Burlington International Airport
14 CFR Part 150 Update
2015 and 2020
Noise Exposure Maps

HMMH Report No. 305661.000
December 2015

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

Prepared by:
HMMH

in association with:
Campbell and Paris Engineers P.C.

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Prepared for:
City of Burlington, Vermont
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Burlington, VT 05403

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Certification

This is to certify the following:

(1) The revised Noise Exposure Maps, and associated documentation for 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 "2015 Existing Condition Noise Exposure Map" (Figure 12 on page 37) accurately represents conditions for calendar year 2015.

(4) The "2020 Five-Year Forecast Condition Noise Exposure Map" (Figure 13 on page 39) accurately represents forecast conditions for calendar year 2020.

By: ______________________

Title: DIRECTOR OF AVIATION

Date: 12/21/2015

Airport Name:	*Burlington International Airport*
Airport Owner/Operator:	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 the 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).

The City of Burlington, Vermont (the City) completed the most recent Part 150 studies for Burlington International Airport (BTV) in 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 November 6, 2006 with NEM contours for 2006 and 2011 conditions. The 2006 NEM represents the most recent aircraft noise contour 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.

One of the principal reasons for preparation of this update is the City's interest in continuing implementation of the federally supported noise mitigation at BTV. The City would like to update the NEM to reflect existing operations, an updated forecast, and current land uses. In addition, the FAA requested that the City update the NEM to continue federally supported noise mitigation.

BTV is currently home to the Vermont Air National Guard (ANG) 158th Fighter Wing (158 FW), which flies F-16s. The ANG is flying the F-16 aircraft under a different set of conditions than had been assumed in the previous 2006 NEM update. The 2006 NEM update included a 2011 NEM forecast contour with an assumption that the transition to the General Electric-powered F-16 aircraft would not require afterburner for take-off. However, according to recent interviews with the City and ANG staff, F-16 departures are currently using afterburners. As a result, the City would like to update the assumptions regarding afterburner use to ensure the NEM reflects current aircraft operations and noise conditions around the airport.

1.1 Purpose and Request for FAA Determination

With this submission, the City of Burlington, Vermont requests that the FAA review these 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. The City is updating only the NEM at this time. This document includes noise contours (the 2015 NEM as Figure 12 and the 2020 NEM as Figure 13), land use, and related documentation for 2015 existing conditions and 2020 forecast conditions.

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

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[1] Title 14 of the Code of Federal Regulations (CFR) Part 150.
[2] City of Burlington, Burlington International Airport 14 CFR Part 150 Update 2006 and 2011 Noise Exposure Maps, August 2006.
[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

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 both the 2015 and 2020 NEM contours for future land-use planning, rather than simply using the 2020 NEM, because the 2015 and 2020 NEM contours are nearly identical.
- The City should continue with the implementation of the voluntary land acquisition measure for properties with noncompatible use, as approved by the FAA.[5] The voluntary land acquisition measure will be implemented as[6]
    - 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 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.[7]
- 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 2015 and 2020 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.[8]
- As the preceding activities proceed in the coming months and years, the City will evaluate the current NCP to see if it continues to meet the needs of the community, the airport and the airport's users. The City's decision to pursue an NCP update should be considered in the context of applicable state or federal laws, regulations (particularly 14 CFR Part 150) and associated funding guidelines.[9]

1.3 Organization of this Document

The balance of this report provides documentation that a Part 150 requires, and supplementary information that the City believes will assist in providing a full understanding of the current and forecasted noise exposure at BTV.

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[5] 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.
[6] This is a brief summary of the 2008 NCP document and the respective FAA ROA. See also Section 4.3.1 of this document.
[7] See also Section 4.3.2 of this document.
[8] Federal Guidelines change from time to time. Currently these guidelines are primarily documented in FAA's Order 5100.38D "Airport Improvement Program (AIP) Handbook."
[9] See footnote 8.

- Chapter 2 provides an overview of Part 150, including a completed copy of the checklist that FAA has prepared in reviewing 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.
- Chapter 4 summarizes the elements and status of the existing FAA-approved NCP.
- Chapter 5 presents the official NEM graphics for 2015 and 2020, compares the contours for those years, and compares the 2015 contours to the 2006 and 2011 contours from the previous noise study. 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 the detailed information that a 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. It also summarizes the changes to this December 2015 document relative to the November 2015 draft.

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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

The 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 year of submission (the "existing condition") and (2) the fifth calendar year following the year of submission (the "forecast condition"). 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.

The anticipated year of submission for this update is 2015, with an existing condition "map" for that year, and a five-year forecast condition map for 2020. 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 the 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.

2.3 FAA Noise Exposure Map Checklist

The FAA has developed a checklist to use in reviewing NEM submissions, and requests that the documentation include a copy. Table 1 presents the NEM checklist for this submission.

Table 1 Part 150 Noise Exposure Map Checklist

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

14 CFR PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport	**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	N/A, Only NEM Update
3. Revision to NEMs 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?	Yes		NEM Submittal Letter
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:			
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
B. Map currency:			

14 CFR PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
1. Does the year on the face of the existing condition map graphic match the year on the airport operator's NEM submittal letter?	Yes		Figure 12, Submittal Letter
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?	Yes		Figure 13, Submittal Letter
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?	N/A		
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? [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 be 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 NEMs.) (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
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:			

14 CFR PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
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?			
a. A land use base map depicting streets and other identifiable geographic features	Yes		All official figures
b. The area within the DNL 65 dB (or beyond, at local discretion)	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)	Yes		
D. 1. Continuous contours for at least DNL 65, 70, and 75 dB?	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 NEMs?		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		Section 6.4
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		Section 6.6
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 NEMs)		N/A	No noise monitoring sites
G. Noncompatible land use identification:			
1. Are noncompatible land uses within at least the DNL 65 dB noise contour depicted on the map graphics?	Yes		Chapter 5, Figure 12 and Figure 13. Additional detail is provided on Figure 14, sheets 1-5 and 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		
3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?	Yes		
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 NEMs are based adequately described in the narrative?	Yes		Chapter 6 presents current and forecast operational data and other modeling inputs.

14 CFR PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
2. Are the underlying technical data and planning assumptions reasonable?	Yes		Chapter 6 presents current and forecast operational data and other modeling inputs.
B. Calculation of Noise Contours:			
1. Is the methodology indicated?	Yes		Chapter 6
a. Is it FAA approved?	Yes		Chapter 6 INM v7.0d and NOISEMAP 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?	Yes		Chapter 6 INM v7.0d and NOISEMAP Version 7.358 were used for all modeling as recommended by FAA. FAA correspondence and approval in Appendix B
2. Correct use of noise models:			
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		No calibration. Substitutions are documented in Section 6.3 and FAA correspondence and approval in Appendix B
b. If so, does this have written approval from AEE, and is that written approval included in the submitted document?	Yes		
3. If noise monitoring was used, does the narrative indicate that Part 150 guidelines were followed?		N/A	No monitoring data used.
4. For noise contours below DNL 65 dB, 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) for both the existing condition and forecast year maps?	Yes		Section 5.3.3 Table 4

14 CFR PART 150 NOISE EXPOSURE MAP CHECKLIST-PART I			
Airport Name: Burlington International Airport	**REVIEWER:**		
	Yes	**No**	**Supporting Pages/Review Comments**
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 NEMs, 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 maps and forecasts?	Yes		Certification page iii
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		

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, dBA
- Maximum A-Weighted Sound Level, L_{max}
- Sound Exposure Level, SEL
- Equivalent A-Weighted Sound Level, L_{eq}
- Day-Night Average Sound Level, DNL

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. The loudest sounds that we can hear without pain contain about one million times more energy than the quietest sounds we can detect. To allow us to perceive sound over this very wide range, our ear/brain “auditory system” compresses our response in a complex manner, represented by a term called sound pressure level (SPL), which we express in units called decibels (dB).

Mathematically, SPL is a logarithmic quantity based on the ratio of two sound pressures, the numerator being the pressure of the sound source of interest (P_{source}), and the denominator being a reference pressure ($P_{reference}$)[10]

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

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

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 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.[11]

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.*

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 and 80 dB sources produce approximately 100 dB of noise when operating together.

Two useful “rules of thumb” related to SPL are worth noting: (1) humans generally perceive a six to 10 dB increase in SPL to be about a doubling of loudness,[12] 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 consider the “low,” “medium,” and “high” frequency components. 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 so-called "A" filter (“A weighting”) generally does the best job of matching human response to most environmental noise sources, including natural sounds and sound from common transportation sources. “A-weighted decibels” are abbreviated “dBA.” Because of the correlation with our hearing, the U. S. Environmental Protection Agency (EPA) and nearly every other federal and state agency have adopted A-

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[11] 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).
[12] A “10 dB per doubling” rule of thumb is the most often used approximation.

weighted decibels as the metric for use in describing environmental and transportation noise. Figure 1 depicts A-weighting adjustments to sound from approximately 20 Hz to 10,000 Hz.

