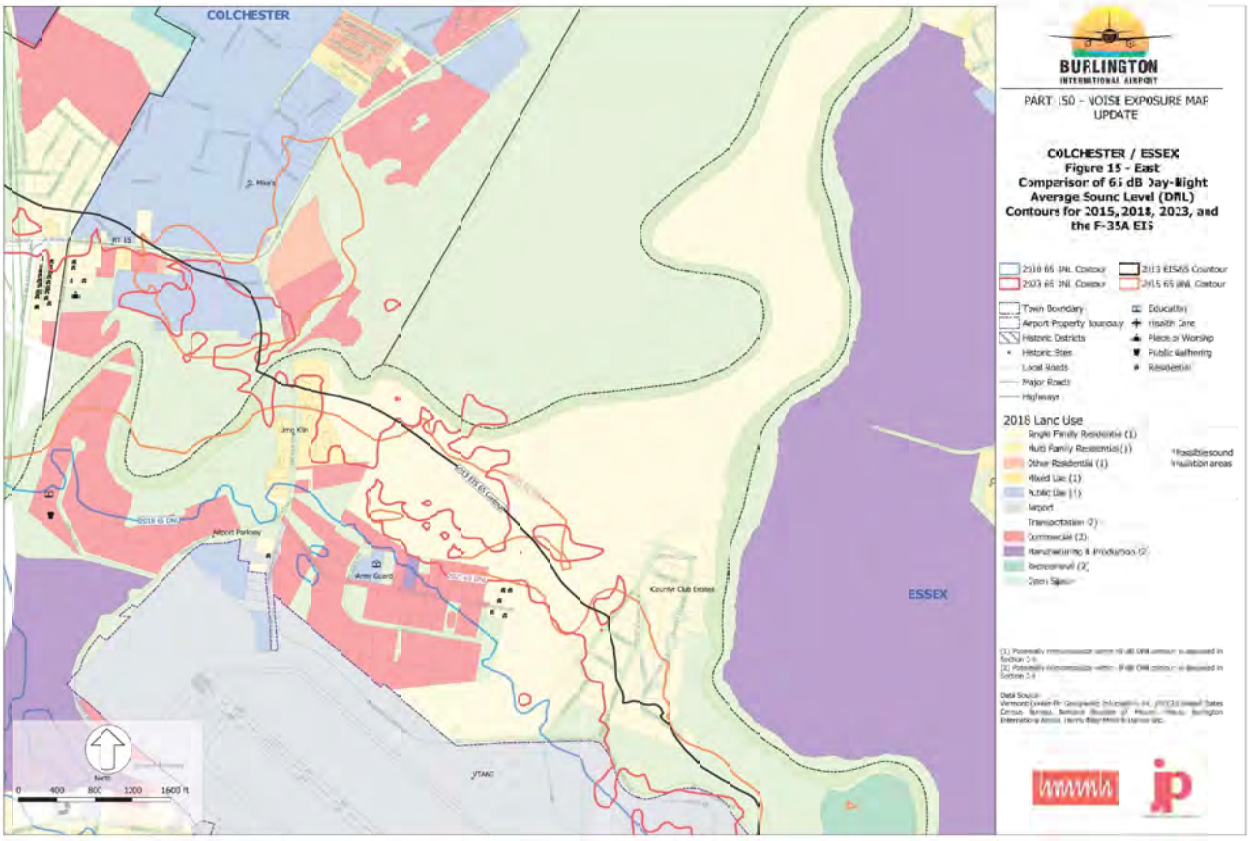

BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
WINOOSKI
Figure 15 - North
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 65 DNL Contour
2023 65 DNL Contour
2013 EIS/65 Contour
2015 65 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
WINOOSKI
COLCHES
Main Street
Riverside Ave
Salmon Hole
Colchester Ave
Pearl Street Burlington
Centennial Woods
Winooski Bridge
Airport Parkway
Grove Street
Roundabout
Park
North
0
400
800
1200
1600 ft


BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
BURLINGOTN
Figure 15 - West
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 65 DNL Contour
2023 65 DNL Contour
2013 EIS/65 Contour
2015 65 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*possible sound insulation areas
BURLINGTON
Riverside Ave
Salmon Hole
Colchester Ave
Grove Street
Pearl Street Burlington
Centennial Woods
Winooski Bridge
North
0
400
800
1200
1600 ft


BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
SOUTH BURLINGTON (NORTH)
Figure 15 - South
Comparisor of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 Land Use
Airport Drive
Airport Parkway
Pitchin Road
Chamberlin School
North
0 400 800 1200 1600 ft


BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
SOUTH BURLINGTON (SOUTH)
Figure 15 - East
Comparisor of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 Land Use
Airport Drive
Chamberlin School
Pitchin Row
Tilley Street
Kirby
Kennedy Drive
Williston Road
North
0 400 800 1200 1600 ft


WILLISTON
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
WILLISTON
Figure 15 - East
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 65 DNL Contour
2023 65 DNL Contour
2013 EIS65 Contour
2015 65 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
Data Source:
0 400 800 1200 1600 ft


COLCHESTER
ESSEX
BURLINGTON
INTERNATIONAL AIRPORT
PART 150 - NOISE EXPOSURE MAP UPDATE
COLCHESTER / ESSEX
Figure 15 - East
Comparison of 65 dB Day-Night Average Sound Level (DNL) Contours for 2015, 2018, 2023, and the F-35A EIS
2018 65 DNL Contour
2023 65 DNL Contour
2013 EIS65 Contour
2015 65 DNL Contour
Town Boundary
Airport Property Boundary
Historic Districts
Historic Sites
Local Roads
Major Roads
Highways
Education
Health Care
Place of Worship
Public Gathering
Residential
2018 Land Use
Single Family Residential (1)
Multi Family Residential (1)
Other Residential (1)
Mixed Use (1)
Public Use (1)
Airport
Transportation (2)
Commercial (2)
Manufacturing & Production (2)
Recreational (2)
Open Space
*Possible sound insulation areas
Data Source:
0 400 800 1200 1600 ft

Appendix D - Comments Received

Google Groups 1

This is my comment

susan abbassian <sabbassian@yahoo.com> May 29, 2019 3:25 PM
Posted in group: **BTVsound**

Sir/Madam,

I'm a long time resident of Winooski but not a homeowner.

I heard the F-35 go over the house today. It was pretty ungodly.

There is nothing I can do to stop the planes now but here is

a thought from me to all who hears or reads this and I consider

this to be a valuable comment to the community.

"This is fault of the voters who keep Sanders& Leahy & Welch in office

in Washington. The matter of these planes was settled long ago

and without much of a fuss and frankly imho behind the backs

of the people of Vermont namely, Winooski and Burlington.

It can't be changed now & who knows how Sanders & Leahy

& Welch benefitted, financially or otherwise? what did these two reap

from screwing their constituents?

If you voted for Sander & Leahy & Welch it's your own damn

fault. You don't have honest people (the above named) working

for YOU. It's all self-interest on their part and is product of a

progressive agenda .

Like I said, if you voted for any of these clowns it's your own

fault."

I sure hope someone reads this outloud at a airport meeting-

I would certainly go to the airport but have no transport.

I will be attending the meeting at the O'Brien Center

this coming Friday.

Signed,

Susan Abbassian
43 west allen st
Winooski VT

2

Diane Carter <dcarter@jonespayne.com>

[BTVsound] F35s and noise

1 message

'Marguerite Adelman' via BTVsound <btvsound@jonespayne.com> Mon, May 27, 2019 at 9:24 PM
Reply-To: Marguerite Adelman <madel51353@aol.com>
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>

As a 66 year-old Winooski resident who has been partially deaf from birth (and qualify as a disabled person), I would like to express my outrage that the F35s will be based at the Burlington International Airport. The F35s are four times louder than the F16s…which already make it difficult for me to hear whether I am inside or outside. The FAA says that sound insulation won't work anyways. And I need to open windows in the summer as I do not own air conditioning. I do not need to risk more hearing loss, and I feel sad for the children living in our area who will suffer from impaired learning because they won't hear all that they need to in their classrooms.

For the life of me, I can't understand why we would base F35s in such a highly populated area, risking both health and environmental impacts on such a huge number of individuals who will be in the 65 decibel sound level or higher. All of these homes will be unsuitable for residential use; inhabitants hearing will be permanently damaged; and homes will be harder to sell, lowering property levels.

I urge that the F35s not be located at the Airport for all of the above reasons.

Sincerely,

Marguerite Adelman

100 West Canal Street, Unit 4

Winooski, VT 05404

518-561-3939

Sent from Mail for Windows 10

3

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F35 -- I object"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, Jun 21, 2019 at 6:30 AM
To: btvsound@jonespayne.com

From: Bridget Ahrens <bridge_vt@yahoo.com>
Subject: F35 -- I object

Message Body:
I love my community. I'm also a health professional, and I know about the health impact of sound -- not just on hearing, but on blood pressure, ER visits, ands stress in general. I am concerned about the effect of the sound on the homes here in the flight path -- like mine -- with lathe and plaster construction. I object that someone has decided my home, my health, and my community can being traded in for someone else's profit. I will continue to do everything I can to resist and object to this project. And I challenge any health care provider who might read this to consider: if we are allowing this unnatural experiment on our people, shouldn't someone be doing a prospective study of the impact on our health? Based on the med lit I've read, we can certainly expect a rise in medical costs -- which will hurt all of us.

--
This e-mail was sent from a contact form on Burlington International Airport Sound Mitigation Program (http://www.btvsound.com)

--
You received this message because you are subscribed to the Google Groups "BTVsound" group.
To unsubscribe from this group and stop receiving emails from it, send an email to btvsound+unsubscribe@jonespayne.com.
To view this discussion on the web visit https://groups.google.com/a/jonespayne.com/d/msgid/btvsound/cb3df8ccfb8bb0fa3e094854db6a814c%40wordpress.jonespayne.com.

4

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Comments for FAÀ

mmmvt1 via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 11:25 PM
Reply-To: mmmvt1@aol.com
To: btvsound@jonespayne.com

Please find my comments and questions for the FAA regarding the Burlington International Airport's Noise Exposure Maps that were released in May, 2019. I look forward to receiving a response, thank you.

Eileen Andreoli
St. Albans, VT

1. The numbers of dwelling units and the number of individuals in the 65 dB DNL* from the Airport report do not match what the Air Force reported in their 2013 Environmental Impact Statement (EIS). In that official government document prepared by the Air Force-the entity that flies the plane and should best know its noise volume-they reported that 2,963 dwelling units, and 6,663 people would be in the F-35 65dB DNL noise zone.

So... how did the airport lose those 323 dwelling units and 538 people?

The Air Force data was based on 2010 census data. Since that time, some things have changed. Although hundreds of homes were destroyed in South Burlington because of the F-16 noise; there were perhaps hundreds more dwelling units built since that time in Winooski and Burlington which are in the 65 dB DNL. So, now, almost ten years later - since there was no moratorium on building residential units in the F-35 noise zone -- the 2020 census data will likely show that the numbers the Air Force reported in 2012 are lower than today's reality. Moreover, the Air Force was reporting on the noise from ONLY the F-35 and they did not factor in the noise from commercial aircraft, which the airport did.

Why is it that the Airport's numbers do not match the Air Force numbers?

2. The BTV Noise Map Report says the latest NOISEMAP noise modeling was used, as has been used at Westfield, Westover & BTV.
But none of these locations have F18's, F22's or F35's. Since the F35 and F22 employ engine thrust vectoring, I understand they can't be modeled using simple linear theories that NOISEMAP uses. Was AEDT 2b and AAM-Advanced Acoustic Noise Modeling used to capture the noise of these powerful engines for the "new" NEM's?

3. After the F35s arrive, when can I file a lawsuit to show impact on property values and health?

4. What data do you need for us to show impact on our property values and children's health?

5. Please confirm to whom the lawsuits should be filed against? We assume the City of Burlington, but is it also the Burlington International Airport and/or the FAA?

6. Why would municipalities have to pay a 10% match to grants for homeowners, as reported in local news? Why should our cities be forced to pay for having their resident's homes modified because of the damage that the F35s will cause?

7. How can someone of limited means escape the noise?

8. How do we protect our children from the harmful effects of the noise?

9. How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?

10. Can you provide us the latest scientific findings on the damaging effect of noise?

11. Does the noise map use the noise levels of the F-35's using military power or the noise from after-burner power?

10. What is the decibel level of the F-35s taking off using after-burners?

11. In creating these noise maps, the F-35 noise input was merged with other airport noise, and the 228 days of F-35 activity was spread over 365 days. This statistical method diminishes the F-35 noise impact by ⅓ or more, falsely making the F-35 noise impact appear to be less (and the greater than 65dB noise zone map area smaller) than it is when people are actually experiencing the singular events, 228 days of the year, at decibel levels that are much greater than the average airport noise. Will you provide us with a map that shows the impact of the F-35 singular events?

12. If the Air Force basing of F-35s here reduces the value of my home due to noise, whether I'm officially in the >65 dB zone or not, will I be compensated? By whom?

13. Will people who live in the noise zone be medically monitored for adverse effects, for example, hearing loss, stress/anxiety, insomnia?

14. People who work, go to school, or otherwise frequent the noise zone could also suffer noise-related health problems. Will they be compensated in any way? Noise cancelling headphones? Warning signs? Waivers that they frequent the area at their own risk?

15. If children suffer hearing loss due to aircraft noise, whether they live in the >65 dB zone or not, will the Air Force or the City of Burlington pay their medical bills?

16. If fire or a crash on the ground or the runway cripples an F-35 and the airport has to shut down for an extended period of time, how will this impact Chittenden County's economy?

17. When whole neighborhoods such as the Italian section of downtown Burlington were demolished, residents suffered traumatic stress disorder from the loss of community ties. Will the Air Force or the City of Burlington pay for therapy that may be necessary due to the demolition of the Chamberlin neighborhood?

18. If students in the Chamberlin School can't play outdoors due to aircraft noise, will the Air Force pay to build a new primary school outside the >65dB zone?

19. If an F-35 crashes, as two have already, will the Air Force fully compensate property owners who lose structures or the use of their land, for example due to infrastructure interruption or environmental damage?

20. If an F-35 crashes, as two have already, how will the Air Force compensate families for the loss of life of family members, livestock, pets?

21. Military waste incinerated in so-called burn pits have caused cancer and other diseases to soldiers down wind. With 40% of the F-35 composed of chemical compounds that are carcinogenic when burned, what will happen to residents living downwind from a fiery crash? Are first responders and residents forewarned of risks, and how to protect themselves? Is there an evacuation plan that people are aware of?

21. With sound mitigation funds only able to pay for 50 houses per year yet 3000 homes are expected to be in the >.65dB noise zone and eligible, is there a guarantee that all the eligible homes will get new doors and windows? How long must people wait? What if the homeowner can't afford the co-pay?

22. If the Chamberlin School is not closed and relocated out of the greater than .65dB zone, how can teachers sustain a learning environment with the many intervals of shattering noise as the F-35 takes off?

23. If my child experiences cognitive impairment due to noise bursts or accumulating noise events, will the Air Force or the City of Burlington pay for tutors and other special education needs?

24. If housing values fall due to noise exposure from military aircraft and the City of South Burlington loses property tax revenue, will the Air Force or the City of Burlington make South Burlington taxpayers whole?

25. If my family can no longer use my yard for barbecues, gardening, or relaxation due to the noise of military aircraft, will the Air Force or the City of Burlington compensate me for this loss to the quality of my life?

26. My mother suffers from hypertension. Her high blood pressure is aggravated by sudden and repeated noise events. Will the Air Force or the City of Burlington pay for any treatment she might require due to the noise of military aircraft?

27. Vermont's tourism economy depends on natural landscapes enjoyed in peace and quiet. What will be the effect on the tourist economy of 18 F-35s taking off multiple times each day?

28. The gap between wages and the cost of housing has already led to more than 300 homeless in Chittenden County. With 200 affordable homes already lost and 3000 facing a declaration that they are no longer "suitable for residential use," how will this affect rents, housing costs, and homelessness?

29. Winooski in particular is the home of many immigrant Americans, often refugees from war-torn regions such as Syria, Iraq, Lybia, Sudan, and the Balkans. How will exposure to the daily high-decibel sound of military aircraft affect people who may already have been traumatized by war?

30. The new report omits any mention of hearing damage, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

31. The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

32. The report only includes average noise levels. It describes other measures of noise but does not tell readers what any of them are even though the Air Force says the F-35 is more than 4 times louder than the F-16 and that the F-35 will use its afterburner 5% of the time. What is the loudest

peak sound level of the F-35 on a public street in South Burlington when the F-35 uses its afterburner for takeoff? In Winooski?

33. The US Air Force said that a single exposure to a 130 dB sound can cause "immediate and permanent hearing damage." Your report fails to mention the peak afterburner sound level of the F-16 or the F-35. What are those levels? What is the peak sound level of the F-35 taking off with its afterburner on streets in South Burlington and Winooski? For passengers enplaning or deplaning?

34. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: cancel the F-35.

35. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property? The Air Force says the F-35 will take off with afterburner 5% of the time. What is the peak sound level passengers will be exposed to as they walk between car and terminal or between terminal and airplane when the F-35 takes off with its afterburner blasting?

36. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB when the F-35 reached 1000 feet elevation. What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

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5

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Public Comment on Noise Exposure Map"

BTVsound Website <cmurphy@jonespayne.com> Mon, Jun 24, 2019 at 9:23 PM
To: btvsound@jonespayne.com

From: Diana Arnell <dianavarnell@gmail.com>
Subject: Public Comment on Noise Exposure Map

Message Body:
Please add this open letter to Senator Bernie Sanders from residents of Winooski, Vermont to the record:

Dear Senator Sanders,

We, the undersigned families and individuals, live in Winooski and many of us have at least one young child in our homes. We are writing to urge you to reconsider your support for basing the F-35s at the Burlington International Airport.

THIS IS A SOCIAL JUSTICE ISSUE.

You have dedicated your career to social justice issues and assert that you represent the common person, rather than the wealthy elite. Your website states that your presidential aspiration is to “achieve economic, racial, social and environmental justice for all” (emphasis in original). Please demonstrate your commitment to that goal.

You advocated for the F-35 jets to be based at the Burlington International Airport and they are on target to arrive this fall. With the slated arrival of the F-35s came a new Noise Exposure Map that was publicly released at the end of May that incorporates the anticipated increase in noise due to the F-35 jets. According to the recently released map, the total number of dwelling units exposed to average noise levels of more than 65 decibels will rise from 819 in 2015 to an estimated 2,640 in 2023, with the total population affected rising from 1,900 in 2015 to 6,125 in 2023. The federal government considers areas with an average noise of more than 65 decibels “unsuitable for residential use.” Half of the homes in Winooski will be in the noise zone of more than 65 decibels.