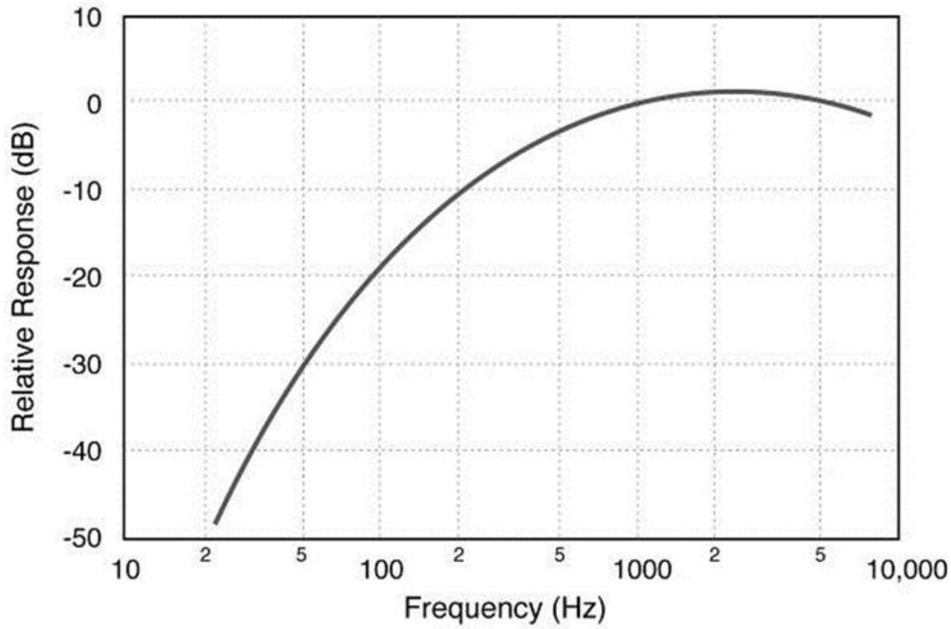


Figure 1 A-Weighting Frequency-Response

Source: Extract from Harris, Cyril M., Editor; “Handbook of Acoustical Measurements and Noise Control,” McGraw-Hill, Inc., 1991, pg. 5.13, HMMH

As the figure shows, A-weighting significantly de-emphasizes noise content at lower and higher frequencies where we do not hear as well, and has little effect, or is nearly "flat,” in for mid-range frequencies between 1,000 and 5,000 Hz.

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.

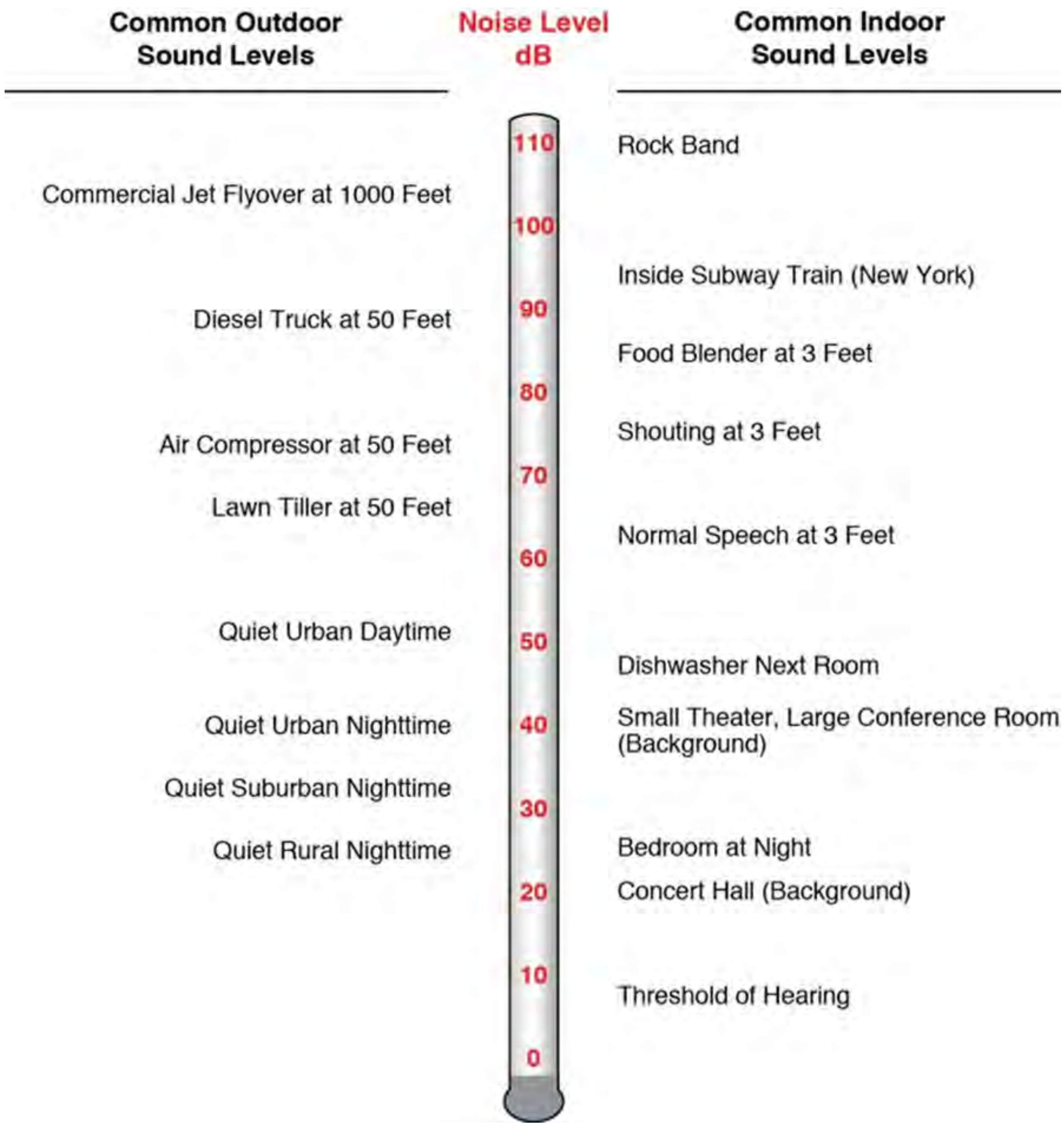


Figure 2 A-Weighted Sound Levels for Common Sounds

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.

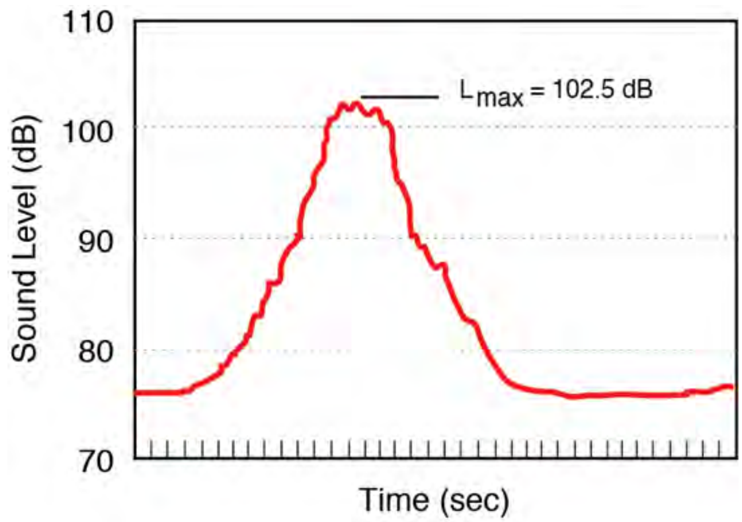


Figure 3 Variation in A-Weighted Sound Level over Time and Maximum Noise Level

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 3. Note that the SEL is higher than the L_{max}.

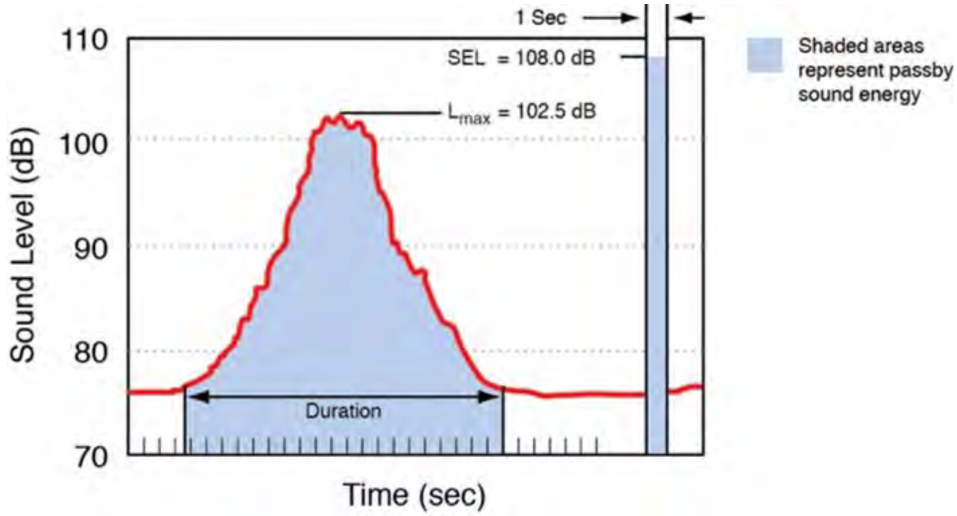


Figure 4 Graphical Depiction of Sound Exposure Level

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, L_{eq}

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.

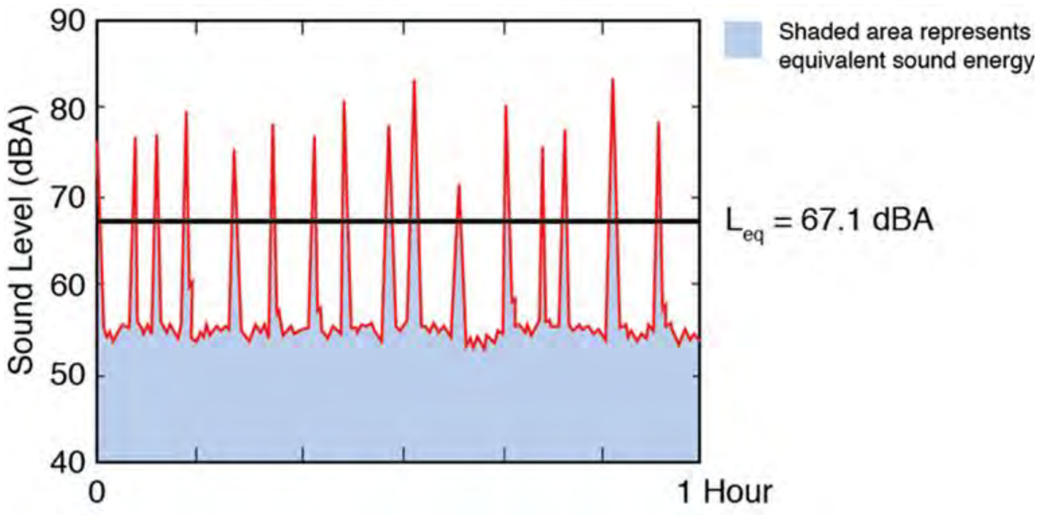


Figure 5 Example of a One Hour Equivalent Sound Level

Source: HMMH

3.1.6 Day-Night Average Sound Level, DNL or Ldn

Part 150 requires that airports use a measure of noise exposure that is slightly more complicated than L_{eq} to describe cumulative noise exposure – the Day-Night Average Sound Level, DNL.

The U.S. Environmental Protection Agency identified DNL as the most appropriate means of evaluating airport noise based on the following considerations.[13]

- 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

[13] "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.

report stated; "There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric."

In simple terms, DNL is the 24-hour L_{eq} with one adjustment; all noises occurring at night (defined as 10 p.m. through 7 a.m.) are increased by 10 dB, to reflect the added intrusiveness of nighttime noise events when background noise levels decrease. In calculating aircraft exposure, this 10 dB "penalty" is mathematically identical to counting each nighttime aircraft noise event ten times.

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 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 (2015 and 2020 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.

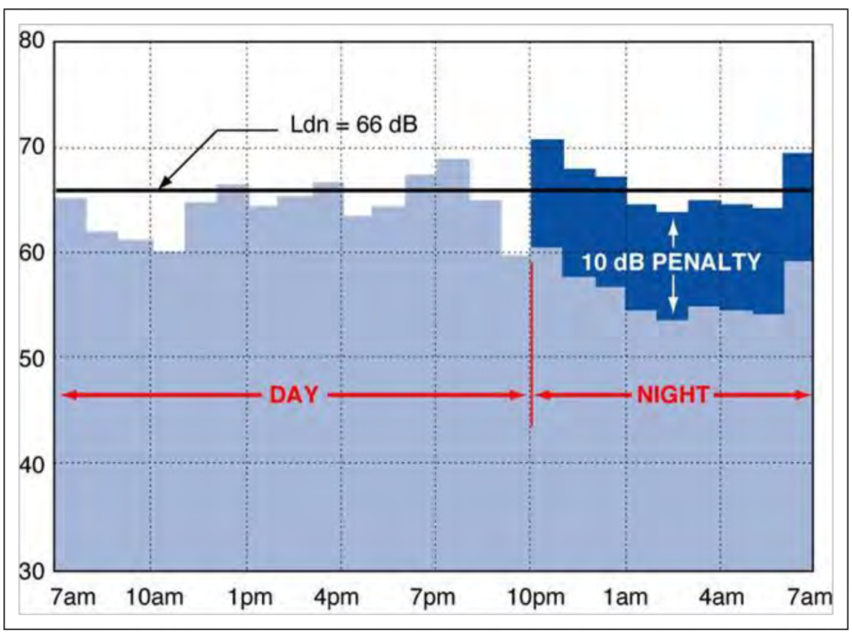


Figure 6 Example of a Day-Night Average Sound Level Calculation

Source: HMMH

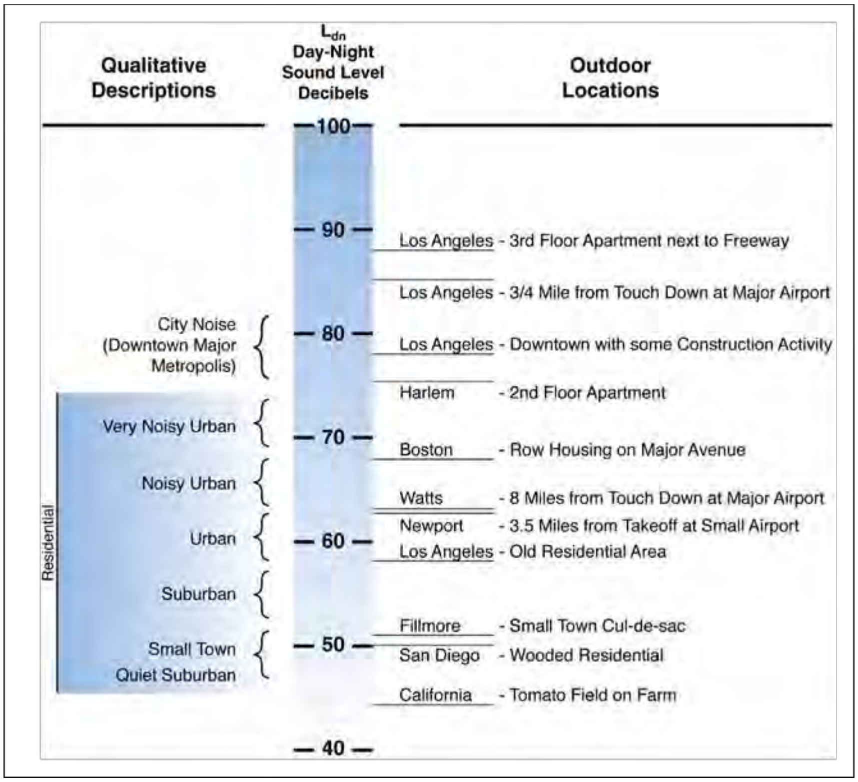


Figure 7 Examples of Measured Day-Night Average Sound Levels, DNL

Source: U.S. Environmental Protection Agency, “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety,” March 1974, p. 14.

3.2 Aircraft Noise Effects on Human Activity

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

One potential 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.

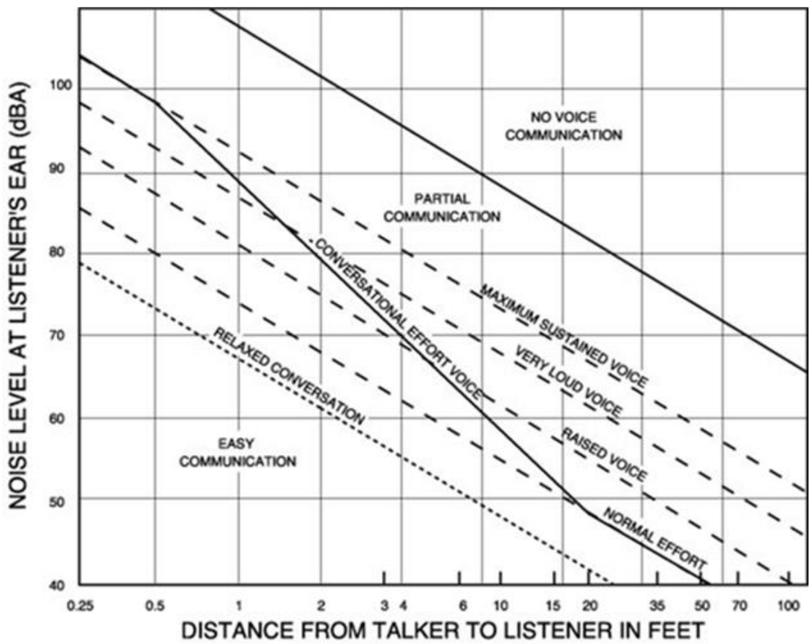


Figure 8 Outdoor Speech Intelligibility

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

Satisfactory conversation does not always require hearing every word; 95% intelligibility is acceptable for many conversations. In relaxed conversation, however, 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.

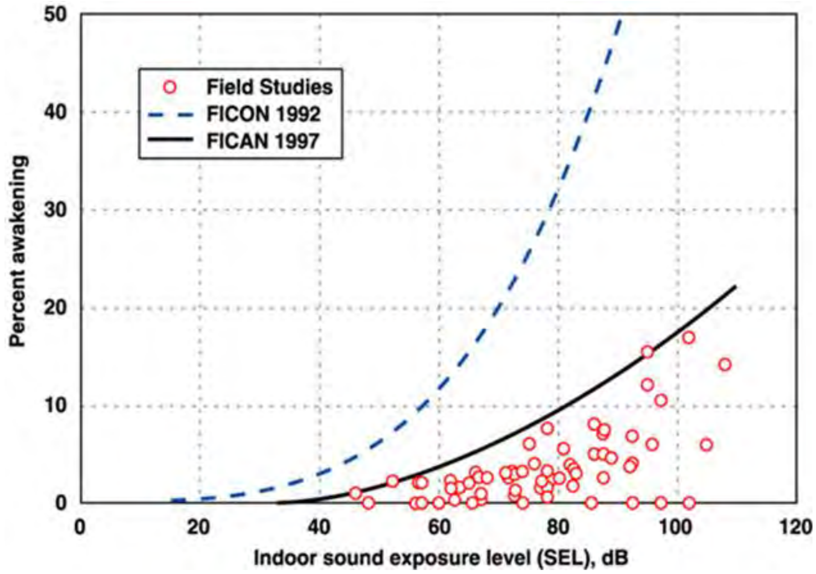


Figure 9 Sleep Interference

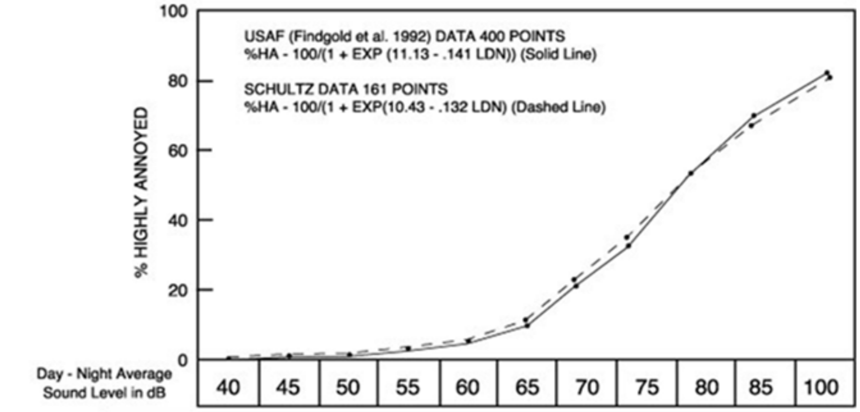
Source: Federal Interagency Committee on Aviation Noise (FICAN), "Effects of Aviation Noise on Awakenings from Sleep", June 1997, page 6.

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.[14]

3.2.3 Community Annoyance

Numerous psychoacoustic surveys provide substantial evidence that individual reactions to noise vary widely with noise exposure level. 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.