At community meetings, not one person from the airport, consulting firms, or Air National Guard could fully answer the question troubling each parent: how will this jet noise impact my family? We desperately want to know the long-term effects of repeatedly exposing our children to jet noise and the environmental consequences of these jets. Like most Vermonters, we love to be outside and enjoy our beautiful State, but can we even sit on our porches or visit the playground during takeoff? Should we bring ear protection to the park? Should the children of Winooski wear headphones during soccer practice if the F-35s are flying above the field, or stop games to put their hands over their ears? All parents, regardless of class or race, want a safe and healthy place to raise our children, and we trusted our elected members of Congress to represent the best interests of our families. You, Senator Leahy, and Congressman Welch have failed to do that.

By all accounts, it will be years before homeowners in Winooski have access to noise mitigation funds, and the F-35s will begin arriving this fall. Noise mitigation efforts do nothing for outdoor spaces in Winooski. It is also unclear at this point whether the homeowners who access the funds will be forced to sign an avigation easement, giving away an important property right.

Winooski is a special place, home to approximately 7,267 people with unique demographics seen nowhere else in the State: Winooski is the most racially and ethnically diverse community in Vermont. We are the only minority-majority school district; there are more than 300 English language learners in the schools and approximately twenty different languages spoken in Winooski homes. Twenty-six percent of Winooski’s households are below the poverty line. The city’s median household income remains below those of Chittenden County and Vermont. We are the most densely populated city in the State and continue to grow and construct new properties. Our population is significantly younger than the rest of Vermont. Winooski’s downtown has undergone a successful revitalization process and we invite you to enjoy one of our many delicious restaurants.

So now our community faces a dilemma. The neighbors who have the financial ability to leave may choose to do so. Some people may choose to wait years for the noise mitigation funds to update their homes, continuing to put themselves and their children at unknown risk. Those who decide not to participate in the federal noise mitigation program may suffer

substantial financial losses in home values and out-of-pocket expenses to mitigate the noise themselves.

Though you often dodge questions related to the F-35s, your few public responses primarily rationalize the basing decision on economic and jobs grounds. Please explain to us, the people who will soon live in homes considered "unsuitable for residential use," why our children's health and safety, why our home values, why our community, matter less than an undefined number of military jobs. You could have used your political power to secure a mission for the National Guard that would be appropriate for a densely populated residential area, but instead chose to advocate for the basing of a new and loud military aircraft in our community, ignoring the concerns of the most affected families.

The residents and city councils in Winooski, South Burlington, and Burlington have voted and passed resolutions voicing our opposition to the basing of F-35s in our community. You claim to be a voice for the people, but are you listening to us? Or can you not hear us over the jet noise?

Signed,

Diana and Bobby Arnell
Abby and Sean Bleything
Vada Adam
Marguerite Adelman and Robert Ackland
John Ames
Arica Bronz
Kate Cappleman Sinz
Martha and Addie Chadwick
Michael Connolly and family
George Cross
Lucy D'Aponte
Gayle DiMasi
James Ehlers
Matthew Ennis
Hillary and Rene Gombar
Sheryl Graves
Nicholas Gray and Fiona Griffin
Leigh Hamilton
Bruce Jones
Katherine Kirby
Caleb Mariott
Martha McKenna
Anis Memon and Teresa Moschin
Cara Montague
Abby Olmstead
Scott Olmstead
Walter Otten
Johanna Sheehey-Jones
Robin Sherman
Kate Simone
Sharon Snow
Curt Weeber

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6

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "NEM suggestions"

BTVsound Website <cmurphy@jonespayne.com> Mon, Jun 24, 2019 at 9:25 PM
To: btvsound@jonespayne.com

From: Diana Arnell <dianavarnell@gmail.com>
Subject: NEM suggestions

Message Body:
This is the list of suggestions that I sent to the Winooski City Council:

1. Obtain voting membership on the airport council.
2. Formally request a public meeting with our federal members of Congress.
3. Demand that the F-35 arrival dates be delayed until after the noise mitigation process.
4. Prioritize noise mitigation funds for homes with young children.
5. Refuse avigation easements.
6. Require the federal government fund and conduct a study regarding long term developmental impacts of jet noise (including, but not limited to, free hearing tests).
7. Define “fair market value” for reimbursement purposes to consider current home values (prior to the arrival of the F-35).

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7

Diane Carter <dcarter@jonespayne.com>

[BTVsound] NEM Comments and Next Steps

1 message

Diana Arnell <dianavarnell@gmail.com> Sat, Jun 1, 2019 at 10:08 PM
To: klott@winooskivt.gov, hcolston@winooskivt.gov, jduncan@winooskivt.gov, alafayette@winooskivt.gov, mmyers@winooskivt.gov, jbaker@winooskivt.gov
Cc: kcolling@btv.aero, btvsound@jonespayne.com, Robert Arnell <rarnell@gmail.com>

Dear Mayor Lott, Councilor Colston, Councilor Duncan, Councilor Lafayette, Councilor Myers, and City Manager Baker,

As a Winooski homeowner with a three-year-old child, I am deeply concerned about the F-35 jets coming to our community. Our home on Hood Street is within the area deemed "unsuitable for residential use" based on the new Noise Exposure Map. I attended both community meetings last week at the airport and in Winooski, and not one person from the airport, consulting firms, or Air National Guard could fully answer the most important question for me: how will this jet noise impact my family? We desperately want to know the effects of repeatedly exposing our young daughter to loud jet noise.

I am by no means a sound expert, and I understand that sound affects people differently, but when I heard the F-35s take off on Friday morning, many of my fears were confirmed. It sounded louder than the F-16s; I had to close the windows and my daughter put her hands over her ears.

I know that many decisions are outside of your jurisdiction, but as the City Council in the municipality most affected by the basing of the F-35s, I strongly encourage you to use your position to:

1. Obtain voting membership on the airport council.
2. Formally request a public meeting with our federal members of Congress.
3. Demand that the F-35 arrival dates be delayed until after the noise mitigation process.
4. Prioritize noise mitigation funds for homes with young children.
5. Refuse any avigation easements.
6. Require the federal government fund and conduct a study regarding long term developmental impacts of jet noise (including, but not limited to, free hearing tests).
7. Define "fair market value" for reimbursement purposes to consider current home values (prior to the arrival of the F-35).

I know how hard the mayor and city manager have worked and advocated for our city on this contentious and complex issue. I appreciate you all taking the time to educate yourselves, attend the meetings, and listen to your constituents. Thank you for your service to our community.

Sincerely,

Diana Arnell
43 Hood St. Winooski
(802) 503-8339
dianavarnell@gmail.com

8

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

as much as we all want to stop these F35's from coming to be our neighbors - living + operating in our front yards.. if we cannot stop them how can we work to prevent them from affecting our lives as well as the children in our community? We know we live in this community w/ its center being an airport, but the airport + government need to do more to reassure and protect ALL of us who will be affected. I don't know the answer - would prefer not to have these planes come to BTV, but if they must - more must be done to protect us.. our children + the surrounding affected communities. So many people are against this - you should be too..

Serena Baker
24 Maryland St
Burl.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

9

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Noise maps

ronbissonn via BTVsound <btvsound@jonespayne.com> Tue, Jun 4, 2019 at 6:53 PM
Reply-To: ronbissonn@aol.com
To: btvsound@jonespayne.com

From what I can see, there really isn't a problem. I've lived in Winooski all my life, in the flight path, and there simply isn't a problem. What little noise there is is for only a few moments at a time. The new noise maps don;t alarm or concern me at all.

Ron Bissonnette
Winooski

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10

Diane Carter <dcarter@jonespayne.com>

[BTVsound] F-35 in BYV

1 message

'jennifer koch' via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 9:06 PM
Reply-To: jennifer koch <jkochframes@yahoo.com>
To: btvsound@jonespayne.com

Hello,
How long after the F-35 arrive can we file a lawsuit for the loss of property values and psychology distress?
Thank you,
Gregg Blasdel

Sent from my iPhone

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11

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "New Map"

BTVsound Website <cmurphy@jonespayne.com> Thu, May 30, 2019 at 10:13 AM
To: btvsound@jonespayne.com

From: Kelly Barrino <kelly.barrino@colchestersd.org>
Subject: New Map

Message Body:
Hi,

I have been reviewing the newest map. I live at 103 Airport Parkway and am in 70 dbl zone. What are my noise compatible program options? I am still unclear as to what options we qualify for. Will the airport buy our home? I know they are no longer removing homes but will they be buying homes?

Whom should I be contacting? Names, numbers, and email addresses would be appreciated.

Thank You

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12

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Re: Questions on Burlington International Airport 14 CFR Part 150 Update BTV_2018_and_2023_DRAFT_NEM_Draft_20190528.pdf

1 message

Bob Battaline <rpbattal@gmail.com> Mon, Jun 3, 2019 at 4:11 PM
To: btvsound@jonespayne.com

Resending my questions again....

On Fri, May 31, 2019, 9:08 PM Bob Battaline <rpbattal@gmail.com> wrote:

> Resending my questions.
>
> On Wed, May 29, 2019, 1:41 PM Bob Battaline <rpbattal@gmail.com> wrote:
>
> > Hello,
> >
> > I have the follwoing questions on the draft report, BTV_2018_and_2023_DRAFT_NEM_Draft_20190528.pdf. I would appreciate if you can reply before the meeting tonight at 5pm.
> >
> > thanks
> > Bob Battaline
>
> 1. On page 1 in the Introduction it states, "FAA provided a Record of Approval (ROA) for the NCP on June 23, 2008.4 The ROA included approval of extending the land acquisition and relocation program to include residences between the 65 dB and 70 dB Day Night Average Sound Level (DNL) contours. Appendix A presents a copy of the 2008 ROA. BTV is currently in the process of updating the NCP with changes to transition away from acquisition to sound insulation."
>   - Why is the airport transitioning away from land acquisition to sound insulation for homes in the 65 to 70db range when the FAA feels that sound levels in this range are dangerous and homes in this range should be removed?
> 2. For homes in the 65 to 70db, how does home sound insulation mitigate the noise when kids and people are outside in their backyards or kids are outside in the Chamberlain schoolyard?
> 3. How are the homeowners in the 65 to 70db range going to be compensated for loss of value due to their now stigmatized property?
> 4. Are the Noise Exposure Maps for 2013, 2015 and 2018 based on actual flight data that had occurred at the airport and not projections?
> 5. Have actual sound measurements ever been taken over the past years around the airport to see how accurate the Noise Exposure Maps are?

13

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Sound mitigation in Winooski"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, May 31, 2019 at 10:34 AM
To: btvsound@jonespayne.com

From: Susan Benoit <ssbenoit2@netzero.com>
Subject: Sound mitigation in Winooski

Message Body:
I live at 144 west spring street in Winooski. It looks like I am in the high decibel zone. This is him every sad news. I am retired and my husband is nearing retirement. Our home is our only asset. If I understand correctly it is now unsaleable Howvcan I be sure I can apply for the federal grant for soundproofing proofing ? We have no savings and fully planned on the house being our children's inheritance. Thank you. Susan Benoit

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14

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F-35"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, Jun 20, 2019 at 6:18 PM
To: btvsound@jonespayne.com

From: Abby Bleything <anmattera@gmail.com>
Subject: F-35

Message Body:
Everything should be done to litigate noise for the affected RESIDENTIAL areas and SCHOOLS. Homes with children and schools should be first priority for noise mitigation funding. Winooski should have a formal role on the Airport Board. As much as possible, jets should take off to the south which is heavily industrial and commercial. F-35s should not be flying until all safety concerns are addressed including faulty equipment and reported high levels of crashing.

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16

Diane Carter <dcarter@jonespayne.com>

[BTVsound] F35

Kirsten GMAVT <kbower@gmavt.net> Fri, Jun 28, 2019 at 11:59 PM
To: btvsound@jonespayne.com

How will the planes impact Richmond which is in the line of flight and has houses at higher elevation?

Kirsten Bower
richmond, vt

Sent from my iPad

15

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F-35s"

BTVsound Website <cmurphy@jonespayne.com> Fri, Jun 21, 2019 at 10:54 AM
To: btvsound@jonespayne.com

From: Sean Bleything <sean.bleything@gmail.com>
Subject: F-35s

Message Body:
Noise mitigation funds should be prioritized for Winooski, who is most heavily affected and funds should be made available as soon as possible. Asking homeowners to wait up to 20 years for mitigation funds is unacceptable. Households with children should be prioritized as they are the most susceptible to the health impacts of the noise pollution. What is being done to mitigate the air pollution? Why are these planes not taking off to the South which has far less residential homes in the affected areas?

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17

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F-35"

BTVsound Website <cmurphy@jonespayne.com> Fri, Jun 21, 2019 at 4:09 PM
To: btvsound@jonespayne.com

From: Meg Bronz <megbronz@gmail.com>
Subject: F-35

Message Body:
I strongly consider you to stop the F35's from being based here in Burlington, VT. I am a winooski resident and have lived here for 15 years. I have raised my family here and love my community. The F35's were never meant to be here, and I worry about their safety. I have many concerns over the sound levels. I have children and while I am fortunate enough to own my home and have an option to sell it and leave. I do not want to. I also do not believe it is fair for all of the families and children who are not as lucky as myself. It feels like environmental racism. Going over one of the poorest towns/city's in Vermont. I am not against the military in any way, but I am very against the f-35's. They will destroy our community. Please reconsider the basing of the F-35's in such a densely populated area. This is a disgrace.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] The noise map

'robin burton' via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 10:06 PM
Reply-To: robin burton <rb125br@yahoo.com>
To: btvsound@jonespayne.com

I am permanently disabled and have problems with my nervous system. Even the sound of the F16 will bring me to my knees when I am out in my garden. When I wrote to Senator Sanders about the noise contour map in 2016, I expressed fear that the map was based on the F16 -- not the F35 -- concerned that my home would be affected by the louder planes once the corrected map was made public and that I would no longer be able to live in it. To say the least, I am angry that it took 2 years for you to finally get around to releasing the latest map, and I am skeptical that it is accurate.

Living as I do, within the noise contour as shown by the new map, I'm asking you. Will I be able to live in my home once the F-35 arrives, and what will be done to help people like me who are disabled? So far, I do not have any faith either in our Senators, the Guard, or the BTV to be truthful or caring about the way these planes will destroy the lives of the vulnerable in the affected area. You've lied or obfuscated the information for too long -- or like the Senator, were evasive or angry even to be asked basic questions about the map.

After asking for Senator Sander's help regarding this issue in 2016, I got a curt note back from him saying that he was "more concerned about the people with a legitimate concern about the noise.'

I'm sorry to say that I am now one of those people.

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COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

THE PEOPLE HAVE SPOKEN! WE DONT WANT THESE PLANES IN OUR COMMUNITY. THEY REPRESENT A 1.4 TRILLION DOLLAR THEFT FROM OUR SCHOOLS, HOSPITALS AND INFOSTRUCTURE. OUR WORLD NEEDS FEWER NUCLEAR WEAPONS AND DELIVERY SYSTEMS, NOT MORE.

Bernard Carver

BERNARD CARVER
25 BACON STREET #404
SOUTH BURLINGTON, VT 05403

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Public Comments

Laura Dlugolecki <laura.dlugolecki@gmail.com> Thu, Jun 13, 2019 at 11:31 AM
To: btvsound@jonespayne.com

Hello,
I am writing to submit comments related to the release of the Noise Exposure Maps for Burlington International Airport. I live on Hall Street, just outside the modeled 65 DNL contour and I am worried about the impact the projected noise impact will have on my young children and the overall community.

Winooski is a special place with a great sense of community. It is also very affordable compared to surrounding communities. That is why many young professionals are moving to this community to put down roots and to raise their families. Our community also houses many low-income families and new American refugee families who don't have options of moving elsewhere. I worry that this noise exposure is conveniently targeted to areas where people are less likely to be able to advocate for themselves or in some cases, understand the impacts due to language barriers.

The fact that over 40% of our residents are inside this line of potential non-compatible uses is a huge challenge for our community. The places that will be impacted include affordable housing, low-income subsidized housing, parks, places of worship and some of our key community gathering spaces.

I realize that the 65 DNL line does not encompass the Winooski School Campus and thus won't be addressed by a traditional NCP. However, it is so important that any mitigation program address the impacts on our City's children. The children should have a safe learning environment when they attend school.

As the noise compatibility program proposal is developed, I hope that the FAA and the City of Burlington will acknowledge the unique make up of Winooski and the disproportionate impact that this increased airport noise will have on this municipality relative to Williston, Colchester, Essex and Burlington, and structure the mitigation funds to support those who want to stay, those who need to leave but otherwise can't, and all of us here in the City who have invested heavily in its future.

I would like to see mitigation prioritize residences with children, and a commitment to working with landlords to ensure renters have equal and equitable access to funds. I also want to see the FAA provide translation services for all of its documents to ensure that residents who don't speak English proficiently can access the program without taxing municipal resources. I also believe that aviation easements should not be coupled with funding, as this unfairly prohibits landowners from addressing as-yet unknown nuisance levels in a growing city that is, at present, entirely excluded from decision making about future airport development and expansion.

Thank you for your time.
Sincerely,

Laura Dlugolecki

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "NewSound Map"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, May 30, 2019 at 5:21 PM
To: btvsound@jonespayne.com

From: Joseph Dubois <jadubois@comcast.net>
Subject: NewSound Map

Message Body:
I have not been too concerned in the past but the new map has my house at 5325 Williston Road within the 65 decibel range. What should I be evaluating for options with the new findings.

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22

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Process for applying for home assurance program"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, May 31, 2019 at 1:25 PM
To: btvsound@jonespayne.com

From: Nancy Duguay <duguay.nancy95@gmail.com>
Subject: Process for applying for home assurance program

Message Body:
Good afternoon, I am writing to inquire about the application process and/or the wait list for the noise mitigation, home assurance, and buyout programs. We are located at 488 N Brownell Rd in Williston. If there is an email update list, I would like to be included.

Thanks in advance for your assistance.
Nancy Duguay

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COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

As a South Burlington city councilor, I am appalled to see the human impact of this basing. The F-35s without afterburners produce more decibels on take-off than an F-16 with afterburners. The number of Vermonters who will be subjected to these decibels during singular events is well over 2,600, I understand. Home insulation spares our remaining housing stock. Land, as far as I am concerned, Senator Leahy and the federal government owe the City of South Burlington 200 single family homes), not to mention the schools built to educate hundreds of children. However, there is no reasonable explanation for basing these planes here, and the people and impacted cities and towns will never be adequately compensated, financially or otherwise. The economic impact is negative overall, according to the Air Force's own information. The human impact due to the emotional stress of living with the unknown has already been unacceptable.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

Meaghan Emery

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F35's"

1 message

BTVsound Website <cmurphy@jonespayne.com> Sun, Jun 2, 2019 at 3:13 PM
To: btvsound@jonespayne.com

From: Patricia Everts <pateverts@yahoo.com>
Subject: F35's

Message Body:
I attended the meeting last Thursday, and did not leave feeling any better than when I went in. I have been opposed to the F35's coming here since the beginning, and nothing on those maps changed my mind. I have been in my home for the last 46 years, and I'm concerned how this plane will affect the value of my home; how it will affect the environment; my hearing,
and that of my grandchildren who regularly play in my yard. I feel they could have, and should have found a much less populated area for this plane.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] F-35 noise maps

Mary Fillmore <mfillmor@together.net> Fri, Jun 28, 2019 at 9:24 PM
To: btvsound@jonespayne.com

To Whom It May Concern:
Although I do not live within the noise zones you have identified, the noise when the visiting F-35s was extremely loud inside the house and unbearably loud outside. Covering our ears didn't stop it even a small amount, and we felt the vibration in our bodies. If we had been outside gardening or taking a walk, or getting kids to school when this sudden noise occurred, we would have been even more disturbed — and at a loss to protect children from the impact on their well being and particularly the damage to their hearing. And we aren't even inside the specified zone.

The report has minimized the actual noise levels in many ways: by averaging the number of days of the year when the F-35s will be flown over the full 365 days, by setting a very high bar for "too much" noise, and by offering only the most minor "mitigation." How good is mitigation when it only partly works, and only when one is inside? Are we really expected to stay indoors to protect our and our children's hearing and health whenever these deadly bombers fly over?

Given that the quality of life in Vermont, and Burlington in particular, rests on our deserved image as a "green" and "livable" city and state, what kind of damage will the F-35 do to the very qualities which bring people to our state as residents, visitors, and seasonal home owners? We are seriously concerned about the resale value of our home, particularly since it is located in an environmentally friendly community so it will not appeal as much to buyers who are motivated by those values.

If the crash which happened in rural South Carolina — quickly buried in the media with few details about the environmental impact which is probably yet to be fully assessed — had happened in downtown Winooski or South Burlington or Burlington, what would the impact be? Surely noise would be the least of our problems in that case.

The report seems to minimize what repeated high levels of noise actually do to the human mind and body, particularly as it is developing. Please provide some analysis that shows you have learned about and considered those impacts, and are prepared to compensate residents who suffer these damages.

Thanks for responding,

Mary Fillmore

Mary Fillmore
<mfillmor@together.net>
Author of An Address in Amsterdam, an historical novel about a young Jewish woman who risks her life in the resistance
Winner, Sarton Women's Book Award for Historical Fiction
Selected as a Kirkus Reviews Indie Book of the Month
maryfillmore.com
seehiddenamsterdam.com
23 East Village Drive
Burlington, Vermont 05401 USA
Tel 802 860-1034

"The Holocaust is not solely about the Jews. It is about the rest of humanity." René Raindorf, Belgian Resistance Worker

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Diane Carter <dcarter@jonespayne.com>

[BTVsound]

Kai Mikkel Førlie <kaimikkelforlie@gmail.com> Sat, Jun 29, 2019 at 10:09 AM
To: btvsound@jonespayne.com

Dear Ma'am/Sir,

I have the following questions concerning the recently released F-35 noise maps.

1. The BTV Noise Map Report says the latest NOISEMAP noise modeling was used, as has been used at Westfield, Westover & BTV.
But none of these locations have F18's, F22's or F35's. Since the F35 and F22 employ engine thrust vectoring, I understand they can't be modeled using simple linear theories that NOISEMAP uses. Was AEDT 2b and AAM-Advanced Acoustic Noise Modeling used to capture the noise of these powerful engines for the "new" NEM's?

2. After the F35s arrive, when can I file a lawsuit to show impact on property values and health?

3. What data do you need for us to show impact on our property values and children's health?

4. Please confirm to whom the lawsuits should be filed against? We assume the City of Burlington, but is it also the Burlington International Airport and/or the FAA?

5. Why would municipalities have to pay a 10% match to grants for homeowners, as reported in local news? Why should our cities be forced to pay for having their resident's homes modified because of the damage that the F35s will cause?

5. How can someone of limited means escape the noise?

6. How do we protect our children from the harmful effects of the noise?

7. How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?

8. Can you provide me with the latest scientific findings on the damaging effect of noise?

9. Does the noise map use the noise levels of the F-35's using military power or the noise from after-burner power?

10. What is the decibel level of the F-35s taking off using after-burners?

11. In creating these noise maps, the F-35 noise input was merged with other airport noise, and the 228 days of F-35 activity was spread over 365 days. This statistical method diminishes the F-35 noise impact by ⅓ or more, falsely making the F-35 noise impact appear to be less (and the greater than 65dB noise zone map area smaller) than it is when people are actually experiencing the singular events, 228 days of the year, at decibel levels that are much greater than the average airport noise. Will you provide us with a map that shows the impact of the F-35 singular events?

12. If the Air Force basing of F-35s here reduces the value of my home due to noise, whether I'm officially in the >65 dB zone or not, will I be compensated? By whom?

13. Will people who live in the noise zone be medically monitored for adverse effects, for example, hearing loss, stress/anxiety, insomnia?

14. People who work, go to school, or otherwise frequent the noise zone could also suffer noise-related health problems. Will they be compensated in any way? Noise cancelling headphones? Warning signs? Waivers that they frequent the area at their own risk?

15. If children suffer hearing loss due to aircraft noise, whether they live in the >65 dB zone or not, will the Air Force or the City of Burlington pay their medical bills?

16. If fire or a crash on the ground or the runway cripples an F-35 and the airport has to shut down for an extended period of time, how will this impact Chittenden County's economy?

17. When whole neighborhoods such as the Italian section of downtown Burlington were demolished, residents suffered traumatic stress disorder from the loss of community ties. Will the Air Force or the City of Burlington pay for therapy that may be necessary due to the demolition of the Chamberlin neighborhood?

18. If students in the Chamberlin School can't play outdoors due to aircraft noise, will the Air Force pay to build a new primary school outside the >65dB zone?

19. If an F-35 crashes, as two have already, will the Air Force fully compensate property owners who lose structures or the use of their land, for example due to infrastructure interruption or environmental damage?

20. If an F-35 crashes, as two have already, how will the Air Force compensate families for the loss of life of family members, livestock, pets?

21. Military waste incinerated in so-called burn pits have caused cancer and other diseases to soldiers down wind. With 40% of the F-35 composed of chemical compounds that are carcinogenic when burned, what will happen to residents living downwind from a fiery crash? Are first responders and residents forewarned of risks, and how to protect themselves? Is there an evacuation plan that people are aware of?

22. With sound mitigation funds only able to pay for 50 houses per year yet 3000 homes are expected to be in the >.65dB noise zone and eligible, is there a guarantee that all the eligible homes will get new doors and windows? How long must people wait? What if the homeowner can't afford the co-pay?

23. If the Chamberlin School is not closed and relocated out of the greater than .65dB zone, how can teachers sustain a learning environment with the many intervals of shattering noise as the F-35 takes off?

24. If my child experiences cognitive impairment due to noise bursts or accumulating noise events, will the Air Force or the City of Burlington pay for tutors and other special education needs?

25. If housing values fall due to noise exposure from military aircraft and the City of South Burlington loses property tax revenue, will the Air Force or the City of Burlington make South Burlington taxpayers whole?

26. If my family can no longer use my yard for barbecues, gardening, or relaxation due to the noise of military aircraft, will the Air Force or the City of Burlington compensate me for this loss to the quality of my life?

27. My mother suffers from hypertension. Her high blood pressure is aggravated by sudden and repeated noise events. Will the Air Force or the City of Burlington pay for any treatment she might require due to the noise of military aircraft?

28. Vermont's tourism economy depends on natural landscapes enjoyed in peace and quiet. What will be the effect on the tourist economy of 18 F-35s taking off multiple times each day?

29. The gap between wages and the cost of housing has already led to more than 300 homeless in Chittenden County. With 200 affordable homes already lost and 3000 facing a declaration that they are no longer "suitable for residential use," how will this affect rents, housing costs, and homelessness?

30. Winooski in particular is the home of many immigrant Americans, often refugees from war-torn regions such as Syria, Iraq, Lybia, Sudan, and the Balkans. How will exposure to the daily high-decibel sound of military aircraft affect people who may already have been traumatized by war?

31. The new report omits any mention of hearing damage, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

32. The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

33. The report only includes average noise levels. It describes other measures of noise but does not tell readers what any of them are even though the Air Force says the F-35 is more than 4 times louder than the F-16 and that the F-35 will use its afterburner 5% of the time. What is the loudest peak sound level of the F-35 on a public street in South Burlington when the F-35 uses its afterburner for takeoff? In Winooski?

34. The US Air Force said that a single exposure to a 130 dB sound can cause "immediate and permanent hearing damage." Your report fails to mention the peak afterburner sound level of the F-16 or the F-35. What are those levels? What is the peak sound level of the F-35 taking off with its afterburner on streets in South Burlington and Winooski? For passengers enplaning or deplaning?

35. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: cancel the F-35.

36. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property? The Air Force says the F-35 will take off with afterburner 5% of the time. What is the peak sound level passengers will be exposed to as they walk between car and terminal or between terminal and airplane when the F-35 takes off with its afterburner blasting?

37. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB when the F-35 reached 1000 feet elevation.

What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

38. Emissions generated by the F-35 contain numerous carcinogens. What is being done to prevent exposure to humans and other life forms of these toxic fumes?

39. Emissions generated by the F-35 (and the U.S. military in general) represent the largest single institutional source of carbon emissions in the world. Given the grave threat this reality poses to continued life on earth, why is nothing being done to reduce or eliminate the F-35 (or the U.S. military in general) from existence?

I look forward to seasoned responses to my questions.

Kai

Kai Mikkel Førlie
Burlington, Vermont

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Comments about the noise exposure map

Ann Goering <anngoering7@gmail.com> Tue, Jun 18, 2019 at 9:59 PM
To: btvsound@jonespayne.com

The map clearly shows that many thousand Vermonters are severely adversely impacted by the coming of the F-35's and it DOES NOT include use of after burners.
There is clearly no way to mitigate sound for all those affected.
The noise average over24 hours significantly dilutes the sound of the F-35's and the impact that repetitive exposure to loud noise (> 90 dB) has on children, adults and wildlife.
Since this airport is located in the MPST DENSELY POPULATED AREA IN THE STATE, it is imperative there be good and accurate data about the actual noise that people will be exposed to on a daily basis. Areas of high levels need to be clearly defined.

Vermont is an outdoor culture and these planes fly when people are walking and riding to work and school, working in their gardens and exercising outdoors
The Air Force has clearly stated that there are many health.

There should be no basing of these extremely loud planes partly due to the noise impact on the community.

Insulation, air conditioners and buy back programs will not be sufficient to offset the economic and health impact of this change in our community. There really is no such thing as a noise compatibility anything.

Please do not accept this map until there is a truer picture of the daily reality for thousands of Vermonts.

Ann Goering
94 Chase St
Burlington, Vermont
05401

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] My F-35 questions

Sharyl Green <sharylg24@gmail.com> Sun, Jun 30, 2019 at 7:26 AM
To: btvsound@jonespayne.com

Here are questions I am seeking answers to regarding the basing of F-35s in Burlington VT. I live just outside the highest noise level boundaries. We are watching the developments closely.

How do we protect our children from the harmful effects of the noise?

How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?

If children suffer hearing loss due to aircraft noise, whether they live in the >65 dB zone or not, will the Air Force or the City of Burlington pay their medical bills?

If the Chamberlin School is not closed and relocated out of the greater than .65dB zone, how can teachers sustain a learning environment with the many intervals of shattering noise as the F-35 takes off?

The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

It feels to me like we have become culturally bereft when we neglect the real needs and basic rights of our community's children.

I await your answers.

Sharyl Green
Burlington VT

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Comments - DRAFT Burlington International Airport 14 CFR Part 150 Update 2018 and 2023 Noise Exposure Maps

Beth Gutwin <bethgutwin@bethgutwin.com> Fri, Jun 28, 2019 at 11:24 PM
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>

11. Does the noise map use the noise levels of the F-35's using military power or the noise from after-burner power?

10. What is the decibel level of the F-35s taking off using after-burners?

11. In creating these noise maps, the F-35 noise input was merged with other airport noise, and the 228 days of F-35 activity was spread over 365 days. This statistical method diminishes the F-35 noise impact by ⅓ or more, falsely making the F-35 noise impact appear to be less (and the greater than 65dB noise zone map area smaller) than it is when people are actually experiencing the singular events, 228 days of the year, at decibel levels that are much greater than the average airport noise. Will you provide us with a map that shows the impact of the F-35 singular events?

19. If an F-35 crashes, as two have already, will the Air Force fully compensate property owners who lose structures or the use of their land, for example due to infrastructure interruption or environmental damage?

20. If an F-35 crashes, as two have already, how will the Air Force compensate families for the loss of life of family members, livestock, pets?

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21. With sound mitigation funds only able to pay for 50 houses per year yet 3000 homes are expected to be in the >.65dB noise zone and eligible, is there a guarantee that all the eligible homes will get new doors and windows? How long must people wait? What if the homeowner can't afford the co-pay?

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] F-35 in Burlington

'ROBERT HERENDEEN' via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 10:31 PM
Reply-To: ROBERT HERENDEEN <raherendeen@yahoo.com>
To: btvsound@jonespayne.com

Offering to (partially?) pay a Winooski resident to sound-insulate a house is laughable in Vermont, where people actually enjoy being out of doors. Asking us to fine-tune this proposal is outrageous. Please send the F-35 elsewhere.

Robert Herendeen
83 Nottingham Ln.
Burlington, VT 05408
raherendeen@yahoo.com
802-862-5017

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F-35 takeoffs this morning (5/31/19)"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, May 31, 2019 at 10:47 AM
To: btvsound@jonespayne.com

From: Kevin Jerram <kjerram@gmail.com>
Subject: F-35 takeoffs this morning (5/31/19)

Message Body:
Without knowing that there were four F-35s on site today, the increased noise of their takeoffs this morning instantly caught the attention of everyone in my household - and not in a good way. My wife and I looked at each other and said, "those MUST be F-35s." Again, we had no idea that F-35s were schedule to take off this morning. The higher amplitude and different tone gave it away. The growing jet noise we've been living with has been enough of a nuisance; this is a terrible indication of what is to come, not to mention the increased crash risk in our neighborhood with these jets. We are disappointed in Burlington and the Air National Guard for the 'reassurances' we've received that the F-35s won't be significantly louder or more dangerous than the existing fleet. They are, and they will have serious consequences in health, quality of life, and home values for thousands of families. This is a loud, sad wake-up call for the residents that they cannot trust your models or reassurances.

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32

BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

My comments are based on attending both the Airport and the Winooski open houses on 29 & 30 May, and discussions with both consultant team members and Air Force / National Guard personnel.

1. Consultant team members were knowledgeable, accessible, and well prepared; military personnel seemed to be less open, more defensive, and less well prepared (while remaining always even tempered and polite in the face of occasionally intense interrogation).

2. More accessible, hard-copy information about current and anticipated noise pollution levels is needed to supplement whatever may be available on-line. Multiple copies of both the Airport consultant's report, as well as the 2010 military environmental impact statement, should be available at Winooski's City Hall, library, senior center, and major senior housing units.

3. All figures presented were averages for 24 hour periods, estimates based on theoretical "lab" studies, and modelled projections into the future. A real time monitoring program after F-35 basing is essential to assessing both the impact and effectiveness of any mitigation practices implemented to reduce negative impacts.

4. The spatial impact of increased noise pollution resulting from basing F-35 planes inside a densely settled residential area must be dealt with on a comprehensive basis. All residents falling with the 65 decibel contour should be eligible for immediate mitigation assistance. Closeness to the airport, and the (presumably) greater noise impact within the 70 and 75 decibel contours are not the only criteria by which to determine timely assistance. The percentage impact on Winooski's population (ca. 40%) entitles that group of victims to coequal protection and assistance. All persons directly impacted by dangerous increases in noise pollution deserve equal treatment.

5. Mitigation practices weren't part of the consultant report mandate; and, beyond indicating that afterburners would only be used in 5% of take-offs, weren't part of the military verbal information portfolio either. Some suggestions: restrict take-offs to a rigidly observed weekday morning and afternoon window; on monthly training weekends, limit take-offs to a strict afternoon window; actually observe the (admittedly speculative) 5% of total take-offs using afterburners; develop a comprehensive window and door sound treatment program for residents in the affected zones; extend this program as a payback loan opportunity to residents outside the 65 decibel contour who meet income criteria and are within a specified distance of the 65 decibel contour.

6. No one impacted by F-35 take-off noise is interested FAA 24 hour average noise figures. We are concerned about the spike in noise that will result from take-offs. No information about this noise increment was available, not even in crude comparisons to F-16 take-offs. Absent such information, it is no wonder that there was a significant undercurrent of anger and disbelief present among community attendees at the open houses.

Douglas L. Johnson, 16 Pleasant St., Winooski, VT

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

33

Diane Carter <dcarter@jonespayne.com>

[BTVsound] F35's this morning

1 message

'Norah Kell' via BTVsound <btvsound@jonespayne.com> Fri, May 31, 2019 at 11:50 AM
Reply-To: Norah Kell <norahmkell@yahoo.com>
To: btvsound@jonespayne.com

I live in Winooski and have been trying to keep an open mind about the jets. The last few months have been very peaceful with no F16s flying. This morning when the F35s flew overhead my husband and I stopped in our tracks. The noise was too much. Our dog peed on the floor and we saw birds scrambling trying to find safety. This is wrong. just wrong. F35s will destroy our way of life. They have no business being in such a densely populated area. I read the EIS years ago and still can't figure out why the other bases being considered weren't higher on the DOD's list. Our Senators, Congressmen and Governor need to go on record saying they are willing to sacrifice the quality of life for Winooski, Williston, South Burlington and Burlington residents in order to keep these jets here because that is exactly what they are doing.

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34

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Surprised to see not in noise map"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, May 31, 2019 at 1:30 PM
To: btvsound@jonespayne.com

From: Scott & Cyndi Knaepen <3clk7klc9@gmail.com>
Subject: Surprised to see not in noise map

Message Body:
Our address (372 Meadowrun Rd, Williston)falls outside the map and I know the article in the Williston Observer states "we all have difference sensitivities to sound", but I'm not sure that captures the reality. The planes practice by taking off/ landing repeatedly and circle right over our house. Sometimes they have been so low, we could see the pilot in the plane! Pictures on the wall vibrate. We can't hear the TV. We work from home and can't talk on the phone for conference calls, so it interrupts business. There have been times where if we are outside, it literally hurts our ears. I just wanted to make sure you had all the info. Maybe if they didn't have to skim the tree tops it wouldn't be so noisy. It's been weird that there appears to be practice with a large cargo/refueler at night the past couple of weeks too. When there is no notice that this happening it is very frightening. Commercial planes don't typically fly over our house, so when a huge plan wakes us up because it sounds like it's about to crash into our roof, it just about stops your heart! Seems like 10pm for this VERY loud noise going over and over while people are trying to sleep is more than "sound sensitivity". Thank you for this forum allowing us to share our experience. Just because we are not at the end of the runway for take off or landing doesn't mean the jets don't come very close to our roofs for repeated circles of take off and landing practice.