[14] 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 Integrated Noise Model, to compute awakenings.



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
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: FICON. "Federal Agency Review of Selected Airport Noise Analysis Issues," September 1992.

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.

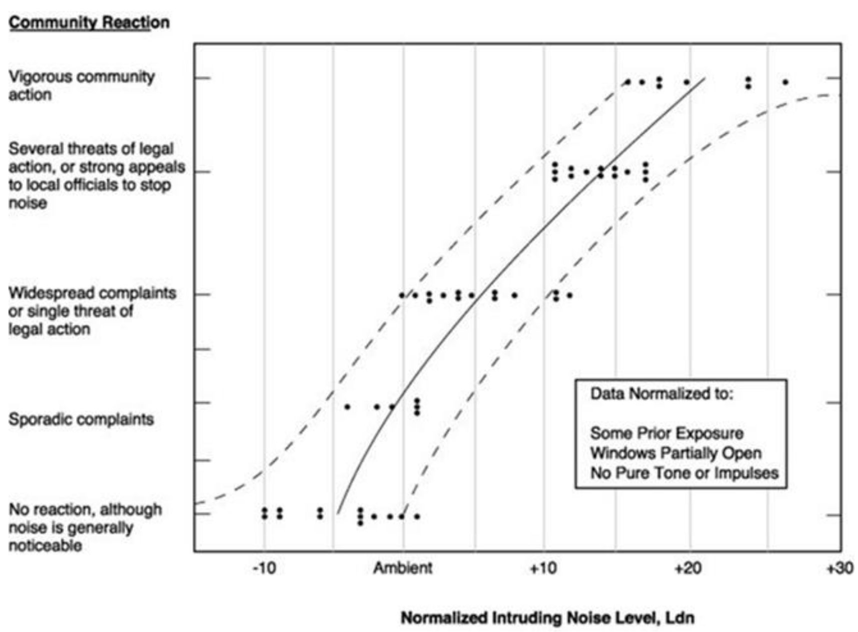


Figure 11 Community Reaction as a Function of Outdoor DNL

Source: Wyle Laboratories, "Community Noise," prepared for the U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, D.C., December 1971, 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

Weather (or atmospheric) conditions that can influence the propagation of sound include humidity, precipitation, temperature, wind, 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

Humidity and precipitation rarely effect sound propagation in a significant manner. 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.[15]

Influence of Temperature

The velocity of sound in the atmosphere is dependent on the air temperature.[16] 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.[17] The effect of an inversion is just the opposite of lapse conditions. It causes sound propagating through the atmosphere to refract downward.

The downward refraction caused by temperature inversions often 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.[18] Under extreme conditions, one study found that noise from ground-borne aircraft might be amplified 15 to 20 dB by a temperature

[15] 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.
[16] 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.
[17] 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.
[18] Ingard, p. 407.

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.[19]

Influence of Wind

Wind has a strong directional component that can lead to 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.[20] 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.[21]

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.[22]

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

DNL estimates have two principal uses in a Part 150 study:

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[19] 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.
[20] 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.
[21] Piercy and Embleton, p. 1413.
[22] Ingard, pp. 409-410.

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

Both of these functions require the application of objective criteria for evaluating noise impacts. 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.

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 in BTV NEM development.

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	Y(2)	Y(3)	Y(4)	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.

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4 EXISTING NOISE COMPATIBILITY PROGRAM

This NEM builds on the previous noise compatibility studies at BTV. The existing 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 2015 and 2020 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)[23], agreed to adhere to the 2008 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. The multi-phase project is scheduled for completion sometime before 2020. The 2015 NEM reflects the current taxiway layout and the 2020 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 has "aircraft ground power" (referred to as "terminal power hooks" in the ROA and the 1989 NCP document) capability at nine gate locations that have passenger boarding bridges. There are 11 gates in total.

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 5:30 AM, which makes implementation of this measure infeasible during these hours. The ATCT has not implemented the

[23] 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

procedure during the remaining "nighttime" hours, as defined by DNL; i.e., from 10 PM to midnight and 5:30 to 7:00 AM.

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

New procedures[24] 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 Runway 33 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: Implemented. This informal agreement continues. Furthermore, BTV Operations strongly discourage C-5 training at the airport, because the runways are only 150 feet wide and wake turbulence from C-5 operations tear up the runway-edge lighting.

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. Based on observations, F-16s in 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 National Guard has continued training operations at BTV.

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

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

measure also included the recommendation of the Technical Advisory Committee 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 and 2006. This documentation represents the third NEM update. The City updated the NCP in 2008.

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. Flight tracks for this study were developed from calendar year 2012 radar data samples provided by the FAA, as discussed in Chapter 6.

4.3 Land Use Measures

Most of the following land use measures require noise contours, and would use the 2015 and 2020 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 2015 and 2020 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 jurisdiction within which the program is implemented, 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.[25] 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 eligibility requirements are best described in FAA's Airport Improvement Program (AIP) Handbook.[26]

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

[26] FAA's current guidance, policy and procedures are documented in FAA Order 5100.38D "Airport Improvement Program (AIP) Handbook", effective September 30, 2014. http://www.faa.gov/airports/aip/aip_handbook/

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. The City anticipates that this measure would be implemented in conjunction with the following measure "Easement Acquisition Related to Soundproofing." 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.[27]

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 will require easements for properties that receive soundproofing.

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).

Status: Not implemented. The airport has not actively encouraged the use of Real Estate Disclosures for properties within the 65 dB DNL contour but will be working with appropriate jurisdictions, such as the City of South Burlington, in that regard.

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[27] See footnote 26 for the AIP Handbook's citation. In particular, see sections C-5, R-9, and R-10 of the AIP Handbook effective September 30, 2014.

5 UPDATED EXISTING AND FORECAST CONDITIONS NOISE EXPOSURE MAPS WITH EXISTING NOISE COMPATIBILITY PROGRAM

The fundamental noise elements of an NEM are Day-Night Average Sound Level (DNL)[28] contours for existing and five-year forecast conditions (2015 and 2020 in this update), presented over base maps depicting the airport layout, local land use control jurisdictions, major land use categories, discrete noise sensitive "receptors," and other information required by Part 150.

Section 5.1 presents the official 2015 and 2020 NEM graphics. For historical perspective, Section 5.2 compares the 2015 existing condition contours to the 2006 and 2011 contours from the previous Part 150 update. Section 5.3 presents land use compatibility statistics for the official 2015 and 2020 existing and forecast condition NEMs.

5.1 2015 and 2020 Noise Exposure Maps

Figure 12 presents the existing condition NEM for 2015 operations. Figure 13 presents the forecast condition NEM for 2020 operations. <u>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).</u>

As is discussed in Section 1.2, The City recommends using the extents of the 2015 and 2020 NEM contours for future land-use planning, rather than simply using the 2020 NEM.

The figures present noise contours for 2015 operations and 2020 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 85 dB DNL contour is completely on airport property and therefore is not shown. The 80 dB DNL contour is largely on airport property except for a few locations to the southwest of the airport and a section to the southeast of the airport. The 80 dB DNL contour does not extend past airport property more than 300 ft., and does not include any potentially noncompatible land uses. Therefore, the 80 dB DNL contour is not shown.

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 should "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."[29]

The 2015 and 2020 noise modeling assumptions differ in terms of the level and mix of aircraft activity operating at the airport, as well as airport layout changes. Section 6.4 presents the modeling "fleet mixes" for those two years. Figure 14 compares the 65 dB DNL contours for 2015 and 2020, to illustrate the effect of the anticipated change in activity. For clarity, the higher contour levels are omitted from this figure. Section 5.3.1 presents additional comparisons of the 2015 and 2020 65 dB DNL contours.

[28] Section 3.1.6 describes DNL and related noise terminology.
[29] In 14 CFR §150.21(d).

The local municipalities (land use control jurisdictions) within the 2015 and 2020 65 dB DNL NEM contour include (starting west of the airport and proceeding clockwise about the figures):

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

All of these municipalities are within Chittenden County. The Town of Essex (“Essex”) is depicted on the maps because of its proximity to the airport; however, the 65 dB DNL noise contours do not extend into Essex. The maps include building outlines as reference, where such data were available.

The 65 dB DNL contours of both 2015 and 2020 NEM are comprised of several non-contiguous areas, because of the effects of terrain. The four areas of mention are:[30]

- The main contour that encompasses the airfield;
- A portion of the 2015 and 2020 65 dB DNL contour in Burlington is over Bilodeau Ct.;
- An area, too small to create a contour is along Roland Ct and Gorge Rd, Winooski, that also affects a few properties in Colchester; and
- Almost due north of the airport, there is a portion of the 2015 and 2020 65 dB DNL contour in Colchester, primarily over the Saint Michael’s College property, and other properties along college Parkway.

Additional discussion is presented in the sections below.

5.2 Comparison of Various Noise Contours, 2006 through 2015

To provide an historical frame of reference, Figure 15 compares the 65 dB DNL contours for three previously documented noise contours along with the 2015 contour that is part of this submission. The four contours, and the respective approximate land area, are listed below.

- The 2006 existing case contour from the most recent NEM update study, accepted by FAA on November 6, 2006. Approximately 1,615 acres.
- The 2011 forecast case contour from the most recent NEM update study, accepted by FAA on November 6, 2006. Approximately 1,163 acres.
- The “Baseline” contour from the USAF’s September 2013 FEIS, Figure BR3.2-1.[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 2,849 acres.

[30] There are a few additional small areas of noise levels greater than 65 dB DNL shown on the maps to the northeast of the airport. Aerial photography indicates these areas are wooded and fielded with no known structures. These areas are shown on the figures.
[31] The exact graphical files used to produce this Figure BR3.2-1 were not available, so the contour presented here is approximate and may differ very slightly from the FEIS.

- The 2015 existing condition contour from this submission. Approximately 2,059 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 2015 and 2020 contours is discussed in Chapter 6 of this document, while the development of the 2006 and 2011 contours is discussed in the 2006 NEM update. For the purpose of this comparison, only the 2015 65 dB DNL main contour is referenced since the 2006 and 2011 65 dB DNL contours were made up of a single contour area encompassing the airfield.