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35

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F35 Sound maps"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, May 30, 2019 at 5:43 PM
To: btvsound@jonespayne.com

From: Tricia Knoll <triciaknoll@gmail.com>
Subject: F35 Sound maps

Message Body:
I live not far from the green level on the map and I'm questioning how accurate these boundary lines are. I am 71 years old with good hearing and live alone with two very sensitive dogs. I would like to receive all updates on the noise levels as I'm very concerned. I just bought my house last year.

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36

Diane Carter <dcarter@jonespayne.com>

Re: [BTVsound] BTVsound website contact us "F35 Sound maps"

1 message

Tricia Knoll <triciaknoll@gmail.com> Tue, Jun 4, 2019 at 8:57 PM
To: Diane Carter-BTV NCP <btvsound@jonespayne.com>

I'd like to make an additional comment. I hope that we can know when training exercises is to keep animals in. I live just down the street from a horse dressage training facility...and the young horses canter around when trucks blow their airhorns. I may not be in the most severe of the impact areas but I believe my life will be very greatly negatively impacted by excessive sound...and what about wildlife? Does anyone know what the impact will be on the deer, bear, foxes, porcupines, rabbits, fishers and others that we share our forests with?

Tricia Knoll

Poetry collections -

- **How I Learned to Be White** is now available from Antrim House -- and on Amazon.
- **Broadfork Farm** collects poems about a small organic farm in Trout Lake, Washington to highlights its people and creatures.
- **Ocean's Laughter**, a book of lyric and eco-poetry about Manzanita, Oregon. Look at **Amazon.com or for** .Reviews.
- *Urban Wild*, a poetry chapbook now available from Finishing Line Press.

Website: triciaknoll.com
twitter:@ triciaknollwind
Amazon author page

On Tue, Jun 4, 2019 at 1:23 PM Diane Carter-BTV NCP <btvsound@jonespayne.com> wrote:

> Thank you for your comments regarding the Noise Exposure Map document. We will be including your comments in the final version of the document that will be submitted to the Federal Aviation Administration. At the close of the comment period (June 28, 2019) we will be providing a response to comments which will be available on the BTVSound.com website.
>
> The upcoming noise mitigation program is still in development. The FAA to begin funding in 2020. More information regarding the upcoming mitigation program will be available at the end of the year.
>
> **Diane Bryant Carter**
> COO
>
> **The Jones Payne Group, Inc.**
> *We Help Make Livable Communities*
> Architects | Planners | Information Managers
>
> 200 East Dania Beach Boulevard, Suite 103, Dania Beach, FL , 33004
> **office**: (954) 924-1063 | **email**: dcarter@jonespayne.com
> **web**: https://www.jonespayne.com
>
> ---------- Forwarded message ---------
> From: **BTVsound Website** <cmurphy@jonespayne.com>
> Date: Thu, May 30, 2019 at 5:43 PM
> Subject: [BTVsound] BTVsound website contact us "F35 Sound maps"
> To: <btvsound@jonespayne.com>
>
> From: Tricia Knoll <triciaknoll@gmail.com>

> Subject: F35 Sound maps
>
> Message Body:
> I live not far from the green level on the map and I'm questioning how accurate these boundary lines are. I am 71 years old with good hearing and live alone with two very sensitive dogs. I would like to receive all updates on the noise levels as I'm very concerned. I just bought my house last year.
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To view this discussion on the web visit https://groups.google.com/a/jonespayne.com/d/msgid/btvsound/CALD_tCzWPCN0rMx1TKF0mswp_ar3hbyxgAb4ME%3DgZ%2BKp9zYvmA%40mail.gmail.com.

37

James Lees
Jol1439@GMAIL.COM

Seven questions to ask today:

1. The new report omits any mention of hearing damage, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

2. The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

3. The report only includes average noise levels. It describes other measures of noise but does not tell readers what any of them are even though the Air Force says the F-35 is more than 4 times louder than the F-16 and that the F-35 will use its afterburner 5% of the time. What is the loudest peak sound level of the F-35 on a public street in South Burlington when the F-35 uses its afterburner for takeoff? In Winooski?

4. The US Air Force said that a single exposure to a 130 dB sound can cause "immediate and permanent hearing damage." Your report fails to mention the peak afterburner sound level of the F-16 or the F-35. What are those levels? What is the peak sound level of the F-35 taking off with its afterburner on streets in South Burlington? For passengers enplaning or deplaning?

5. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: cancel the F-35.

6. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB when the F-35 reached 1000 feet elevation. What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

7. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property? The Air Force says the F-35 will take off with afterburner 5% of the time. What is the peak sound level passengers will be exposed to as they walk between car and terminal or between terminal and airplane when the F-35 takes off with its afterburner blasting?

38

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F35"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, May 31, 2019 at 9:41 AM
To: btvsound@jonespayne.com

From: susan letourneau <toono@comcast.net>
Subject: F35

Message Body:
I live under the flight path in Winooski. I witnessed the F35s landing a few days ago and then witnessed them taking off this morning. Is the guard getting this type of F35? Was the noise of those planes what we will be hearing when they're here? Was this a good example of what we will be in for? Were their after burners on or off this morning?
I have to say, it wasn't noticeably different than the F16s.
Please respond and let me know.

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Diane Carter <dcarter@jonespayne.com>

Fwd: F35 Sound Map Concerns

Nicolas Longo <nlongo@btv.aero> Mon, Jun 24, 2019 at 1:35 PM
To: Diane Carter <dcarter@jonespayne.com>

Add to comments

Nic Longo, C. M.
Deputy Director of Aviation
Administration
802-503-7368

Sent from my iPhone

Begin forwarded message:

From: Jacqueline Cappadora <jacqueline.cappadora@gmail.com>
Date: June 9, 2019 at 7:21:24 PM EDT
To: nlongo@btv.aero, senator_leahy@leahy.senate.gov, mayor@burlingtonvt.gov, kdorn@sburl.com
Subject: F35 Sound Map Concerns

[EXTERNAL]: This message has originated from an External Source. Please use proper judgment and caution when opening attachments, clicking links, or responding to this email.

To Whom it May Concern,

We
are writing today in regards to the new sound map generated to reflect the effects of the F35s on the areas surrounding the airport. We own one of the few properties pushed into the 75 decibel range by the arrival of this aircraft. Previously, the airport
had deemed properties in this zone unable to be mitigated, and therefore unlivable. We are a little confounded as to why this is no longer the case, especially considering all of the homes directly across the street from us have been bought out and demolished.

We
have a two year old daughter, and we love our home. It is ideally located between both of our workplaces, coincidentally the airport and Fanny Allen, and is very close to our daughter's Daycare Center, as well. We really do not want to leave here, however,
due to recent research showing the negative effects of sound in such a high decibel range as the F35s on the cognitive development of young children, we know we have to leave, and soon. We understand that the arrival of the F35s is imminent, and we feel very
strongly that we need to leave before that happens. We also fear that putting our home on the market now and trying to sell it before the programs that airport is prepared to offer people like us become available would force us to incur a financial loss that
we simply cannot afford. We love Vermont, but like many young families, we struggle to stay here. Vermont is our chosen home, as we are both transplants here, and it would be shameful if we were forced to leave because of a financial loss of this nature.

Ideally,
we would like the airport the purchase our home for fair market value, before the F35s arrive. We really see no other moral or ethical option considering our home will become unlivable due to sound by September. We are in a quandary in trying to protect our
brilliant, blossoming child as well as our investment in our property. We do not feel the airport, the city of Burlington, nor the town of South Burlington has our best interests in mind, considering the only feasible options being potentially offered to us
would have living us here, in a soon to be uninhabitable zone, for nearly two years after the arrival of the F35s.

Our
question to you is: What can we do, or what can YOU do, to help us protect our daughter and our investment, and help us to be able to stay in Vermont? And if there is nothing that can be done: Why?

Sincerely,

Jacqueline
Cappadora and Aaron Whitledge
95 Kirby Rd.
South Burlington, VT 05043
(718) 710-1001
(802) 380-0115

40

Diane Carter <dcarter@jonespayne.com>

[BTVsound] F-35 Noise Impact

1 message

'Anne MacLeod' via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 9:16 PM
Reply-To: Anne MacLeod <agmacleod@aol.com>
To: btvsound@jonespayne.com

I am profoundly concerned about each of these issues and more in regard to the planned basing of F-35s in my neighborhood. As for high blood pressure, though, that one item is not applicable to my mother — but to me.

Anne MacLeod
62 Maple Street
Winooski

1. The numbers of dwelling units and the number of individuals in the 65 dB DNL* from the Airport report do not match what the Air Force reported in their 2013 Environmental Impact Statement (EIS). In that official government document prepared by the Air Force-the entity that flies the plane and should best know its noise volume-they reported that 2,963 dwelling units, and 6,663 people would be in the F-35 65dB DNL noise zone.

So... how did the airport lose those 323 dwelling units and 538 people?

The Air Force data was based on 2010 census data. Since that time, some things have changed. Although hundreds of homes were destroyed in South Burlington because of the F-16 noise; there were perhaps hundreds more dwelling units built since that time in Winooski and Burlington which are in the 65 dB DNL. So, now almost ten years later - since there was no moratorium on building residential units in the F-35 noise zone -- the 2020 census data will likely show that the numbers the Air Force reported in 2012 are lower than today's reality. Moreover, the Air Force was reporting on the noise from ONLY the F-35 and they did not factor in the noise from commercial aircraft, which the airport did.

Why is it that the Airport's numbers do not match the Air Force numbers?

2. The BTV Noise Map Report says the latest NOISEMAP noise modeling was used, as has been used at Westfield, Westover & BTV.
But none of these locations have F18's, F22's or F35's. Since the F35 and F22 employ engine thrust vectoring, I understand they can't be modeled using simple linear theories that NOISEMAP uses. Was AEDT 2b and AAM-Advanced Acoustic Noise Modeling used to capture the noise of these powerful engines for the "new" NEM's?

3. After the F35s arrive, when can I file a lawsuit to show impact on property values and health?

4. What data do you need for us to show impact on our property values and children's health?

5. Please confirm to whom the lawsuits should be filed against? We assume the City of Burlington, but is it also the Burlington International Airport and/or the FAA?

6. Why would municipalities have to pay a 10% match to grants for homeowners, as reported in local news? Why should our cities be forced to pay for having their resident's homes modified because of the damage that the F35s will cause?

7. How can someone of limited means escape the noise?

8. How do we protect our children from the harmful effects of the noise?

9. How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?

10. Can you provide us the latest scientific findings on the damaging effect of noise?

11. Does the noise map use the noise levels of the F-35's using military power or the noise from after-burner power?

10. What is the decibel level of the F-35s taking off using after-burners?

11. In creating these noise maps, the F-35 noise input was merged with other airport noise, and the 228 days of F-35 activity was spread over 365 days. This statistical method diminishes the F-35 noise impact by ⅓ or more, falsely making the F-35 noise impact appear to be less (and the greater than 65dB noise zone map area smaller) than it is when people are actually experiencing the singular events, 228 days of the year, at decibel levels that are much greater than the average airport noise. Will you provide us with a map that shows the impact of the F-35 singular events?

12. If the Air Force basing of F-35s here reduces the value of my home due to noise, whether I'm officially in the >65 dB zone or not, will I be compensated? By whom?

13. Will people who live in the noise zone be medically monitored for adverse effects, for example, hearing loss, stress/anxiety, insomnia?

14. People who work, go to school, or otherwise frequent the noise zone could also suffer noise-related health problems. Will they be compensated in any way? Noise cancelling headphones? Warning signs? Waivers that they frequent the area at their own risk?

15. If children suffer hearing loss due to aircraft noise, whether they live in the >65 dB zone or not, will the Air Force or the City of Burlington pay their medical bills?

16. If fire or a crash on the ground or the runway cripples an F-35 and the airport has to shut down for an extended period of time, how will this impact Chittenden County's economy?

17. When whole neighborhoods such as the Italian section of downtown Burlington were demolished, residents suffered traumatic stress disorder from the loss of community ties. Will the Air Force or the City of Burlington pay for therapy that may be necessary due to the demolition of the Chamberlin neighborhood?

18. If students in the Chamberlin School can't play outdoors due to aircraft noise, will the Air Force pay to build a new primary school outside the >65dB zone?

19. If an F-35 crashes, as two have already, will the Air Force fully compensate property owners who lose structures or the use of their land, for example due to infrastructure interruption or environmental damage?

20. If an F-35 crashes, as two have already, how will the Air Force compensate families for the loss of life of family members, livestock, pets?

21. Military waste incinerated in so-called burn pits have caused cancer and other diseases to soldiers down wind. With 40% of the F-35 composed of chemical compounds that are carcinogenic when burned, what will happen to residents living downwind from a fiery crash? Are first responders and residents forewarned of risks, and how to protect themselves? Is there an evacuation plan that people are aware of?

21. With sound mitigation funds only able to pay for 50 houses per year yet 3000 homes are expected to be in the >.65dB noise zone and eligible, is there a guarantee that all the eligible homes will get new doors and windows? How long must people wait? What if the homeowner can't afford the co-pay?

22. If the Chamberlin School is not closed and relocated out of the greater than .65dB zone, how can teachers sustain a learning environment with the many intervals of shattering noise as the F-35 takes off?

23. If my child experiences cognitive impairment due to noise bursts or accumulating noise events, will the Air Force or the City of Burlington pay for tutors and other special education needs?

24. If housing values fall due to noise exposure from military aircraft and the City of South Burlington loses property tax revenue, will the Air Force or the City of Burlington make South Burlington taxpayers whole?

25. If my family can no longer use my yard for barbecues, gardening, or relaxation due to the noise of military aircraft, will the Air Force or the City of Burlington compensate me for this loss to the quality of my life?

26. My mother suffers from hypertension. Her high blood pressure is aggravated by sudden and repeated noise events. Will the Air Force or the City of Burlington pay for any treatment she might require due to the noise of military aircraft?

27. Vermont's tourism economy depends on natural landscapes enjoyed in peace and quiet. What will be the effect on the tourist economy of 18 F-35s taking off multiple times each day?

28. The gap between wages and the cost of housing has already led to more than 300 homeless in Chittenden County. With 200 affordable homes already lost and 3000 facing a declaration that they are no longer "suitable for residential use," how will this affect rents, housing costs, and homelessness?

29. Winooski in particular is the home of many immigrant Americans, often refugees from war-torn regions such as Syria, Iraq, Lybia, Sudan, and the Balkans. How will exposure to the daily high-decibel sound of military aircraft affect people who may already have been traumatized by war?

30. The new report omits any mention of hearing damage, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

31. The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

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34. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: cancel the F-35.

35. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property? The Air Force says the F-35 will take off with afterburner 5% of the time. What is the peak sound level passengers will be exposed to as they walk between car and terminal or between terminal and airplane when the F-35 takes off with its afterburner blasting?

36. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB when the F-35 reached 1000 feet elevation. What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

41

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Burlington VT Noise Exposure maps

mmm@mahoneyappraisals.com <mmm@mahoneyappraisals.com> Fri, Jun 28, 2019 at 11:29 PM
To: btvsound@jonespayne.com

To: FAA

I am submitting the list of comments and questions below regarding the BIA's 2019 Noise Exposure maps, and request a reply to my concerns.

Thank you.

Sincerely,
Michael M. Mahoney
St. Albans, VT

1. The numbers of dwelling units and the number of individuals in the 65 dB DNL* from the Airport report do not match what the Air Force reported in their 2013 Environmental Impact Statement (EIS). In that official government document prepared by the Air Force-the entity that flies the plane and should best know its noise volume-they reported that 2,963 dwelling units, and 6,663 people would be in the F-35 65dB DNL noise zone.

So... how did the airport lose those 323 dwelling units and 538 people?

The Air Force data was based on 2010 census data. Since that time, some things have changed. Although hundreds of homes were destroyed in South Burlington because of the F-16 noise; there were perhaps hundreds more dwelling units built since that time in Winooski and Burlington which are in the 65 dB DNL. So, now, almost ten years later - since there was no moratorium on building residential units in the F-35 noise zone -- the 2020 census data will likely show that the numbers the Air Force reported in 2012 are lower than today's reality. Moreover, the Air Force was reporting on the noise from ONLY the F-35 and they did not factor in the noise from commercial aircraft, which the airport did.

Why is it that the Airport's numbers do not match the Air Force numbers?

2. The BTV Noise Map Report says the latest NOISEMAP noise modeling was used, as has been used at Westfield, Westover & BTV.
But none of these locations have F18's, F22's or F35's. Since the F35 and F22 employ engine thrust vectoring, I understand they can't be modeled using simple linear theories that NOISEMAP uses. Was AEDT 2b and AAM-Advanced Acoustic Noise Modeling used to capture the noise of these powerful engines for the "new" NEM's?

3. After the F35s arrive, when can I file a lawsuit to show impact on property values and health?

4. What data do you need for us to show impact on our property values and children's health?

5. Please confirm to whom the lawsuits should be filed against? We assume the City of Burlington, but is it also the Burlington International Airport and/or the FAA?

6. Why would municipalities have to pay a 10% match to grants for homeowners, as reported in local news? Why should our cities be forced to pay for having their resident's homes modified because of the damage that the F35s will cause?

7. How can someone of limited means escape the noise?

8. How do we protect our children from the harmful effects of the noise?

9. How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?

10. Can you provide us the latest scientific findings on the damaging effect of noise?

11. Does the noise map use the noise levels of the F-35's using military power or the noise from after-burner power?

10. What is the decibel level of the F-35s taking off using after-burners?

11. In creating these noise maps, the F-35 noise input was merged with other airport noise, and the 228 days of F-35 activity was spread over 365 days. This statistical method diminishes the F-35 noise impact by ⅓ or more, falsely making the F-35 noise impact appear to be less (and the greater than 65dB noise zone map area smaller) than it is when people are actually experiencing the singular events, 228 days of the year, at decibel levels that are much greater than the average airport noise. Will you provide us with a map that shows the impact of the F-35 singular events?

12. If the Air Force basing of F-35s here reduces the value of my home due to noise, whether I'm officially in the >65 dB zone or not, will I be compensated? By whom?

13. Will people who live in the noise zone be medically monitored for adverse effects, for example, hearing loss, stress/anxiety, insomnia?

14. People who work, go to school, or otherwise frequent the noise zone could also suffer noise-related health problems. Will they be compensated in any way? Noise cancelling headphones? Warning signs? Waivers that they frequent the area at their own risk?

15. If children suffer hearing loss due to aircraft noise, whether they live in the >65 dB zone or not, will the Air Force or the City of Burlington pay their medical bills?

16. If fire or a crash on the ground or the runway cripples an F-35 and the airport has to shut down for an extended period of time, how will this impact Chittenden County's economy?

17. When whole neighborhoods such as the Italian section of downtown Burlington were demolished, residents suffered traumatic stress disorder from the loss of community ties. Will the Air Force or the City of Burlington pay for therapy that may be necessary due to the demolition of the Chamberlin neighborhood?

18. If students in the Chamberlin School can't play outdoors due to aircraft noise, will the Air Force pay to build a new primary school outside the >65dB zone?

19. If an F-35 crashes, as two have already, will the Air Force fully compensate property owners who lose structures or the use of their land, for example due to infrastructure interruption or environmental damage?

20. If an F-35 crashes, as two have already, how will the Air Force compensate families for the loss of life of family members, livestock, pets?

21. Military waste incinerated in so-called burn pits have caused cancer and other diseases to soldiers down wind. With 40% of the F-35 composed of chemical compounds that are carcinogenic when burned, what will happen to residents living downwind from a fiery crash? Are first responders and residents forewarned of risks, and how to protect themselves? Is there an evacuation plan that people are aware of?

21. With sound mitigation funds only able to pay for 50 houses per year yet 3000 homes are expected to be in the >.65dB noise zone and eligible, is there a guarantee that all the eligible homes will get new doors and windows? How long must people wait? What if the homeowner can't afford the co-pay?

22. If the Chamberlin School is not closed and relocated out of the greater than .65dB zone, how can teachers sustain a learning environment with the many intervals of shattering noise as the F-35 takes off?

23. If my child experiences cognitive impairment due to noise bursts or accumulating noise events, will the Air Force or the City of Burlington pay for tutors and other special education needs?

24. If housing values fall due to noise exposure from military aircraft and the City of South Burlington loses property tax revenue, will the Air Force or the City of Burlington make South Burlington taxpayers whole?

25. If my family can no longer use my yard for barbecues, gardening, or relaxation due to the noise of military aircraft, will the Air Force or the City of Burlington compensate me for this loss to the quality of my life?

26. My mother suffers from hypertension. Her high blood pressure is aggravated by sudden and repeated noise events. Will the Air Force or the City of Burlington pay for any treatment she might require due to the noise of military aircraft?

27. Vermont's tourism economy depends on natural landscapes enjoyed in peace and quiet. What will be the effect on the tourist economy of 18 F-35s taking off multiple times each day?

28. The gap between wages and the cost of housing has already led to more than 300 homeless in Chittenden County. With 200 affordable homes already lost and 3000 facing a declaration that they are no longer "suitable for residential use," how will this affect rents, housing costs, and homelessness?

29. Winooski in particular is the home of many immigrant Americans, often refugees from war-torn regions such as Syria, Iraq, Lybia, Sudan, and the Balkans. How will exposure to the daily high-decibel sound of military aircraft affect people who may already have been traumatized by war?

30. The new report omits any mention of hearing damage, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

31. The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

32. The report only includes average noise levels. It describes other measures of noise but does not tell readers what any of them are even though the Air Force says the F-35 is more than 4 times louder than the F-16 and that the F-35 will use its afterburner 5% of the time. What is the loudest peak sound level of the F-35 on a public street in South Burlington when the F-35 uses its afterburner for takeoff? In Winooski?

33. The US Air Force said that a single exposure to a 130 dB sound can cause "immediate and permanent hearing damage." Your report fails to mention the peak afterburner sound level of the F-16 or the F-35. What are those levels? What is the peak sound level of the F-35 taking off with its afterburner on streets in South Burlington and Winooski? For passengers enplaning or deplaning?

34. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: cancel the F-35.

35. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property? The Air Force says the F-35 will take off with afterburner 5% of the time. What is the peak sound level passengers will be exposed to as they walk between car and terminal or between terminal and airplane when the F-35 takes off with its afterburner blasting?

36. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB when the F-35 reached 1000 feet elevation. What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] questions in view of F-35 noise map

James Marc Leas <jolly39@gmail.com> Fri, Jun 28, 2019 at 7:25 PM
To: btvsound@jonespayne.com

Dear Airport and FAA,

1. The new report omits any mention of hearing damage, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

2. The report omits mention of learning impairment of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

3. The report only includes average noise levels. Why?

4. The report describes other measures of noise but does not tell readers what any of them are. Why not?

5. The Air Force says the F-35 is more than 4 times louder than the F-16 in normal military power. What is the loudest peak sound level of the F-35 on a public street in South Burlington when the F-35 takes off in military power? In Winooski?

6. The Air Force says the F-35 will use its afterburner 5% of the time. What is the loudest peak sound level of the F-35 on a public street in South Burlington when the F-35 uses its afterburner for takeoff?

7. What is the loudest peak sound level of the F-35 on a public street in Winooski when the F-35 uses its afterburner for takeoff?

8. What is the peak sound level of the F-35 taking off with its afterburner for passengers as they walk between car and terminal walking to their cars when an F-35 is taking off with afterburner on? For passengers as they walk between terminal and airplane?

9. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: cancel the F-35.

10. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB

when the F-35 reached 1000 feet elevation. What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

11. What is the maximum F-35 sound level on the runway side of the terminal building during takeoff with afterburner on?

12. What is the maximum F-35 sound level on the part of airport property where civilians may be located during F-35 takeoff with afterburner on?

13. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property?

12. The Air Force says the F-35 will take off with afterburner 5% of the time. Show the noise contours for F-35 taking off with afterburner 50% of the time? 90% of the time?

13. Show the noise contours for F-35 taking off with afterburner 90% of the time?

14. Show the noise contours for F-35 taking off with afterburner 100% of the time?

15. What is the anticipated decline in enplanements and deplanements at the Burlington airport in view of the exposure to dangerous F-35 noise?

16. The basing of F-35 jets located where they damage cities full of civilians is illegal under the military's own law of war manual. Will the city of Burlington and its airport continue to collaborate in the illegal basing of F-35 jets in the Chamberline School neighborhood of the City of South Burlington?

Thank you.

Best regards,

James Marc Leas

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Opposition to F35 basing at BTV

1 message

Loretta Marriott <lmarriot@uvm.edu> Sat, Jun 22, 2019 at 3:18 PM
To: btvsound@jonespayne.com

Please stop the planned F35 basing at BTV.
Thank you.
Loretta

44

Diane Carter <dcarter@jonespayne.com>

[BTVsound] I oppose the basing of F35s at BTV

Loretta Marriott <lmarriot@uvm.edu> Sat, Jun 22, 2019 at 3:22 PM
To: btvsound@jonespayne.com

Please protect us by stopping the basing of F35s at BTV.
Loretta

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] The basing of F35s at BTV is morally reprehensible

Loretta Marriott <lmarriot@uvm.edu> Sat, Jun 22, 2019 at 3:26 PM
To: btvsound@jonespayne.com

The basing of F35s at BTV is morally reprehensible.
Please stop the basing of F35s at BTV.
Loretta Marriott
13 Mills Ave
South Burlington, VT

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] I oppose the basing of F35s at BTV

Loretta Marriott <lmarriot@uvm.edu> Sat, Jun 22, 2019 at 3:31 PM
To: btvsound@jonespayne.com

I don't know why I write comments that have no effect whatsoever.
Please stop the basing of F35s at BTV. It is so wrong.
Thank you,
Loretta

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Please mitigate F35 warm up noise by constructing noise walls

1 message

Loretta Marriott <lmarriot@uvm.edu> Fri, Jun 28, 2019 at 12:24 PM
To: btvsound@jonespayne.com
Cc: Gene Richards <grichards@btv.aero>, Helen Riehle <hriehle@sburl.com>, Meaghan Emery <memery@sburl.com>, Tom Chittenden <tchittenden@sburl.com>, Tim Barritt <tbarritt@sburl.com>, Dave Kaufman <dkaufman@sburl.com>, Maida Townsend <mtownsend@leg.state.vt.us>, Kevin Dorn <kdorn@sburl.com>, Paul Conner <pconner@sburl.com>

Greetings,

Please construct noise walls close to airplanes to mitigate ground noise while warming up.

Previously we heard F-16s idling for a long time before take off. One can ignore this noise but it wears on you and puts you on edge.

May 31, 2019 there it was again! I rode my bike to the airport and saw the F35s warming up at the south end of the runway making ground noise for 20 minutes or more that can be abated, (noise walls would help).

There is plentiful research and much experience with noise walls being effective in mitigating ground noise on highways and at airports.

Richard Doucette of the FAA has stated that once in the air there is nothing that can be done to mitigate military jet noise.

Please construct noise walls close to the planes to mitigate ground noise.

What would it take to get this done?

Thank you,
Loretta Marriott
13 Mills Ave
South Burlington, VT
802-862-2990

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Noise map and options for us"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, May 30, 2019 at 3:55 PM
To: btvsound@jonespayne.com

From: Cindy Matthews <CMatthewsw@AOL.com>
Subject: Noise map and options for us

Message Body:
We were unable to make meeting and for me to find 161 Kirby road on the map and what decibel range is it in. Could you please tell me what it is and what might be options for us in the future and when? We are retired and lived here 30 years and all of my life here have spent a lot of my income on this house. If insulated is it really free or comes out of our profit from selling if we do in the future. THAT would not be free to me. Thanks for your time.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Re: Winooski, VT Resident

1 message

'Martha McKenna' via BTVsound <btvsound@jonespayne.com> Thu, May 30, 2019 at 5:47 PM
Reply-To: Martha McKenna <pinkspatzi@yahoo.com>
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>

A few questions to which I would appreciate answers as well, please:

1) After the F35s arrive, when can I file a lawsuit to show impact on property values and health?
2) What data do you need for us to show impact on our property values and children's health?
3) Please confirm to whom the lawsuits should be filed against. I assume the City of Burlington, but is it also the Burlington International Airport and/or the FAA?
4) Why would municipalities have to pay a 10% match to grants for homeowners, as reported in local news? Why should our cities be forced to pay for having their residents' homes modified because of the damage that the F35s will cause?
https://www.sevendaysvt.com/OffMessage/archives/2019/05/28/many-more-homes-are-inside-high-decibel-areas-on-new-f-35-sound-maps
5) How can someone of limited means escape the noise?
6) How do we protect our children from the harmful effects of the noise?
7) How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?
8) Can you provide the latest scientific findings on the damaging effect of noise?
9) Does the noise map use the noise levels of the F-35's using military power or the noise from after-burner power?
10) What is the decibel level of the F-35s taking off using after-burners?

On Thursday, May 30, 2019, 11:51:46 AM EDT, Martha McKenna <pinkspatzi@yahoo.com> wrote:

To Whom It May Concern,

I am very concerned about the basing of F-35's at BTV airport. My house is directly in the take-off and landing-route of flights at that airport. F-16s are already loud enough and negatively affect my use and enjoyment of my property, for which I have paid a premium. F-35s are reportedly 4x as loud. Efforts to "noise proof" my home as suggested as part of a mitigation process will do absolutely nothing to protect me outside of my home, in my yard, and in my garden.

What are the plans to mitigate the effects on my health? On anyone's health in the path of the F-35's?

Will you be purchasing homes in the flight path? I didn't sign up to live in a war zone, and F-35s are going to significantly devalue my home. This is a financial hardship being forced upon me and my family.

I am staunchly against basing war machines at a civilian airport. And, I'd like to know, specifically, how I will be recompensed and protected from all of the negativities (hearing loss, stress, depression, loss of property value) inflicted by this forced occupation.

Respectfully,
Martha McKenna
Roland Ct
Winooski, VT 05404

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COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

When the Military officers said
"We do not plan to have Nuclear weapons on the F35" or
"There is No Plan to have nuclear weapons on the F35s"

I understand what plan means and how plans change, quite often with our government!

No F35's in Vermont

Sally Millichamp
millichampsally@gmail.com

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] FAA Noise Map Question

Fred Mindlin <fmindlin@gmail.com> Fri, Jun 28, 2019 at 6:22 PM
To: btvsound@jonespayne.com

How long does it take for the damaging health effects of noise to manifest in the human body? in children's bodies?

Fred Mindlin
String Stories|Digital Stories
Teaching Artist: Core Connected Learning

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Questions about the NEM"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, May 30, 2019 at 9:54 PM
To: btvsound@jonespayne.com

From: Cara <stringbean75@gmail.com>
Subject: Questions about the NEM

Message Body:
Dear Mr. Longo,

I live in Winooski at 68 West St. I attended the Open House at the O'Brien Center, watched the interview you did with Mayor Lott on Channel 17, and I have looked at the NEM and have several questions.

1. I live just 2 blocks outside of the mapped 65 DNL. What are the risks to my health? In the recent report, you don't really explain why 65 DNL is considered incompatible with residential use? There is a brief explanation that it might interrupt sleep or be "annoying", but these seem like such small consequences in relationship to the fact that homes inside the current 65 DNL have been purchased outright and raised. Why were those homes considered uninhabitable?

2. What will the effect be on Winooski's tax base if the homes inside the 65 DNL loose value? Will the city be compensated for that lose? For how long?

3. Will the NEM ever be updated based on real life data once the F 35s arrive?

4. I am a landscaper and spend my days outside. I'm concerned that noise mitigation efforts will be useless for me as you can't mitigate for outdoor noise. I also spend considerable time outside with my children. Will their health be impacted?

5. What will the noise impact be on our native fauna? How can we justify the damage this will do to them?

6. My children attend the Bellwether school in Williston. It is also just a few blocks outside of the 65 DNL zone. Teachers tell me that the noise levels from the F16s already significantly interrupt classroom and playground time. I am surprised that with the increased expected noise levels that they wouldn't qualify for any sound mitigation.

7. If I choose to sell my home, what kind of a disclosure will I need to make to future buyers?

8. Where else should I send my questions and concerns?

sincerely,

Cara Montague

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Noise impact to Winooski"

BTVsound Website <cmurphy@jonespayne.com> Thu, Jun 6, 2019 at 9:54 AM
To: btvsound@jonespayne.com

From: Bryn Oakleaf <bryn.oakleaf@gmail.com>
Subject: Noise impact to Winooski

Message Body:
It would be prudent for FAA, DOD, and the VTANG to do an environmental justice and economic impact studies prior to basing and in conjunction with mitigation plans. It should plan to do an assessment in recurring two year increments. Current reports are simply estimates and serve only as proxy data to the real, lived experiences to come.

The Winooski community already faces an unfair burden with the current demographic and infrastructure composition. Consideration of these factors should not be a static review for a single point in time but an ongoing review to asses how the F35 basing impacts the health, welfare, quality of life, housing assessments, and economic vitality of the community. The findings should then become actionable measures to mitigate those impacts comprehensively and not merely for the estimated 40% of homes within the 65db range provided by the latest maps.

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This is a combined response to Mayor Kristine Lott concerning the basing of the F35 nuclear bombers in Burlington
-- from the nine Missionary Sisters of Our Lady of Africa living at Our Lady of Providence Residential Care Facility, Winooski.

We appreciate that you continue to reach out to the people of Winooski concerning the noise impact from the F35 nuclear bombers that are scheduled to come to our area in September 2019.

We are aware that the noise is estimated to be 4 times louder that the previous F16 fighter planes.
We have noted that the proposed flight path is right over Winooski. That is right over schools, churches, parks, homes, etc. Residents, especially children are bound to suffer greatly from this added stress and we all risk deafness and other health consequences.

While not much can be done to mitigate the sound in outdoor areas, at least buildings can be made more sound-proof.

We have heard that sound mitigation for buildings will be carried out, but that it is a long process and will likely take up to 25 years at least before all the buildings could be touched.

We also heard that Winooski is last on the list.

<u>We have three requests:</u>
1. Publish flight schedules for take-off and landing of these planes so at least people can be a bit prepared.
2. Prioritize Winooski to receive funding for sound mitigation for buildings.
3. Continue to do everything possible to transfer the basing of the F35 to another region which is less inhabited.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Quality of Life for Seniors"

BTVsound Website <cmurphy@jonespayne.com> Thu, Jun 27, 2019 at 2:20 PM
To: btvsound@jonespayne.com

From: Our Lady of Providence <kdaigneault@ourladyofprovidence.org>
Subject: Quality of Life for Seniors

Message Body:
Dear Sirs,
Our lady of Providence is a residential care community for elders in Winooski, Vermont. 45 elders are entrusted to our care necessitating this outreach to you on their behalf.
We have reviewed the noise map and adjacent documentation and believe that due to our location those who reside with us will be negatively impacted by this project.
We have actively pursued all venues of public discourse to voice this concern throughout the unfolding of the F 35 Project. This being our final opportunity to do so we would like to take a moment to describe the unique value of our community. Our property is located on 2.5 acres of lush green garden areas with beautiful walking paths in the heart of Winooski. We worry that our beautiful courtyard will no longer be usable for our residents to garden, stroll and enjoy the outdoors.
We respectfully request that you reconsider this project and if no longer an option that we are prioritized in receiving noise remediation funding to ensure our residents quality of life remains intact.
Please reach out to Executive Director, Mary Belanger should you have further questions or information regarding this public comment.

Sincerely,
Our Lady Of Providence
47 West Spring Street
Winooski, Vermont 05404
(802)655-2395

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "F-35 NEP options"

BTVsound Website <cmurphy@jonespayne.com> Mon, Jun 3, 2019 at 6:47 PM
To: btvsound@jonespayne.com

From: Taunya Perron <tp1031@hotmail.com>
Subject: F-35 NEP options

Message Body:
Hi,
We read the article in the observer and are in the 65db section of the NEP. We want to see if we are eligible for any of the following: FAA funds for noise mitigation upgrades, market value price protection or outright purchase. Our address is 524 North Brownell, Williston VT 05495. Please contact us in regards. Thank you.
-Taunya

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Oppose the F35 basing

1 message

Pierce <nichpierce@gmail.com> Mon, Jun 3, 2019 at 11:17 AM
To: btvsound@jonespayne.com

I am thoroughly opposed to the F-35 Basing and have serious concerns re: the impact of noise, particularly in light of the newly released sound maps for Winooski, South Burlington and parts of Burlington. The economic and environmental impact will be devastating at these predicted levels, and the slow to adapt and inadequate noise mitigation plan is not nearly comprehensive enough to offset the damage to these Vermont communities.

Sincerely,
Nick Pierce

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Comments on the FAA's Projected Noise Map for BTV

Joanna Rankin <Joanna.Rankin@uvm.edu> Fri, Jun 28, 2019 at 10:28 PM
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>

The noise from the Vermont Air Guard's F-16 have already been a debacle for the communities adjacent to the Airport, and the projected Noise Map shows that any F-35 basing with exacerbate this situation greatly. And the impact will be born most for people who can afford it least, low income people, immigrants, etc.

Having now heard F-35s taking off from BTV several days after the events in which the Noise Map was presented to the public, I now understand the the F-35s will be MUCH worse than the F-16s. I should say that I love off East Avenue in Burlington, barely outside of the critical Noise Map zone. I also now understand that the Noise Map is deceptive in that it fails to include low frequency rumbling that is felt rather than heard. The F-35 takeoffs I witnessed were much louder than the F-16 ones we are so used to—even though they probably departed on that occasion making the least noise they could. The character of the noise, however, was very different: F-16 noise is noxious, but usually it is just noxious. The F-35s were not only much louder, they produced pressure variations and infrasound that were frightening.

The Noise Map is therefore deceptive because it only takes into account the F-35 noise within the 20 Hz to 20 KHz range of human hearing. In my experience, what Burlington residents may come to most object to is the sound energy that falls at lower frequencies than most people can hear.