The 2015 65 dB DNL contour is generally smaller than the 2006 contour along the extended Runway 15/33 centerline, and generally larger to the sidelines of Runway 15/33. To the northwest, the 2015 contour is approximately 5,400 ft. smaller than the 2006 contour along Runway 15/33 centerline. The 2006 contour extends into residential areas in Winooski while the 2015 contour does not. To the southeast along Runway 15/33 centerline, the 2015 contour extends just beyond Industrial Avenue in Williston and is approximately 4,800 ft. smaller than the 2006 contour. To the northeast along the sideline of Runway 15/33 in South Burlington, the 2015 contour is between 500 and 2,000 ft. larger than the 2006 contours. To the southwest in South Burlington along the sidelines of Runway 15/33, the 2015 contour is between 500 and 1,800 ft. larger than the 2006 contours.

Similarly, the 2015 65 dB DNL contour is generally smaller than the 2011 contour along the extended Runway 15/33 centerline, and generally larger to the sidelines of Runway 15/33. To the northwest, the 2015 contour is approximately 2,300 ft. smaller than the 2011 contour along Runway 15/33 centerline. To the southeast, the 2015 contour is approximately 2,300 ft. smaller than the 2011 contour along Runway 15/33 centerline. To the northeast along the sideline of Runway 15/33 in South Burlington, the 2015 contour is between 500 and 2,000 ft. larger than the 2011 contours. To the southwest along the sidelines of Runway 15/33 in South Burlington, the 2015 contour is between 500 and 1,800 ft. larger than the 2011 contours.

The operational changes in the F-16 takeoffs, and specifically the implications of afterburners, caused the 2015/2020 NEM 65 dB DNL contours to be generally smaller than the 2006/2011 contours along the extended Runway 15/33 centerline, and generally larger to the sidelines of Runway 15/33. This result occurred because the use of afterburners increases the noise along the sideline of Runway 15/33, but also allows the aircraft to climb much faster, and therefore it is higher when it is going over Winooski and/or Williston.

The 2015 65 dB DNL NEM contour has similar shape, though smaller, than the “Baseline” contour from the USAF’s September 2013 FEIS. As noted above, the FEIS contour is based on 228 flying days as opposed to 365 average annual days required by 14 CFR Part 150. There are a few locations that the 2015 65 dB DNL NEM contour show are larger than the FEIS contour, and those locations are furthest from the airport and influenced by changes in the assumptions used to develop the two contours.[32]

[32] The changes in the modeling inputs between the NEM and the FEIS are noted in Chapter 6. The change in terrain data caused some of the “bulges” shown in the 2015 and 2020 NEM contours that are not present in many of the prior contours.

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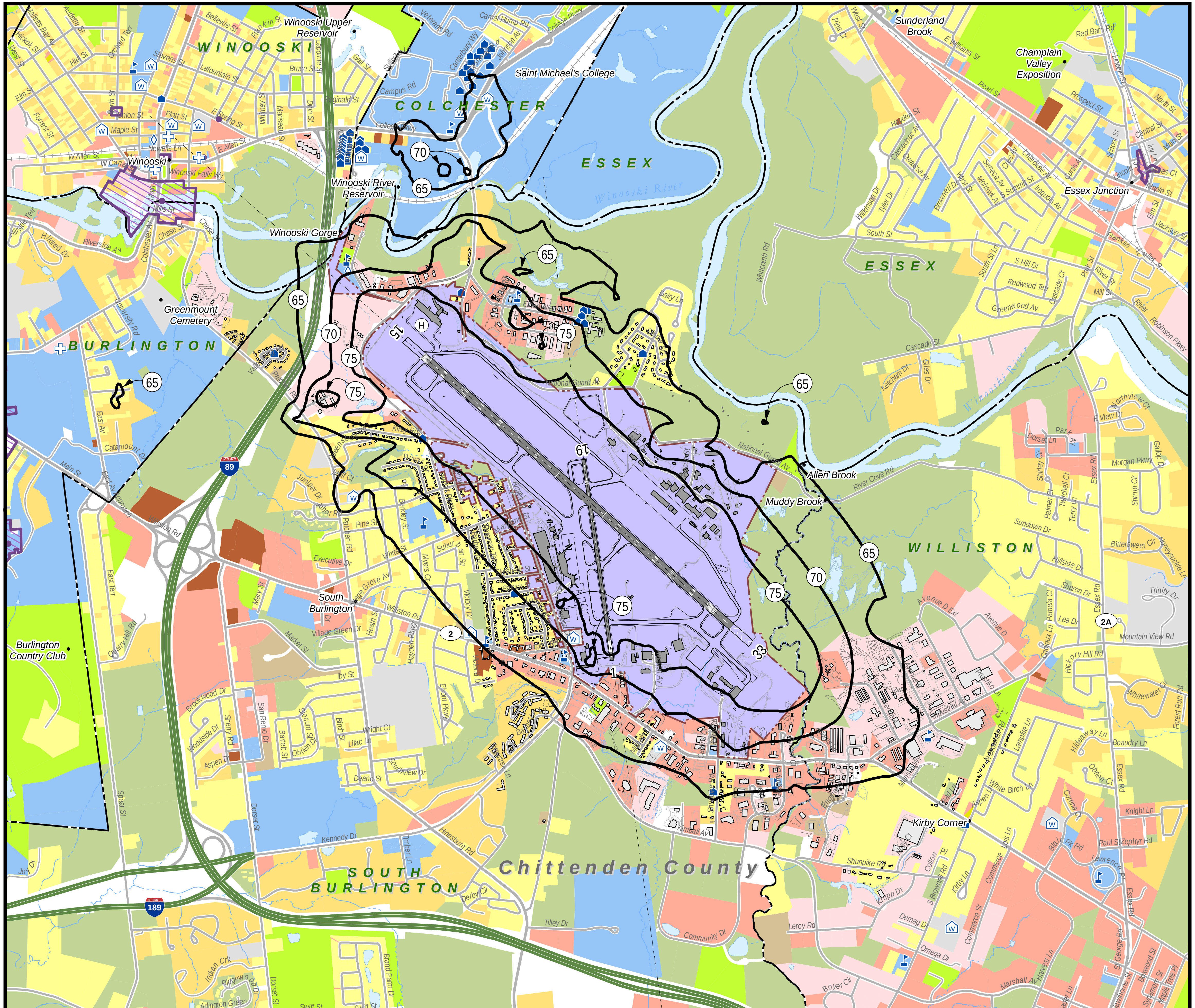

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December 2015

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 12
2015 Existing Conditions Noise Exposure Map

2015 DNL Contours

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

Single Family Residential (1)

Multi Family Residential (1)

Residence or Accomodation Functions (1)

General Sales or Services (2)

Mixed Use (1)

Manufacturing and Wholesale Trade (2)

Education, Public Admin., Health Care (1)

Religious Institutions (1)

Arts, Entertainment, and Recreation (1)

Agriculture, Forestry, Fishing and Hunting (1)

Mining and Extraction Establishments

Construction-Related Businesses

Transportation, Communication, and Utilities (2)

Open Water

Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

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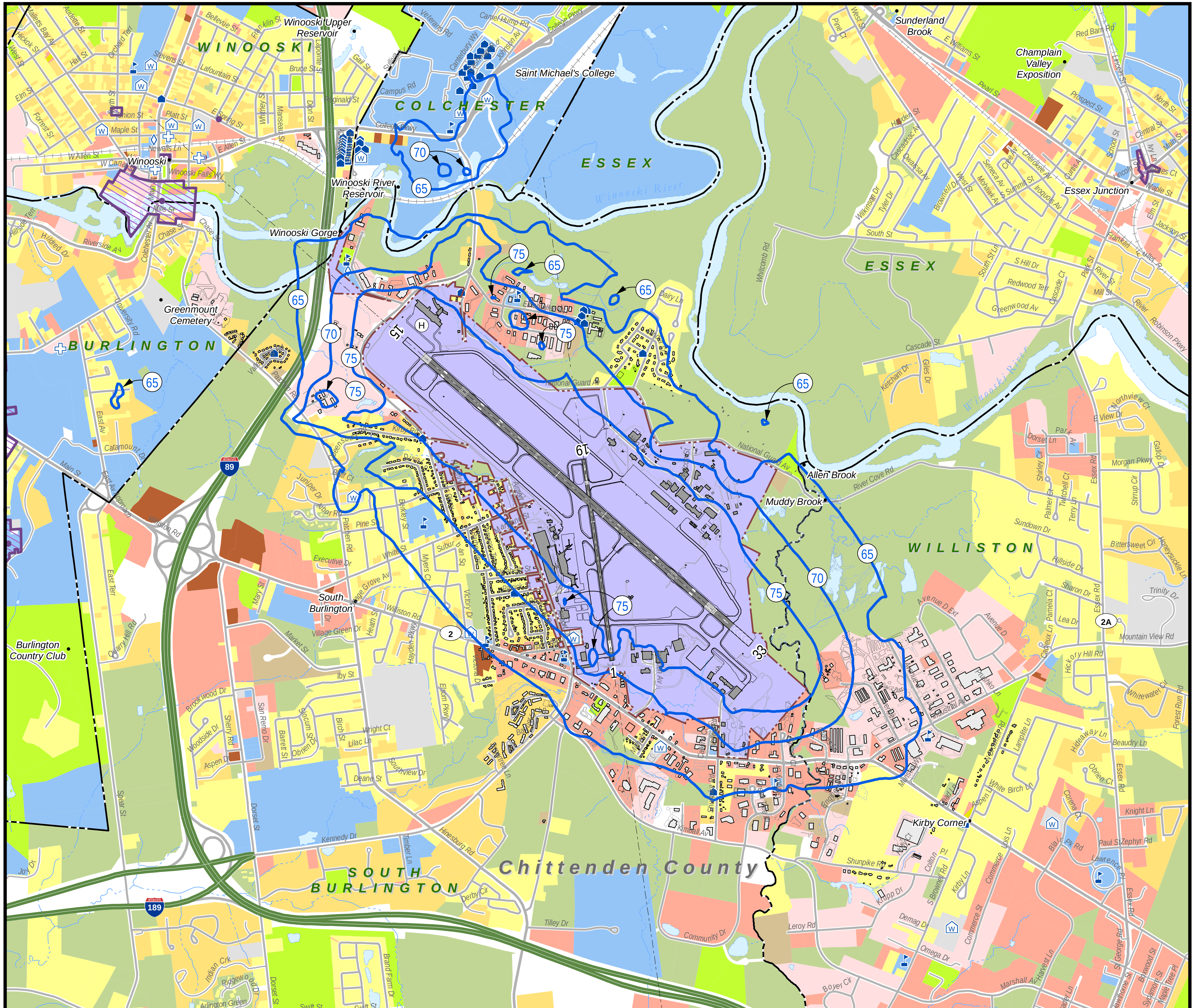
BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 13
2020 Forecast Conditions Noise Exposure Map



December 2015

2020 DNL Contours

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

Single Family Residential (1)

Multi Family Residential (1)

Residence or Accomodation Functions (1)

General Sales or Services (2)

Mixed Use (1)

Manufacturing and Wholesale Trade (2)

Education, Public Admin., Health Care (1)

Religious Institutions (1)

Arts, Entertainment, and Recreation (1)

Agriculture, Forestry, Fishing and Hunting (1)

Mining and Extraction Establishments

Construction-Related Businesses

Transportation, Communication, and Utilities (2)

Open Water

Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

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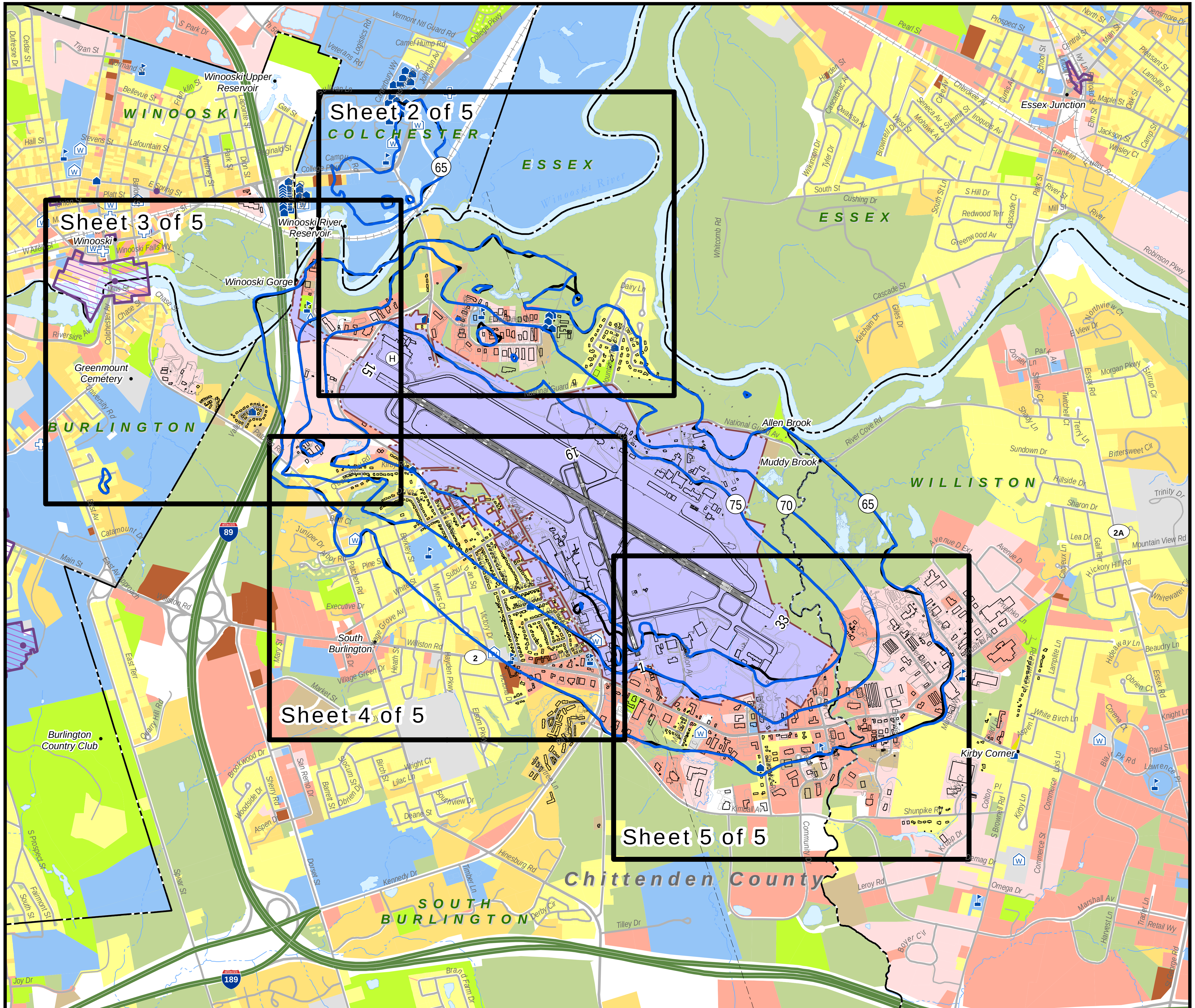

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 1 of 5

2020 DNL Contours
2015 DNL Contours

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

Single Family Residential (1)
Multi Family Residential (1)
Residence or Accomodation Functions (1)
General Sales or Services (2)
Mixed Use (1)
Manufacturing and Wholesale Trade (2)
Education, Public Admin., Health Care (1)
Religious Institutions (1)
Arts, Entertainment, and Recreation (1)
Agriculture, Forestry, Fishing and Hunting (1)
Mining and Extraction Establishments
Construction-Related Businesses
Transportation, Communication, and Utilities (2)
Open Water
Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

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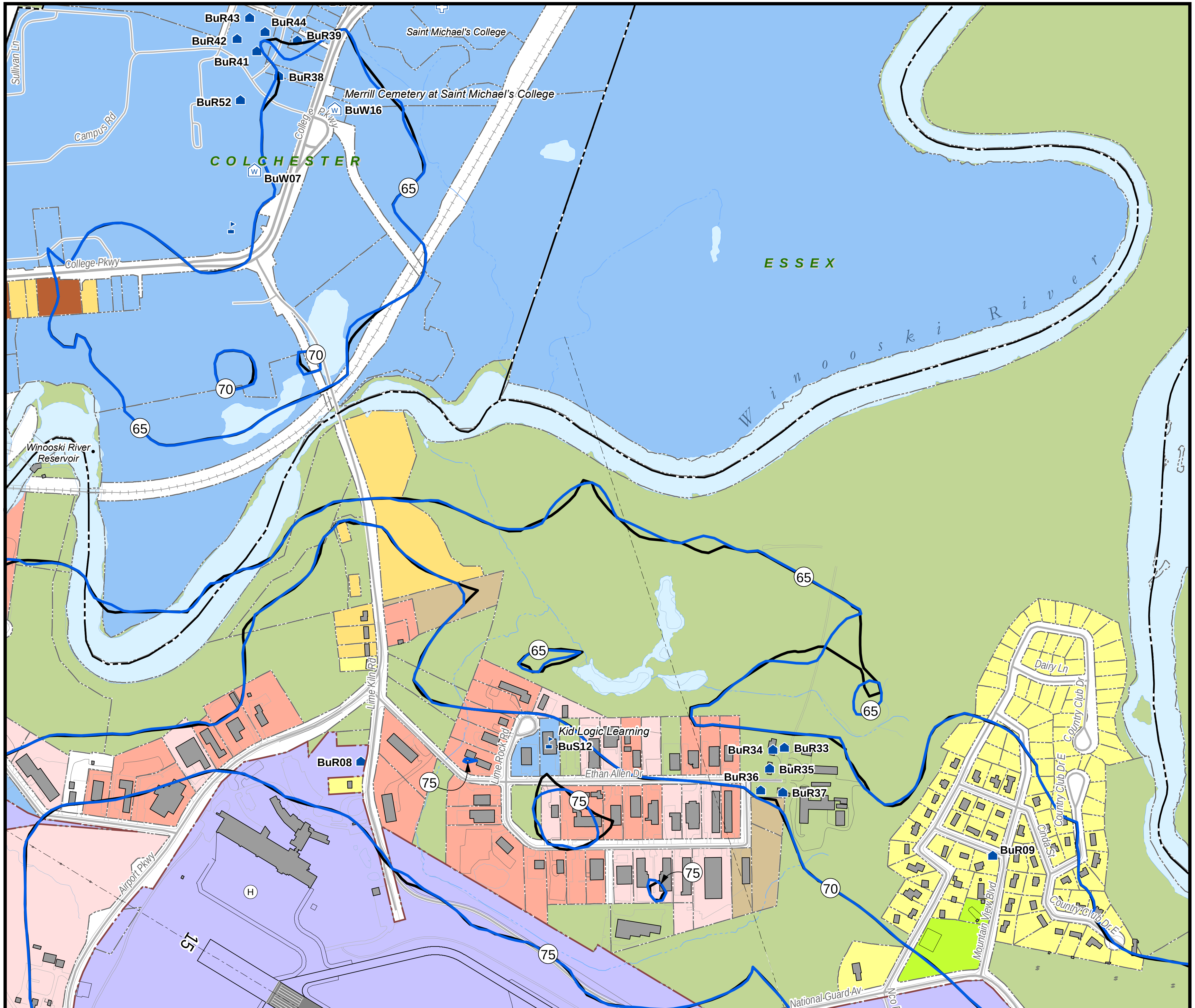