Joanna Rankin, Physicist
23 East Village Dr.
Burlington

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Increased Noise Pollution Coming to Winooski Soon

ellen <ravelinellen@gmail.com> Sat, Jun 22, 2019 at 12:43 PM
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>, Ellen Ravelin <ravelinellen@gmail.com>

I am Pastor Ellen M. Ravelin and my church, Winooski United Methodist Church, and my home at 236 West Canal Street are both directly in the flight path of the new military jets coming to our area soon. Please keep me in the loop as to what I need to know in order to protect my congregation and my family from the noise pollution this will cause most of us who live in Winooski. Thank-you for your consideration of this request.

Most appreciated,

My email is ravelinellen@gmail.com

My church phone is 802-655-7371

My home phone is 802-655-9629

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Noise from F35's"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, Jun 20, 2019 at 5:53 PM
To: btvsound@jonespayne.com

From: Theodore Regula <theodoreregula@hotmail.com>
Subject: Noise from F35's

Message Body:
Dear Sir:
The easiest way to abate F35 noise
is to station them is to put them on a military
base. War planes should NOT be based at a
civilian airports. I think they should be based on
Senators Leahy and Sanders property.
Let's see how much they would like having to
wear hearing protection to step outside.

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COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

As a kid Im very Scared because I Just started my live and if they use nuclear weapons on us it will effect them too. I dont want anyone in my family or other people to die. I hope that they will agree to not use Nuclear Weapons on South Burlington's base. This is my home and I love it So please dont take it away.

Sincerly,

Naomi rose choulot

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Steve + Judy Rusiardo 22 Terry Lane, Williston

I request the FAA lookout past the 65 dB DNL zone to include 55 and 45, maybe.

We are in the flight pattern and have witnessed the shaking house and windows. Also, couldn't hear on the phone and have to plug ears, to alleviate pain.

Thank you.

our email - kkparlow@L.com

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BVT noise

1 message

'Peter Rowan' via BTVsound <btvsound@jonespayne.com> Thu, Jun 20, 2019 at 9:46 PM
Reply-To: Peter Rowan <peterrowanvt@me.com>
To: btvsound@jonespayne.com

So often at events honoring our veterans we hear people saying “Thank you for your service.” Well, as a resident of Winooski and living under the path of these Air Force Fighter jets and the brave men and women that fly them, I consider my being subject to their noise as my infinitesimal contribution to the effort necessary to preserve our freedom.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "BTV F-35 noise"

1 message

BTVsound Website <cmurphy@jonespayne.com> Thu, Jun 20, 2019 at 9:47 PM
To: btvsound@jonespayne.com

From: Peter Rowan <prowan01@yahoo.com>
Subject: BTV F-35 noise

Message Body:
So often at events honoring our veterans we hear people saying “Thank you for your service.” Well, as a resident of Winooski and living under the path of these Air Force Fighter jets and the brave men and women that fly them, I consider my being subject to their noise as my infinitesimal contribution to the effort necessary to preserve our freedom.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTV Comment NOISEMAP vs AAM noise modeling

1 message

'JEAN SAYSANI' via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 6:35 AM
Reply-To: JEAN SAYSANI <jeanblu@aol.com>
To: btvsound@jonespayne.com

The BTV Noise Map Report says the latest NOISEMAP noise modeling was used, as has been used at Westfield, Westover & BTV.
But none of these locations have F18's, F22's or F35's. Since the F35 and F22 employ engine thrust vectoring, I understand they can't be modeled using simple linear theories that NOISEMAP uses. ***Was AEDT 2b and AAM-Advanced Acoustic Noise Modeling used to capture the noise of these powerful engines for the "new" NEM' s?***
Jean Saysani
Winooski
802-355-3300

Sent from my iPhone

66

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Sound Mitigation Comment"

1 message

BTVsound Website <cmurphy@jonespayne.com> Mon, Jun 3, 2019 at 6:22 PM
To: btvsound@jonespayne.com

From: Jennifer Schollmeyer <jaschollmeyer@gmail.com>
Subject: Sound Mitigation Comment

Message Body:
This message is in regards to the most recent sound maps and the public meetings. I feel it is a tremendous burden to place on one of the most densely populated part of Vermont to endure this sounds increase in our community. While I appreciate the financial offerings that may be available to the community I'm still very upset that I will no longer be able to have open windows or play outside with my child. Where will my hold play? What will happen to the new American community that may not be fully aware of their ability to participate in any noise mitigation? What about the many rental units that have owners that are not interested in keeping up their property? These are the people most at risk for adverse affects. Please don't make any decisions about if our community will get funding without reaching out to these people as well.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Noise Map question F-35 in Burlington, VT

Peter B. Schubart <pbs@together.net> Sat, Jun 29, 2019 at 10:34 AM
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>

Hello,

How do we protect our children from the harmful effects of the noise?

Thank you.

Peter Schubart

Sent from Mail for Windows 10

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Noise of F 35

1 message

Sheehey-Jones, Johanna M. <Johanna.Sheehey-Jones@uvmhealth.org> Sat, Jun 1, 2019 at 7:44 AM
To: "btvsound@jonespayne.com" <btvsound@jonespayne.com>

My hisband and I happened to be home at 49 Mansion Street in Winooski durimg both the landing and takeoff of the F 35 planes this week.
All our windows, triple panes, new in past 5 years, and doors were closed. The sound of the jets still made conversation impossible. My husband went outside to watch the jets overhead but the deafening roar made it too painful to be outside.
Please consider this message as a formal complaint.

Johanna Sheehey-Jones

Get Outlook for Android

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COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Could you come to our church with the maps and explain the sound levels and their impact? Please contact me: Spencer Smith: sspencersmith92@gmail.com Burlington Friends Meeting (Quakers) 173 N. Prospect, Burlington VT

Thank you.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] Reaction to Mitigation details

1 message

Ron Stotyn <stotyn.ron@gmail.com> Sat, Jun 1, 2019 at 11:20 AM
To: btvsound@jonespayne.com

Good day: To whom it may concern
1. I support the F35 deployment to Vermont. However I have concerns about details revealed about the sound mitigation scheme.
2. I live adjacent to the intersection of La Fountain and Bernard in Winooski. Having attended the Winooski presentation on Thursday last I am disappointed by the exclusion of my house from the mitigation zone. It appears to me that the policy of requiring a 65 DBa maximum level fails to recognize the real DBa-SPL levels that occur when the F35s fly over Winooski. That reality is that, based on SPL measurements I have taken while the F16s where still based here, (and average of 90 DBa-SPL at peak during flyover) inside my home with windows closed and slightly higher when they are open) it is certain that my house and those of my neighbors should qualify for mitigation.
3. The rational for drawing the boundaries as shown on the map is obtuse. I have experience with audio production in which I taught, at university level, OSHA guidelines and specifications and audio level comparisons. For example, it is the case that measurements of 90 DBa, equivalent to construction power saws next door running more or less constantly and considering constant exposure for 2 hours of more will cause permanent hearing damage.
4. My measurements of the F16s showed exposure limited to 2 minutes, more or less when flights of 3-4 jets were passing on their way to altitude. I note also that OSHA standards recognize that distance from the source is a factor in measuring and understanding the impact of SPL on hearing. Given that my measurements of 90 DBa were of a traveling sound source at altitude of several thousand feet and rapidly dissipating actually demonstrate a limited maximum peak of about 30 seconds, more or less. That clearly is insufficient to create even temporary damage. This time frame is generally recognized by OSHA as unlikely to create even temporary hearing damage. It is known that the ear recovery quickly because hearing is resilient in most people.
5. This kind of information is entirely missing from the presentations materials that I saw on display. Notwithstanding my explanation above, if the report considers that 65 DBa is a maximum allowable sound level, then the real DBa measurements of the sound source must be properly considered in determining what area should lie within a mitigation zone. Further, given that my measurements involved only F16 flyovers, I believe that it is incumbent for the study committee to use and employ real DBa measurements of F35 flyovers with careful recognition of altitude as a factor for SPL on the ground inside homes with windows closed. I note in particular the departure of the F35s on Friday last, which was not announced, did not allow me to make any measurement. I will say based on my experience with the sound levels of the F16s, that I did not discern any significant different in the SPL from the F35s. OSHA recognizes that it takes a change of 3 DBa for the human ear to recognize any increase, Since the maps and accompanying information does not express any information about real source DBa emissions it is not possible for the public to understand what is valid information.
6. Let me reiterate that I support the F35 deployment to BTV. But, I deplore that abject lack of real DBa measurement information and discussion of the realities of what actually constitutes hearing damage. I do not speak to any other kind of impact on one's lifestyle or well-being except to say that in my experience one can generally adjust quickly to the sound levels to the extent that it becomes habituated and thus not found to be an issue. That is, one does not any longer pay any attention to the sound level source.
Respectfull submitted
Dr. Ron Stotyn, PhD, Associate Professor of Broadcasting (RET)

"You are what you repeatedly do. Excellence is not an event - it is a habit. " Aristotle
"It's not enough to do one's best. What is required is rather that one do what is necessary for success." Winston Churchill
"Our age of anxiety is, in great part, the result of trying to do today's jobs with yesterday's tools." Marshall McLuhan
"If you are a leader, but have no followers, you are just taking a walk." Unknown author
"Count that day lost when you don't learn a new thing" Bill Matheson (World's best weatherman, Paris 1995)

Ron Stotyn, Ph.D
21 Bernard Street,
Winooski VT 05404-1504
AIM: ronstotyn
mobile: 802-598-6541

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] F-35 Basing at BTV

1 message

Pamela Sullivan <pamsullivan155@gmail.com> Fri, May 31, 2019 at 12:08 PM
To: btvsound@jonespayne.com
Cc: Dave Sullivan <Dasully999@gmail.com>

Hello,

I am writing to you today to express my very real concern regarding the basing of F35s at BTV.

My husband and I are residents of Winooski. We are recent transplants from Connecticut. We live at 155 Weaver Street. Most every plane that flies in and out of BTV flies directly over our rooftop. As we live on the top 2 floors of our 2 family dwelling and have skylights on the 3rd floor, I literally can see the belly of every plane that flies over. In warmer weather, with windows open, we cannot hear the tv or have a conversation while most any plane is flying over, let alone an F16.

While we had come to accept the F16s and the associated disruptions, I don't think we understood the gravity of the impact those planes had on the surrounding area of the airport until now. Faced with 4x the noise impact and knowing that our home is well within the high impact zone — a zone deemed non compatible for single, multi, other and mixed residential, as well as public land use as outlined on the map provided in the study— we realize how detrimental this will be to those who took the worst of the impact of the F16s and whose impact will become 4-fold with the F35s

The hi impact area (65 db DNL contour) would appear to include the entire downtown area of the city of Winooski, as well as the surrounding neighborhood. It includes schools, churches, care facilities, an historic district and an increasingly vibrant and growing business district. The surrounding neighborhoods house home owners and renters who are taxpayers, students, medical personnel.

This part of the state of Vermont (Chittenden County) is the most densely populated county in the state of VT with what I assume is an enormous tax base for the state. We, as residents of Winooski, pay very high taxes. And, while we have means to relocate if we feel the need, we feel very much like we should defend the viability of the city of Winooski and all that it is and can become as it continues to evolve and come into itself.

The F35s will hurt our investment in the state of Vermont. The F35s will harm the residents of Winooski. The F35s will harm the evolution and viability of the city of Winooski.

The 4 F35s that were laid over at BTV these past 2 days left this morning at approximately 8:15 am. I was in my kitchen, preparing to head upstairs to the my 3rd floor home office to work for the day. They flew, one by one, directly over our home. With windows open, the sound was deafening and alarming. My dog was visibility shaken and I had to plug my ears due to the intensity of the noise. These planes are louder than the F16s - of that I am sure. Their negative impact reaches out further in the surrounding community and will force people like ourselves who bring investment and energy to the area to find a way out.

The question i have for you — is the basing of these F35s here in the middle of Vermont's most densely populated area worth the destruction they will cause?... making the surrounding area that is vibrant and full of residents, schools, churches, businesses, university, colleges unlivable?

What will you do with all the homes you buy up? How will you compensate me for making my property investment unlivable? How really do you justify the enormous negative impact this basing will have on everything within your red line? Why would the state of Vermont want to stunt its growth by inflicting this on its most heavily populated region? The state of Vermont is working hard to attract people to the live here — providing funds to encourage relocation. This basing flies in the face of that effort — don't you think? Or, is it just that the city of Winooski feels expendable? We would tend to disagree.

Respectfully,

Pamela & David Sullivan
155 Weaver Street
Winooski, Vermont

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Diane Carter <dcarter@jonespayne.com>

[BTVsound] F35's

Jean Szilva, MD <jszilva60@gmail.com> Fri, Jun 21, 2019 at 9:06 AM
To: btvsound@jonespayne.com

https://www.nhs.uk/news/heart-and-lungs/aircraft-noise-linked-with-stroke-and-heart-problems/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3757288/

https://www.science.org.au/curious/earth-environment/health-effects-environmental-noise-pollution

Aside from the health and cognitive problems that will ensue (but since no one is going to study this, you will claim it hasn't happened, the equity in our homes will certainly take a hit. There goes the retirement plan, the college education plan for the kids and the plan with long term care expenses which we will need sooner because of the noise.

Many homes in the area have plaster walls and ceilings. Are you going to help when they fall?

There is no good reason for these planes to be here. You wouldn't even consider it if the flight plan was over Shelburne.

This is all about wealthy developers getting richer. What a mess.

Jean Szilva, MD

leaterhune 44@gmail.com
leaterhune@gmail.com

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Noise Map Questions from Public

1. If the Air Force reduces the value of my home due to noise, whether I'm officially in the >65 dB zone or not, will I be compensated? By whom?

2. If my children suffer hearing loss due to aircraft noise, whether I'm in the >65 dB zone or not, will the Air Force or the City of Burlington pay our medical bills?

3. If fire or a crash on the ground or the runway cripples an F-35 and the airport has to shut down for an extended period of time, what will happen to Chittenden County's economy?

4. When whole neighborhoods such as the Italian section of downtown Burlington were demolished, residents suffered traumatic stress disorder from the loss of community ties. Will the Air Force or the City of Burlington pay for therapy that may be necessary due to the demolition of the Chamberlin neighborhood?

5. If students in the Chamberlin School can't play outdoors due to aircraft noise, will the Air Force pay to build a new primary school outside the >65dB zone and pay for it?

6. If an F-35 crashes, as two have already, will the Air Force fully compensate property owners who lose structures or the use of their land?

7. If an F-35 crashes, as two have already, how will the Air Force compensate families for the loss of life of family members?

8. Military waste incinerated in so-called burn pits have caused cancer and other diseases to soldiers down wind. With 40% of the F-35 composed of chemical compounds that are carcinogenic when burned, what will happen to residents living down wind from such a crash?

9. With sound mitigation funds only able to pay for 50 houses per year yet 3000 homes are expected to be in the .65dB noise zone and eligible, is there any guarantee that all the eligible homes will get new doors and windows? How long must people wait?

10. If the Chamberlin School is <u>not</u> closed and relocated out of the <65dB zone, how can teachers sustain a learning environment with the many intervals of shattering noise as the F-35 takes off?

11. If my child experiences cognitive impairment due to noise bursts or accumulating noise events, will the Air Force or the City of Burlington pay for tutors and other special education needs?

12. If housing values fall due to noise exposure from military aircraft and the City of South Burlington loses property tax revenue, will the Air Force or the City of Burlington make South Burlington taxpayers whole?

13. If my family can no longer use my yard for barbecues, gardening, or relaxation due to the noise of military aircraft, will the Air Force or the City of Burlington compensate me for this loss to the quality of my life?

14. My mother suffers from hypertension. Her high blood pressure is aggravated by sudden and repeated noise events. Will the Air Force or the City of Burlington pay for any treatment she might require due to the noise of military aircraft?

15. With most maintenance of the F-35 done by Lockheed Martin outside of Vermont, what will happen to the jobs of Vermont aircraft mechanics who worked on the F-16?

16. Vermont's tourism economy depends on natural landscapes enjoyed in peace and quiet. What will be the effect on the tourist economy of 18 F-35s taking off multiple times each day?

17. The gap between wages and the cost of housing has already led to more than 300 homeless in Chittenden County. With 200 affordable homes already lost and 3000 facing a declaration that they are no longer "suitable for residential use," how will this affect rents, housing costs, and homelessness?

18. Winooski in particular is the home of many immigrant Americans, often refugees from war-torn regions such as Syria, Iraq, Lybia, Sudan, and the Balkans. How will exposure to the daily high-decibel sound of military aircraft affect people who may already have been traumatized by war?
19. After the F35s arrive, when can I file a lawsuit to show impact on property values and health?
20. What data do you need for us to show impact on our property values and children's health?
21. Please confirm to whom the lawsuits should be filed against? We assume the City of Burlington, but is it also the Burlington International Airport and/or the FAA?
22. Why would municipalities have to pay a 10% match to grants for homeowners? Was the City of South Burlington forced to pay for having their resident's homes modified because of the damage that the F16s caused to homeowners there?

23. The new report omits any mention of **hearing damage**, as described by the US Air Force in Volume II of the EIS. Your report only mentions "annoyance and a nuisance. [Noise] can interfere with conversation, listening to television, disrupt classroom activities in schools, and disrupt sleep." Why does your report fail to even mention hearing damage when the Air Force described three separate mechanisms of permanent hearing damage?

24. The report omits mention of **learning impairment** of children, also highlighted by the US Air Force in Volume II of the EIS. Why is learning impairment omitted from your report?

25. The report only includes average noise levels. It describes other measures of noise but does not tell readers what any of them are even though the Air Force says the F-35 is more than 4 times louder than the F-16 and that the F-35 will use its afterburner 5% of the time. What is the loudest peak sound level of the F-35 on a public street in South Burlington when the F-35 uses its afterburner for takeoff? In Winooski?

26. The US Air Force said that a single exposure to a 130 dB sound can cause "immediate and permanent hearing damage." Your report fails to mention the peak afterburner sound level of the F-16 or the F-35. What are those levels? What is the peak sound level of the F-35 taking off with its afterburner on streets in South Burlington? For passengers enplaning or deplaning?

27. Your report graphically demonstrates that the reduced use of the F-16 and its afterburner in 2018 dramatically lowered average sound level and that way fewer homes were in the noise danger zone. Do you agree that your 2018 map shows that the danger to thousands of people in homes schools, day care centers, and churches is sharply reduced when the illegal use of fighter aircraft in a city is reduced? Do you agree that the 2018 map points the way to a solution to the extreme noise danger shown in the 2023, F-35 dominated noise map: **cancel the F-35.**

28. The Air Force said that exposure to 114 dB can cause temporary hearing damage and that repeated such exposures can cause permanent hearing damage. The Air Force said the F-35 would hit a person on the ground below with 115 dB when the F-35 reached 1000 feet elevation. What is the elevation of the F-35 when it reaches Winooski, and what is the peak sound level there?