December 2015

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 2 of 5

- 2020 DNL Contours
- 2015 DNL Contours

- 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

- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

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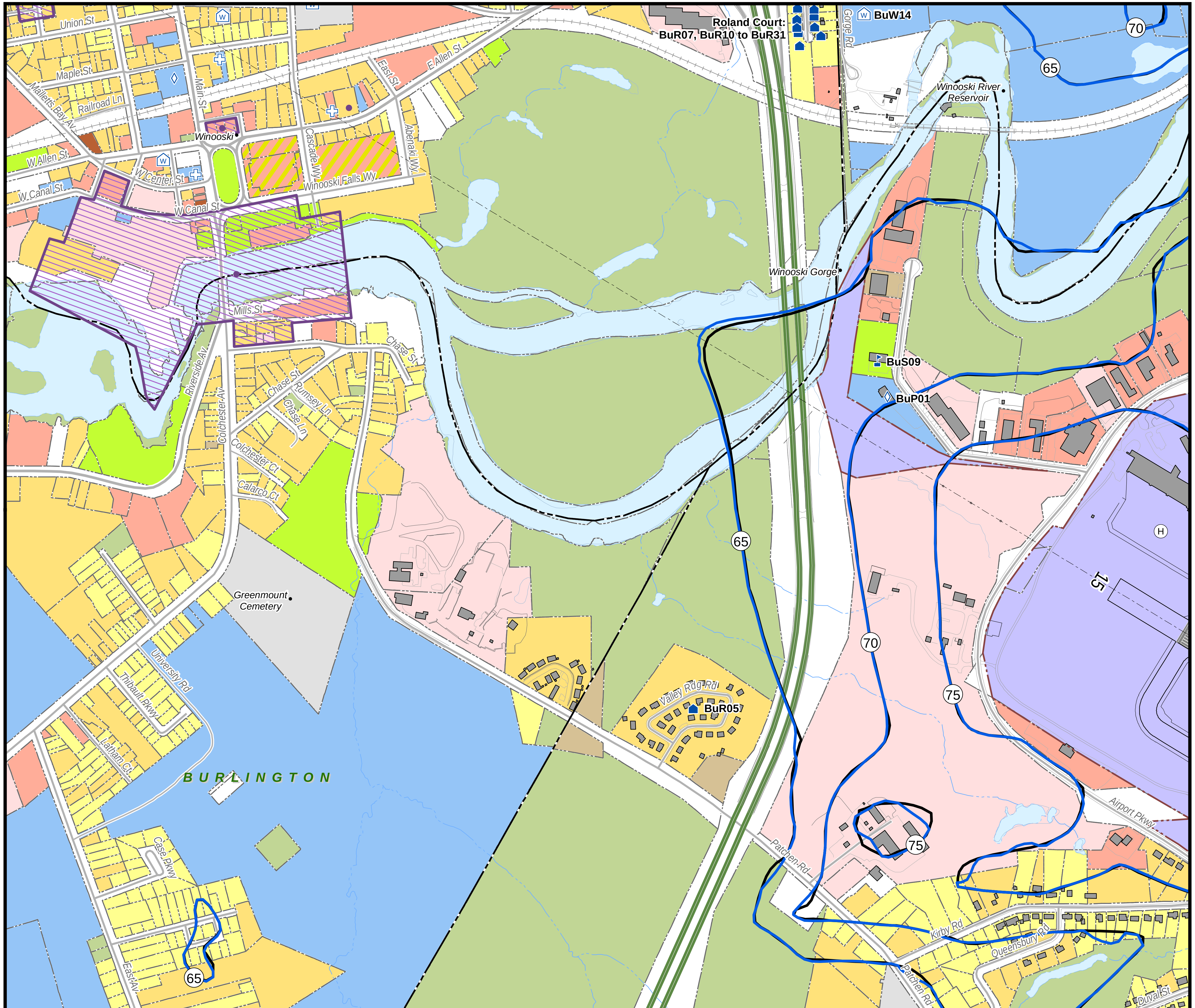
BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 3 of 5



December 2015

- 2020 DNL Contours
- 2015 DNL Contours
- Airport Property Boundary
- Town Boundary
- Helicopter Pad
- Highways
- Major Roads
- Local Roads
- Education
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- National Register Historic District
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0 300 600 1,200 Feet

North

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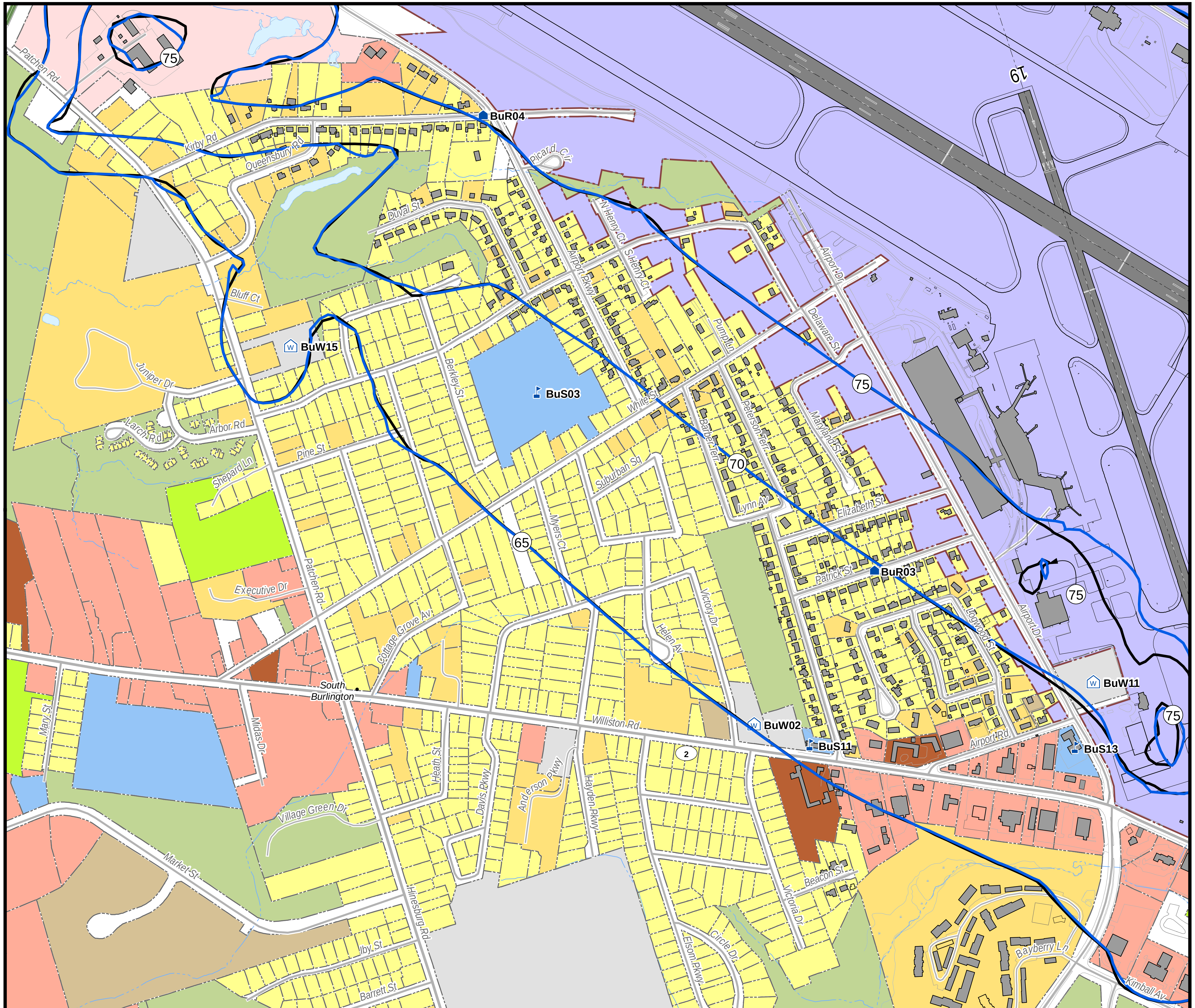
CAMPBELL AND PARIS ENGINEERS, P.C.

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 4 of 5



2020 DNL Contours
2015 DNL Contours

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

Single Family Residential (1)
Multi Family Residential (1)
Residence or Accomodation Functions (1)
General Sales or Services (2)
Mixed Use (1)
Manufacturing and Wholesale Trade (2)
Education, Public Admin., Health Care (1)
Religious Institutions (1)
Arts, Entertainment, and Recreation (1)
Agriculture, Forestry, Fishing and Hunting (1)
Mining and Extraction Establishments
Construction-Related Businesses
Transportation, Communication, and Utilities (2)
Open Water
Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