29. Would you agree that your report is deeply flawed because it omits mention of sound levels on airport property in view of the fact that the airport serves 4000 passengers enplaning and deplaning each day on airport property? The Air Force says the F-35 will take off with afterburner 5% of the time. What is the peak sound level passengers will be exposed to as they walk between car and terminal or between terminal and airplane when the F-35 takes off with its afterburner blasting?

74

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Betrayal

Robert Thiefels <bthiefels@gmail.com> Sat, Jun 29, 2019 at 1:01 AM
To: btvsound@jonespayne.com

Senator Sanders and Senator Leahy have betrayed the people of Vermont.

The war industry and jobs have been one of Senator Leahy's big pet projects over the years, and he has been true to form here. If we had someone better to oppose him in the next election, I would.

Leahy could stop this basing of the F-35's here if he wanted to.

I have opposed the basing of the F-35 here and I still do. I have written Senator Sanders about this, and have NEVER heard back from him. His mind was made up from the start, and he would not listen to any opposition. Makes me wonder about Bernie as well.

Robert Thiefels
Hinesburg, VT 05461

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You received this message because you are subscribed to the Google Groups "BTVsound" group.
To unsubscribe from this group and stop receiving emails from it, send an email to btvsound+unsubscribe@jonespayne.com.
To view this discussion on the web visit https://groups.google.com/a/jonespayne.com/d/msgid/btvsound/CABbODm8z%3D73qVkt%2BUtSLEvLdgqENgn_AGSsZ0AL0v0qjHWbKwg%40mail.gmail.com.

75

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Very disturbed over the basing of the F-35 in a residential / school zone. Shame on Leahy!

Sandra Welch

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

76

Diane Carter <dcarter@jonespayne.com>

[BTVsound] FAA Noise Map Question

1 message

'Irene Wrenner' via BTVsound <btvsound@jonespayne.com> Fri, Jun 28, 2019 at 7:18 PM
Reply-To: Irene Wrenner <imwren@aol.com>
To: btvsound@jonespayne.com

I have followed this issue for years.

As Chair of the Essex Selectboard in 2009-10, I was asked to champion a resolution supporting the basing, which I declined because that sounded like political posturing to me. After all, the airport is neither in Essex, nor are flight patterns made over our town.

As I have attended meetings and read about the possible impacts of this plane's arrival, I am prouder than ever that such a resolution was not presented to, nor signed by, my board during the 12 years in which I served as a Selectman.

Here's a question that IS relevant to many of my neighbors who live near enough to the airport to hear the F-35 arrivals and departures.

If the basing of F-35s at BTV reduces the value of any home due to noise, whether that home is officially located in the >65 dB zone or not, will homeowners be compensated? If so, by whom?

Thank you very much for your time.

Irene Wrenner
Essex

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

As a Winooski City home owner I would like Airport administrators, city officials and committee members to consider the density of people & homes that will be affected by this growth of air traffic in our city vs other effected areas. Our small city has wonderful schools, churchs, single homes & multi unit homes as well as parks & community centers that will be effected almost immediately. Please consider this as you move towards funding & plans for noise mitigation programs.

I also wonder as realestate will most certainly be effected — any federal or home taxes might another way to compensate our community.

To submit comments online, please visit www.btvsound.com

Lucy Dyk

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

78

Diane Carter <dcarter@jonespayne.com>

[BTVsound] BTVsound website contact us "Decibel Level"

1 message

BTVsound Website <cmurphy@jonespayne.com> Fri, May 31, 2019 at 8:47 AM
To: btvsound@jonespayne.com

From: Sharon <sbgutwin@gmail.com>
Subject: Decibel Level

Message Body:
I have commercial property in Blair Park and when the F16s went overhead you could not hear a person standing next to you shouting.
The map you present is not even close to telling the truth of what to expect with the F35.
When the F35s come you can be sure that I will take the actual decibels with this map to court. I will not allow lies and deceit to rule. We have laws and consequences regarding false advertisement. All parties that contribute to misinformation will be held accountable.

--
This e-mail was sent from a contact form on Burlington International Airport Sound Mitigation Program (http://www.btvsound.com)

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You received this message because you are subscribed to the Google Groups "BTVsound" group.
To unsubscribe from this group and stop receiving emails from it, send an email to btvsound+unsubscribe@jonespayne.com.
To post to this group, send email to btvsound@jonespayne.com.
To view this discussion on the web visit https://groups.google.com/a/jonespayne.com/d/msgid/btvsound/64e9ac621feba8116381f656cd372546%40wordpress.jonespayne.com.

79

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Jets

1 message

Sbgutwin <sbgutwin@gmail.com> Fri, May 31, 2019 at 8:31 AM
To: btvsound@jonespayne.com

I have lived in Williston for over 3 decades and the noise from the F16s were so loud that you could not carry on a conversation with someone even shouting at them...far above 65 decibels. I actually measured it with a phone app to be above 100 decibels! And...they came in groups of like five jets. I have lost all respect for the National guard with their total disregard of the effect of their noise.

Frankly, when has any air force jet even once, afforded any real protection to our country. Yes, they showed up at 911....only afterwards. Yes, they go over seas to “fight the enemy”...not my enemy.

When are we going to wake up to a different perspective on this planet...who we define as people to kill, what lands we aim to bomb the hell out of. It is ego, power, money and a lot of ignorance that drives war. I am sick of it. Every time I see or hear anything of war it sickens me to my core. I see people being “pro life” and “pro killing” in some righteous state mind.

I am done with tolerating wars...done with people destroying peace on earth. Those blasted jets scheduled to arrive will not afford any peace in any way to anyone.

Sharon

80

Diane Carter <dcarter@jonespayne.com>

[BTVsound] Resident of Winooski

1 message

amac841 via BTVsound <btvsound@jonespayne.com> Tue, May 28, 2019 at 7:15 PM
Reply-To: amac841@aol.com
To: btvsound@jonespayne.com

As a resident of Winooski I applaud the basing of the F-35 at BTV, as a disabled American Veteran I am ashamed to admit these people come from the same town but it is clear that they are apposed to the Military, not the F-35's.

81

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

It is completely inappropriate to do so the FBOs Lee in Vermont

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

82

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

We live @ 103 Country Club Dr East, SB
We have concerns about the "projected impact" on our neighborhood and the true impact!
We have lived in Country Club Estates for 20 yrs now, when an F16 is flying overhead we have to stop conversations and things rattle on the wall.
I can't imagine how worse it will be with the F35's!
Neighborhood needs to be part of the Sound Insulation Project!!!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

83

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

The coming of the F-35's to this airpot is a very bad choice, but if it is necessary, at least be honest with us!

Your "noise levels" are only "averages" - What are the actual decibal levels when the F-35's fly over??

"Sound abatement" isn't a viable solution - houses in our area are wood-framed, built in the 1960's - just retrofitting doors and windows isn't enough. Even if it were, it does nothing to save our hearing (and nerves!) if we're outside.

Do the right thing - cancel the F-35's, OR buy us out at truly fair market value!!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

84

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I live off East Ave in Burlington. We are severely impacted by noise at North take off's! - the butt end of the jets points at us & the hospital.

The Numbers of people affected in Burlington are completely WRONG.

I suspect the model was tweaked to make sure the hospital was not in the impact zone.

Bull Shit!

O

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

85

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

1. What is the over all plan for Chamberlin?
2. How will recess be affected because you can't sound proof outside?
3. Will flight schedules be posted/available so community knows when to head indoors?
4. Whats the plan for in between F35s flying and grant money coming in?

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

86

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I completely oppose the basing of F-35's in Burlington for so many reasons. I believe their presence in a commercial airport puts us all at risk and makes us a target, as it is the transport system that will be targeted by our enemies. They also malfunction, use tons of fuel, are noisy as hell and cost $1.3 trillion for the program. They are an affront to the good people of Burlington, S. Burlington and Winooski who have said they don't want them here.

They are I believe they will be nuclear capable in the near future, and are be readied for first-strike stealth attacks. Thinking about moving away to a safer location. Shame! Shame!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

87

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

(1) [redacted] Nuclear capability even without a nuclear payload makes our community a target.

(2) All the fancy, expensive maps and reports cannot convince me. I've lived with the F-16s for 7 years. Everytime they Fly overhead, my family has to suspend whatever we're doing — conversation, media, etc. And our residence [redacted] is not even in the high noise area.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

88

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

What noise effects will be experienced by children whose upper frequency Range of hearing is not included in the A-weighted dB measure?

Can will Noise abatement/insulation prevent the vibrations of wooden homes due to frequencies below that of A-weighted dB measures?

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

89

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

WHAT IS THE REASON TO PUT FIGHTER JETS @ BTV? THEY ARE A WASTE OF MONEY, THEY ARE LOUD, THEY ARE DANGEROUS. AND BURLINGTON, SOUTH BURLINGTON, + WINOOSKI DONT WANT THEM DEMOCRACY, I DONT THINK SO

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

90

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Will Burlington or the Air Force pay to replace the Chamberlin School?

If my child experiences cognitive damage from noise will Burlington or the Air Force pay for his therapy?

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

91

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

* Please consider the dangerous impacts of this intense noise on our children at the Chamberlin School. It is macceptable!

Also what will happen to my property values?

This basing of the F-35 must be cancelled!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

92

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

We need REAL, MEANINGFUL INFO RE INSTANTANEOUS NOISE LEVELS. DEAFENING!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

93

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

This is the biggest whitewash - noise averages mean absolutely nothing

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

94

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Do you actually know how many ~~AAA~~ communities in Chittenden Care opposed to these planes being based in ~~The~~ this family community. The noise and disruption are very harmful to the people who live in the area.

Please keep these planes away from populated areas.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

95

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I live in Winooski and you do not have any immediate remediation for the sound. That is shameful and illegal!!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

96

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I asked a simple question this evening: How much louder is the F-35 than the F-16? None of the Air Nat'l Guard representatives could answer. A pilot, two other officers, and an environmental impact expert could not answer my question. I restated it after they told me it would depend on a number of factors. Same altitude, same position, same weather conditions — just F-35 instead of F-16. They had no answer. We need answers.

by Robert Ackland, PhD (I'm a professor of teacher education)
100 W. Canal Apt 4
Winooski, VT 05404

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

97

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I bought my Williston home 49 years ago thinking I was moving to the country! I have lived in my house for 49 years – I am now 79 years old and do not want to have to move! The F16s made my windows shake and were so loud that I could not hear people on the telephone. All the F65s will do is lower my resale price and my future.

Don't there some way to get sound suppression? Please help. I am not the only senior in my neighborhood who will need help, and this is not the first time I have asked for help!!

ps. I live at Hickory Hill Williston.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

98

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

1. What is the current data/projections on the affect of these levels of airplane noise within the 65db DNL contour on real estate values/house sale prices?
2. What is the breakdown of low-income residents (percentage of overall residents or households) within the 65 db DNL boundary?
3. What is the estimate of the maximum noise level (in db) and for what amount of time (daily/weekly/monthly) within the 65 db / 70 db / 75 db contours?
   a. during planned operation
   b. for potential future operation (is it possible or likely there will be an increase from current planned flights?)
4. Assuming all homes w/in the 65 db DNL contour are eligible for sound mitigation, what is the estimated timeframe to complete mitigation for all homes?

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

99

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

It is wrong to base this plane in an urban area. The noise threatens The hearing of all in The range, causes hearing loss and learning impairment in children, causes heart disease in The elderly and makes the entire area a bombing target. The only solution is to base Them elsewhere. The only solution is to cancel The F-35 basing here.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

100

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

(1) When 55% of Burlington voters called for cancellation of the F-35 basing, why was the basing allowed to continue?

(2) Noise levels from the F-35 will be high enough to cause learning problems and permanent hearing damage in children. Sound mitigation inside will not affect all circumstances where children will be exposed to the noise. This is unconscionable.

(3) There are areas affected by the noise of the F-16s + F-35s that do not show up in the 65dB zone.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

101

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

this was not helpful at all - I expected a presentation of information + possibly a Q+A We could not hear anything any individual said - the maps were not accessible either - to crowded I also received conflicting information from different people -

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

102

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Shame on you Bernie, Peter and Patrick our elected officials who are SUPPOSED to be looking out for your constituents! I have 2 words for you Bern, "Election year"

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

103

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Gene Richards runs a great airport. Seriously. All except for this issue, the existing on the county and state of a nuclear weapons delivery system that is outrageously dangerous in today's world.

Please, for reason prevail. Send a message to the air force that this plane is the wrong way to go. Our lives depend on it.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

104

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Since population of Burl is woefully wrong – no count for Hosp patients impacted for example … one can only wonder at how many other errors are represented in the Dwelling and population counts on each report.

Having a So Burl map on the floor – not at eye level at the start of the presentation seems rude/uncaring for the folks who want/need to see that particular set of details.

Some "staff" answering questions are wearing a name tag with a first name only on it. – No affiliation/business link is provided. Don't we have a right to know who we are talking to?

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

105

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Print copies must be provided at the mtgs.

Not everyone has a computer or access; printing at a library @ 10¢ per page X 164 pages to read the report is prohibitive.

No mics provided so very hard to hear both questions and answers. The "mill about" format adds to noise. A presentation would be more efficient

Answer the question, on a mic, one time Not repeated versions of the same question over + over.

An announcement about parking voucher so all get equal treatment in West Conf, Rm.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

106

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Map/poster layout in the mezz circle was odd So Burl may have had the highest # in attendance
One poster in the flow at the start
Very crowded in the area chosen
Hard to even locate the So Burl relevant info upon first arriving.

The whole mtg seemed to just reiterate the Guard and Arpt positions with little concern for homeowners' issues –

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

107

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I live on 49 Helen ave. A toddler granddaughter lives with me & believe the noise will be so bad & unbearable that I might have to sell my house. You should provide all neighborhood with special insulation to keep noise away from us.
It is detrimental for our schools & residential areas, what are all politicians are doing. Shame on Leahy & Bernie for allowing this.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

108

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Your red line Contour with noise levels only covers a small area of homes that will receive Compensation for insulated windows, what happens to the area ~~the~~ just outside the noise level? It seems to me you are not caring for all residents in immediate noise areas. I believe if you assure residents in the airport area you will insulate their homes they might be more willing to accept this idea of having war planes next to their homes they do much more + have worked for! Please be thoughtful of that!
My name is Maria Jakobeit 802-598-7278.
I would love for you to come + see the homes in our area.
mariajakobeit52@gmail.com

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

109

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

This is ~~the~~ an inappropriate setting for war planes. The noise is unsuitable for residential use and the financial cost to tax payers to build & maintain planes, and subsidize noise mitigation or acquisition programs is an undue burden.

The timeline of the noise mitigation program is completely inadequate. The idea that ~~only~~ residents would need to be in their homes and not be able to comfortably access outdoor spaces is inconsistent with Vermont values.

The costs to homeowners and tax payers outweigh any ~~gains that may~~ reasons offered to justify further militarization and armament.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

110

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

I am very concerned that my home is in the area deamed "in compatible with residential use." Please find a place to fly and house these planes that is not the most densly populated area in Vermont. We already have a housing crisis with a very low vacancy rate and this will only serve to exacerbate the issue. If you accidentally drop a nuclear weapon it will kill us all. Bigger than 911; bigger than Pearl Harbor. Do YOU REALLY WANT TO TAKE THAT RISK?!?!

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

111

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

Every Military Base is a toxic waste dump They bombed the Japanese with Nukes — Japan is now reciprocating by putting Plutonium ~~toxic~~ RADIATION into the Pacific Whales + Even They also is dying This is the legacy of the military — If They were a defense dept They would work to MAKE the world free of Nuke radiation — not bring it To Vermont — They don't defend anything but lots of money for a few men military men turned lobbyist

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

112

COMMENT FORM

Burlington International Airport

I / We wish to comment or inquire about the following aspects of this project:

My house is within the 65 db line. I enjoy gardening and spending time in my yard with my dog. On my street, children and families socialize and play outdoors. Most do not have air conditioning. Even indoors, I have to pause during phone conversations until the jets pass. I cannot even imagine what four times louder would be like. Mitigation is contrary to goals of health, non-obesity, and community interaction. I didn't move to South Burlington to be locked up in my house.

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

I Live on Burling ST in Winooski. I noticed that Burling ST is not included ~~on the~~ within the graph.

Here is the Rub, when military planes come in over Winooski, go over the Runway AT A speed and height To require them To go Around To Bleed off speed, their path is north of the graph. I do understand the graph is for take off data only. However military planes do go over my house AT 150-200 ft. Because of my work, I do have A dB meter. The sound Level is over 95 — up. Why hasn't this part of the data Ben used or AT Least A line showing of this on the graph I'm for the planes! No issue there. But the graph isn't showing the True Levels overall. Only contoured for the cause. Why?

To submit comments online, please visit www.btvsound.com

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

NOTHING CAN Compensate for damage to my health + home safety with F35 based here – They DO NOT Belong Here

To submit comments online, please visit www.btvsound.com

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

115

BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

What is the peak sound level people will experience? We need this information – not an average. Louder sound is more dangerous in the immediate.

What is the current noise level? How much louder will this be? ex 40 DB → 65? or 60 → 65?

Where is the real data? Everything I saw here was a model. It is deeply concerning that the Airport Director was unaware NO SUCH DATA EXISTS. There is no study of our lives now, so of course we are freaking out!

To submit comments online, please visit www.btvsound.com

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

Winooski is a reception area for refugees, many fleeing war and suffering trauma. Military aircraft noise will increase traffic stress and make the school experience for their children difficult.

To submit comments online, please visit www.btvsound.com

Please note that this comment card and any information provided on it will be maintained as a public record and may be subject to disclosure under the Vermont Public Records Act.

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BURLINGTON INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

I'm shocked that so many more homes will be impacted by the F35 noise. Given that only 100 homes will be mitigated for noise each year, I'm guessing it'll be 20+ years before you get to my unacceptable residence. I do NOT want the F35s at Burlington airport. It is insane to station them so near the ~~MOST~~ most densely populated community in all of New England. In addition the maps are missing some schools (Centerpoint School on Winooski) as well as all VT licensed home child cares. When mitigation begins, you must prioritize schools and places that take care of children.

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

We are worried that the F-35 mission might change (without warning) to allow nuclear weapons on them. Where would the weapons be stored?

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

Do you have an evacuation plan for Winooski if an F35 crashes here. We are only 1 sq. mile — you'd have to evacuate the entire city?

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

My husband and I work from home, and rely on confrence calls. The State of Vermont has made individuals like us a priority bringing us to the state. We need a way to know when the USAF will be taking off, like we can w/ commercial planes, so we can plan when to communicate to our clients. We have had to end calls for 15 minutes w/ the FHG's, and these planes will only be louder. If we cant work here, we cant live here, and will need to leave.

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

It is criminal to subject a civilian population to the noise and toxic risks associated with this plane. You are making us human shields. The impact on children both hearing and learning — is severe, according to your own EIS.

And of course, the plane is a boon-doggle. It doesn't even belong on an air base.

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BURLINGTON INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

why is no real data on actual noise levels in the area collected? According to personnel here tonight, no comparison data has ever been collected to validate or invalidate former models. It seems to me irresponsible not to study real impact & correct models correspondingly.

Additionally, the method of not collecting real data or providing model data on events instead of averages seems designed to minimize apparent changes to the detriment or confuddlement of the people who will be affected. Are these models designed, tested, confirmed, & publicized with true intent to inform community members or in bad faith?

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

Why does the AirForce believe BTV is the place to base these F-35's, given that such a great # + % of residents + property owners are within the noise contour that renders our properties "unsuitable for Residential use?" Also given the high density of population?

If eligible for sound mitigation, that will help the interior of your house/building, a/c long as you have the doors + windows closed. I STRONGLY believe property owners have the right to enjoy our TOTAL PROPERTY, including the full yard/lot, and that we should not have to keep our doors + windows closed!

To submit comments online, please visit www.btvsound.com

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BURLINGTON INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

For Winooski to have official representation on the Airport's Board.

For Winooski to be given special consideration for funding and abbreviated timelines because of the widespread impact to our residential community.

To prioritize funding towards homes with children.

To provide hearing screening for youth within the 65 decibel zone.

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map ~~Open House~~

~~May 30~~, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

① What is the specific decibel level at F35 take off, and what is the health impact on young children? Should children wear headphones at the playground? Will free hearing tests be available?

② Winooski must have a seat/vote on the airport board.

③ Mitigation funds should be prioritized for homes with vulnerable populations.

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

FROM ATTENDEE:
USING PHYSICAL NOISE MONITORS
AFTER F-35s ARRIVE

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

I feel like the consultants were asked to answer the wrong question. It is interesting to determine who gets annoyed to the point where they are eligible for noise mitigation, The right question is what is the maximum noise level the F35s will generate and how will that impact our children and their sensitive ears.

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

Will I be gaurenteed new windows and doors? Why should I have to pay anything since the F35 does not advantage me in anyway - just the opposite? How long will I have to wait for help?

Will the FAA pay for my hearing aides if I lose my hearing?

What is the peak decible level? We could all suffer permanent hearing damage.

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BURLINGTON INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

We have had this plane F35 posed on us. We don't want it and no one cares. Winooski has said no multiple times.

Since you all know and have known for years ~~that~~ what it would mean for us with in the 65 decibles (not compatible for humans) so why have this meeting and not be able to tell us ~~what to~~ when & how much mitigation specifically for each of our homes. I don't want to wait for 5 years or 20 to get help. I may have no hearing by that time And I shouldn't have to pay a dime!!!

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Also what is the evacuation plan for Winooski is one of these F35's crashes here? Whats the peak sound level over my hous

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House

May 30, 2019 5PM – 7PM

O'Brien Community Center

Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

I find it 100% ridiculous that the FAA requirements are the only ones being used to create data for 65 decibal level. The exact range of decibals should be available not just the average. Also in measuring noise factor, ~~dont~~ measure the loudest aircraft, not someone's small plane.

The boundary of the red area needs to be expanded to reflect living in Winooski. Even now with the F16's, if I am outside I have to put hands over my ears when one F16 goes over the West Canal area where I live. According to your map, I'm outside the red area of concern!! Hard to believe how such an unhealthy proposal has gotten this far!

To submit comments online, please visit www.btvsound.com

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

WOULD BE BETTER IF FAA BE FAIR AND HONEST AND DECLARE THAT A COMMUNITY DATED FROM THE 1800'S WILL SOON UNFIT TO LIVE.

THE PROGRAM IS RIDICULOUS, THE MAP NOISE IS A JOKE AND BY THE TIME I GET ANY BENEFITS FROM ANY PROGRAM I WILL BE BANKRUPTED AND HAVE MY MORTGAGE DEFAULT AND ~~M~~ LIFE SAVINGS GONE.

~~We~~ THE TRUTH IS WE HAVE NO

To submit comments online, please visit www.btvsound.com

CHOICE, SALE ASAP PACK AND GO.

THANK FOR DESTROY MY COMMUNITY!!

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BURLINGTON
INTERNATIONAL AIRPORT

COMMENT FORM

Noise Exposure Map Open House
May 30, 2019 5PM – 7PM
O'Brien Community Center
Winooski, VT

I / We wish to comment or inquire about the following aspects of this project:

Will all the properties be approved up front? Hopefully yes.

To submit comments online, please visit www.btvsound.com

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southburlington
VERMONT

June 17, 2019

Gene Richards
Director of Aviation
Burlington International Airport
1200 Airport Drive
South Burlington, VT 05403

re: Official City Recommendations for 2019 Airport Noise Compatibility Plan

Dear Mr. Richards,

Thank you for your actions to include community partners in the development of the 2019 BTV Noise Compatibility Plan (NCP) update, and for assuring that the completion of the NCP was held until the release of the updated 2019 Noise Exposure Maps (NEM). The Airport's efforts to obtain Federal Aviation Authority (FAA) approval to update the NEMs to account for the pending arrival of the F-35 aircraft in time to be informative to the NCP was a collaborative endeavor and we thank you for pursuing this.

We also thank you, your staff, your consulting team, and the Airport Commission for hosting the NCP Technical Advisory Committee (TAC) and for inviting our input on the draft Plan. We offer the following recommendations from the City of South Burlington (the City).

Land Use Program Recommendations

The TAC was provided with technical papers detailing the different land use program alternatives available, pros and cons of each, and applicability. Using these materials, and together with a review of the City's Comprehensive Plan, the recommendations of the recent Chamberlin Neighborhood-Airport Planning Committee's work, and 2018 community survey results, we find and recommend the following:

A. For homes approved for acquisition and removal under prior NCP funding awards:

   1. The City acknowledges that the Airport will conclude existing programs to acquire and remove homes deemed eligible within the 2016 approved NCP funding and their predecessors, with the exception of the "Kirby Cottages."

   2. The City strongly urges the seven "Kirby Cottages" to remain in place, be transferred to the Purchase Assurance program (or an equivalent), and be returned to serve as permanent housing. Not less than three (3) of the seven should be returned to being permanently affordable.

B. For properties within the 65-75 dnl noise contour per the 2019 NEM (with the exception of those in section A above):

   The City considers that there are two broad categories for the treatment of residential units within the 65-75 dnl noise contour. The first allows homes to be retained and occupied, and the second involves the prior program of acquisition and removal of the homes.

575 Dorset Street South Burlington, VT 05403 tel 802.846.4106 fax 802.846.4101 www.sburl.com

1. Consistent with the Resolution accompanying this letter, the City actively supports programs that retain the homes in their present location, and strongly disapproves of any program that results in further acquisition and relocation/removal of homes.

The City further considers two primary options within the palate of alternatives that retain homes, the first are programs that reinvest in the structures themselves to achieve greater noise insulation for current and future residents, the second are programs that provide a one-time payment to current property owners to offset the impacts of noise on property value and/or quality of life.

2. The City strongly supports programs that invest in the dwelling units for current and future residents and generally does not support one-time payments that provide no lasting benefit to the neighborhood. Specifically:

   a. The City strongly supports a Sound Insulation program for all eligible properties. This program offers homeowners the opportunity to have their homes renovated with enhanced noise insulation, improving quality of life for residents and providing a reinvestment in the housing stock for future generations.

   b. The City supports a Purchase Assurance program for eligible homeowners who find themselves in a position where they feel it is time to relocate. This program allows residents to sell their home to the Airport at Fair Market Value, with the Airport then performing renovations for enhanced sound insultation, and subsequently returning the house to the market to become a home for a new household. The result, similar to that of the Sound Insulation program, will be an improved quality of life for the next residents and a reinvestment in the housing stock for future generations.

   c. The City would support a program that allows an eligible homeowner to sell an avigation easement, under the following circumstances:
      i. The house is not eligible for a Sound Insulation or Purchase Assurance program due to interior sound thresholds not being met; and
      ii. Avigation easements, as discussed below, become invalid where an updated NEM shows dnl levels have increased beyond the identified threshold; and,
      iii. The sale of an avigation easement does not preclude the house's eligibility for a Sound Insulation or Purchase Assurance program should the avigation easement be invalidated.

   d. The City does not support a Sales Assistance program. This program, which makes funds available to a seller demonstrating that attempts to sell their home at Fair Market Value have been unsuccessful to make up a portion of the difference from a lower sales price, provides only a one-time payment to the seller. The result would be a home that remains but has received no renovations for sound insulation, and yet also is no longer eligible for such renovations by future residents. Reinvesting in the housing in this neighborhood is of too great of an importance to future generations families to support a regressive mitigation program such as this one.

C. For properties within the 75+ dnl noise contour per the 2019 NEM:

The City recognizes that homes located within the 75+ dnl contour have a more substantial noise burden than properties in the 65-75 dnl range. The City seeks to balance this circumstance with the important goal of retaining a vibrant and cohesive neighborhood. The City therefore makes the following recommendations:

1. The City supports block rounding to retain homes in the 75+ dnl line that are located adjacent to, intermixed with, or are otherwise clearly correlated to homes to be retained in the 65-75 dnl priorities above. The City's priorities are those outlined above for the 65-75 dnl areas.
2. Where block rounding is not applicable or reasonably feasible, the City recommends an individual house assessment to determine if either Sound Insulation or Purchase Assurance options viable. A third-party assessment of viability could be included in such a program to assure a mutually acceptable outcome amongst all parties.

Avigation Easement Recommendations:

The TAC was provided with samples of Avigation Easements approved by the FAA elsewhere in the New England area. Using these materials, and together with a review of the City's Comprehensive Plan, the results of the Chamberlin Neighborhood-Airport Planning Committee's reports, and survey results, we find and recommend the following:

A. Any Avigation Easement must have a clause that invalidates the easement in the event that a future amendment to the NEMs indicates an increase in noise that would otherwise effect eligibility for initial or additional mitigation.
B. Avigation Easement should not be required unless the Airport can demonstrate that it would substantially affect funding priority. In other words, "consistency" is not a sufficient basis.

Airport Operation Measure Recommendations:

The TAC was provided draft progress reports on each of the operational mitigation measures included in the prior NCP. The City now offers the following recommendations for continued and new operational mitigation measures:

A. The City supports continued action towards Terminal Power Installation and APU/GPU Restrictions as proposed in the 2009 NCP.
B. The City supports continuation of practice of towing planes in and out of areas that are not screened by the Terminal or other major structures.
C. The City supports the completion of taxiway G relocation away from the Airport fence line.
D. The City understands that there are two helicopter takeoff/landing approach zones, located off the northeast and northwest corners of the principal runway. The City urges the Airport and its partners to develop policies & procedures to prioritize either the runway approach zone or the northeast helicopter approach zone over the northwest helicopter approach cone. The northwest helicopter approach zone is largely situated above the Chamberlin neighborhood.
E. The City supports the Airport's plans to collect and make available flight tracking data.
F. The City supports the provision of a clear, direct manner for residents to report noise-related issues and concerns to the Airport.
G. The City supports ongoing meetings of the Airport Sound Committee, and the use of this venue to track progress on all aspects of noise mitigation and to review complaints & anomalous operations are reported, discussed, and what corrective action has been taken.

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H. The City, further, supports a collaborative endeavor between the City, Airport, and other interested parties to establish permanent physical noise monitoring at the Airport for the Airport and Airport Sound Committee to able to identify, review, and respond to both isolated incidents and longer-term patterns of noise activity.

Ongoing Participation in Block Rounding and Prioritization of Funding

The City requests ongoing participation and collaboration with the Airport and relevant partners in undertaking any Block Rounding efforts and in the prioritization of application distribution of FAA funds for Noise Compatibility.

Sound Barriers for Ground-Emanated Noise

The Burlington International Airport is an unusual facility in that it both a joint civilian & military airport and is also located adjacent to a thriving residential neighborhood on its west side, with no significant changes in topography. While recognizing that sound barriers, or berms, are traditionally categorized as land use measures under the FAA's Part 150 program and therefore considered as alternatives in the analysis of options as described above under "land use measures", the City urges consideration of sound barriers as an *additional* measure to provide an improved transition from the activities at the airport to the Chamberlin neighborhood. The Council further notes that early-morning ground-based activities, as well as warm-up of military aircraft, are ground based and present a quality of-life challenge to the neighborhood.

Active Pursuit and Matching of FAA Funds

The City recognizes that implementation of any Noise Mitigation projects requires that funds both be made available from the FAA, and that the Airport apply for such funding. The City strongly supports the active pursuit of funds from the FAA and other potential funding sources with the same level of vigor as was the case for the prior Land Acquisition & Relocation efforts in areas adjacent to the Airport.

FAA noise compatibility funding may require a financial match. These have historically been met by the Airport and other partners and not by the affected property owners or the City of South Burlington. Under future programs, it is the City's expectation that this practice will continue.

Future Changes to Noise Exposure Maps

We appreciate the Airport's actions to both update the NEMs in advance of the arrival of the F-35 aircraft and to hold completion of this NCP update until the draft NEMs were available for review. Should changes in Airport operations or function take place in the future necessitating a further update to the NEMs, we would request that those updates proceed equally expediently and that the NCP also be updated on a concurrent schedule to assure that noise mitigation efforts match the needs of the community.

Thank you for considering these comments and for continuing to pursue a mutually beneficial and supportive relationship between the City of South Burlington and Burlington International Airport.

Signed this 17TH day of JUNE, 2019

Helen Riehle, Chair

Thomas Chittenden

Meaghan Emery, Vice-Chair

David Kaufman

Tim Barritt, Clerk

cc: Kevin Dorn, City Manager
David Young, Superintendent of Schools
Miro Weinberger, Mayor, City of Burlington
Jeff Munger, Chair, Airport Commission
Richard Doucette, Environmental Program Manager, Federal Aviation Authority

City of Winooski
Vermont's Opportunity City

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27 West Allen Street
Winooski, Vermont 05404
802 655 6410
winooskivt.gov

June 27, 2019

Gene Richards, Director of Aviation
Jones Payne Group, Consultants for the Burlington International Airport

Submitted via email to: btvsound@jonespayne.com

Re: City of Winooski's Comment on the Draft Noise Exposure Map

Dear Mr. Richards,

Thank you for including the City of Winooski in the review of the Draft 14 CRF Part 150 Update and accompanying Noise Exposure Maps (NEM). With the draft updated Noise Exposure Map that was recently released, over 50% of the impact anticipated for 2023 will be borne by Winooski residents and businesses. In total 43% of our population and 41% of our homes will be within the 65 or higher DNL. This represents a significant change from the prior impact. Additionally, beyond the 65 DNL, our entire community will be impacted including our Winooski School District campus on Main Street.

Winooski is the most densely populated City in Northern New England (Vermont, New Hampshire, and Maine) with 7,200 people living in 1.4 mi^2. We are also the most diverse City in the State (21% of our neighbors are people of color) and a community committed to ensuring quality affordable rental housing (61% of our homes in Winooski are rentals with 53% of these being subsidized affordable homes.) Within the NEM there are now 398 subsidized housing units comprising 64% of our total subsidized housing. The 65 DNL entirely encompasses our second lowest income block group, with a median household income of $26,362, or 40% of Area Median Income (AMI). The 65 DNL partially encompasses our lowest income block group, with a median household income of $21,074, or 32% of AMI. Additionally, the 65 DNL entirely encompasses census tract 25, block group 2 which has the highest concentration of renters in the city at over 75% rentals. Finally, 96% of our subsidized housing for seniors and those with disabilities fall within the 65 DNL

We are a unique community that must be heard and supported. We respectfully request that the City of Burlington lead the charge to incorporate the changes below into the 14 CRF Part 150 Update.

Information Sharing: In the final NEM document, please include all comments made in reference to Winooski or by Winooski residents. If questions were posed, please include responses to each of these questions.

City of Winooski
Vermont's Opportunity City

27 West Allen Street
Winooski, Vermont 05404
802 655 6410
winooskivt.gov

Incorporate Additional Locations: Please include on the Map:

- Centerpoint School: http://www.centerpointschool.org/
- The O'Brien Community Center at 32 Malletts Bay Ave
- All registered day care centers and family child care centers in Winooski: https://dcf.vermont.gov/childcare/parents/find-provider

Provide Additional Sound Information:

- Please include not only aggregate data but specific data at defined points from the modeling for when the F-35s take off with afterburners and without.
- Provide information on OSHA sound standards and how they relate both to the aggregate sound models and take-off sound models.
- Make available the GIS layer of the models to our City staff for future land use planning.

We appreciate the cooperation the City of Burlington has demonstrated as we work together to finalize the NEM and mitigate the disproportionate negative impact the City of Winooski will bear as a result of the F-35 arrival and the general airport operations.

Please feel free to contact City Manager Jessie Baker (jbaker@winooskivt.gov) or Mayor Kristine Lott (mayor@winooskivt.gov) with questions or comments.

Sincerely,

Winooski City Council

Mayor Kristine Lott

Deputy Mayor Hal Colston

Councilor James Duncan

Councilor Amy Lafayette

Councilor Michael Myers

Winooski City Manager

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WINOOSKI HOUSING AUTHORITY

June 27, 2019

Eugene Richards, Director of Aviation, Burlington International Airport
Jones Payne Group, Consultants

Submitted to btvsound@jonespayne.com

RE: Winooski Housing Authority's Comment on the Draft Noise Exposure Map

Dear Mr. Richards;

Thank you for the opportunity to comment on the Draft Noise Exposure Maps as presented as through the 14 CFR Part 150 Update.

We have reviewed the maps and plans and understand we have several properties that will be impacted by noise above the 65 DNL level in the future. Our properties are included as "residential" in nature, we would like to emphasize that we house elderly and disabled people. As such, we request that our properties (listed below) be called out in your Multi-family and Mixed Use parcels.

- Spring Gardens – 31 East Spring Street
- The Terraces – 65 Barlow Street
- Senior Towers – 83 Barlow
- Courtyard Apartments – 120 East Spring Street (owned by Chittenden Housing Corporation)
- Allen House – 57 West Allen Street (Holding Housing Vouchers)

The Authority also supports families in the area through our Housing Choice Voucher program. In many cases, these families have young children.

As indicated by your maps, Winooski is the most impacted community within the 65 DNL limit, yet Winooski has seen no funding through the program to date.

As you develop the Noise Compatibility Program, we strongly urge that airport operations, commercial and military, be altered to reduce noise in the City of Winooski, limiting the impact on the most densely populated area and vulnerable people in the flight path. It appears that military flights both take off and land over the City of Winooski. We propose that this impact can be mitigated by taking off and landing in the opposite direction – where most of the land is commercial and industrial, with fewer residential properties affected.

We further request that our properties be prioritized when funds become available through the program. We would appreciated direct communication with the Authority as the program is implemented.

83 BARLOW STREET, WINOOSKI, VERMONT 05404 (802) 655-2360 • FAX (802) 655-5540
Equal Housing Opportunity

Once again, thank you for the opportunity to comment. We look forward to working with you and your staff as this effort proceeds. If you have any questions or wish to discuss any items in this letter, please feel free to call our Executive Director.

On behalf of the Board of Commissioners of the Winooski Housing Authority,

Patricia M Raymond

Patricia M Raymond
Vice – Chair

cc. Kristine Lott, Mayor, City of Winooski