0 300 600 1,200 Feet

North

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December 2015

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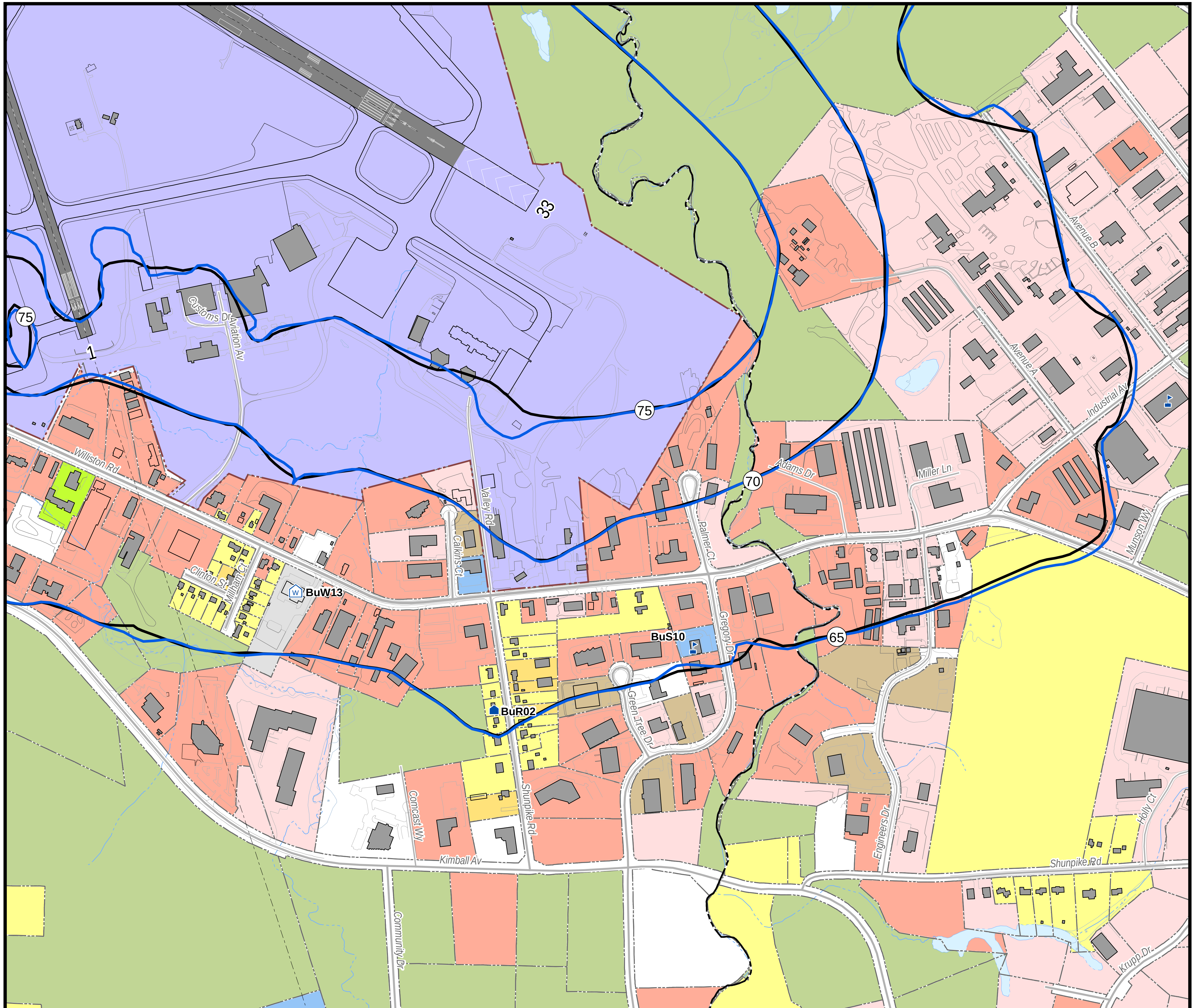

BURLINGTON INTERNATIONAL AIRPORT

Part 150 - Noise Exposure Map Update

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 5 of 5

2020 DNL Contours
2015 DNL Contours

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

Single Family Residential (1)
Multi Family Residential (1)
Residence or Accomodation Functions (1)
General Sales or Services (2)
Mixed Use (1)
Manufacturing and Wholesale Trade (2)
Education, Public Admin., Health Care (1)
Religious Institutions (1)
Arts, Entertainment, and Recreation (1)
Agriculture, Forestry, Fishing and Hunting (1)
Mining and Extraction Establishments
Construction-Related Businesses
Transportation, Communication, and Utilities (2)
Open Water
Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

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December 2015

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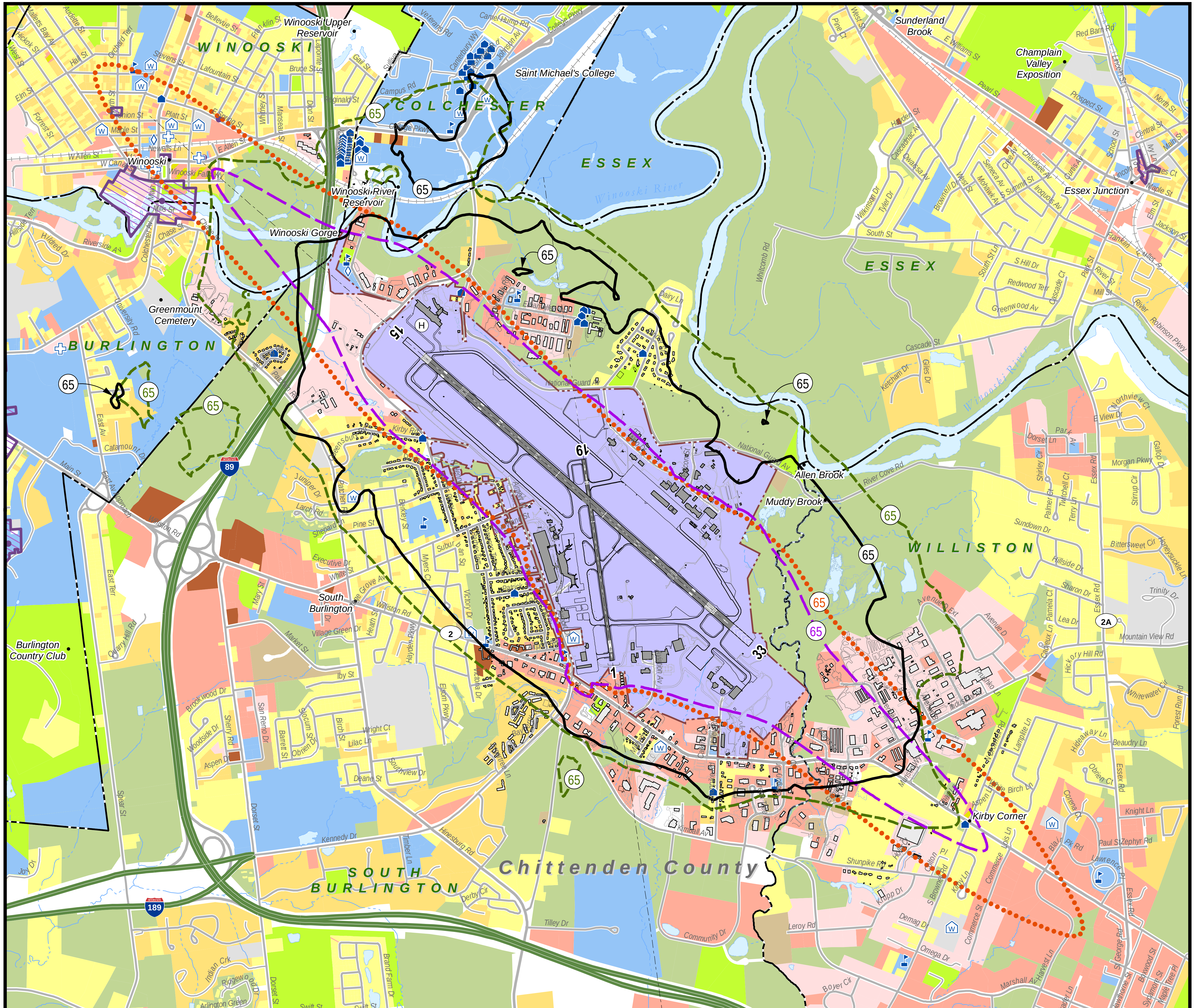

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 15
Comparison of Various 65 dB Day-Night Average Sound Level (DNL) Contours for 2006 – 2015

2015 DNL Contours

2011 DNL Contours

2010 Baseline USAF EIS Contour (Based on 228 Operating Days; Approximate from Fig. BR3.2-1 of EIS)

2006 DNL Contours

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

Single Family Residential (1)

Multi Family Residential (1)

Residence or Accomodation Functions (1)

General Sales or Services (2)

Mixed Use (1)

Manufacturing and Wholesale Trade (2)

Education, Public Admin., Health Care (1)

Religious Institutions (1)

Arts, Entertainment, and Recreation (1)

Agriculture, Forestry, Fishing and Hunting (1)

Mining and Extraction Establishments

Construction-Related Businesses

Transportation, Communication, and Utilities (2)

Open Water

Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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 1,000 2,000 4,000 Feet

North

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CAMPBELL AND PARIS ENGINEERS, P.C.

December 2015

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5.3 Potential Noncompatible 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.[33]

- 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 2015 and 2020. 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. The City would like to continue this program in the future as well as implement a sound insulation program. This process was discussed in Section 4.3.1, Section 4.3.2, and Section 4.3.3.

5.3.1 Comparison of 2015 and 2020 Noncompatible Land Uses

Comparison of the 2015 and 2020 contours show that the contours are expected to remain generally static. The contours are heavily influenced by the Air National Guard F-16 operations, which are forecast to remain constant between 2015 and 2020. A slight increase along the Runway 15/ 33 centerline and a slight decrease to the southwest side of the airport are expected, but both changes result in less than 100 ft. difference for the 65 dB DNL contours. These changes are caused by the forecast changes in operations and airport layout between 2015 and 2020. These changes, the effects on the contours and the resulting forecasted change in noncompatible land-use are explained in detail below.

The slight increase in noise along Runway 15/ 33 centerline is expected to cause only a slight increase in noncompatible land-use. The slight increase is due to the forecasted increase in operations. Although the retirement of Stage 2 aircraft for 2020 decreases the noise slightly, the increase in operations is more influential.

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[33] 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.

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. None of these locations are currently listed on the National Register of Historic Places. These locations are depicted on the NEMs and the status within the 2015 NEM and the 2020 NEM are listed in Table 3. Figure 14 presents these locations in detail. Table 3 also indicates which sheet the location can be found in Figure 14, and is generally organized from north to south.

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 2015 and 2020

Source: Chittenden County Regional Planning Commission (2012), HMMH (2015)

City/Town	Type	Facility Name	2015 NEM Contour interval	2020 NEM Contour interval	Location on Figure 14 [7]
Colchester	Residential	Boutin Commons 2	<65	<65	Sheet 2, BuR43
Colchester	Residential	Boutin Commons 3	<65	<65	Sheet 2, BuR44
Colchester	Residential	Hodson Hall	<65	<65	Sheet 2, BuR42
Colchester	Residential	Pontigny Hall	<65	<65	Sheet 2, BuR39
Colchester	Residential	Boutin Commons 1	<65	<65	Sheet 2, BuR41
Colchester	Residential	Cashman Hall	65 - 70	65 - 70	Sheet 2, BuR38
Colchester	Residential	Nicolle Hall	<65	<65	Sheet 2, BuR52
Colchester	Place of Worship	Merrill Cemetery at Saint Michael's College	65 - 70	65 - 70	Sheet 2, BuW16
Colchester	Place of Worship	Chapel of Saint Michael [2]	65 - 70	65 - 70	Sheet 2, BuW07
South Burlington	Education	Kid Logic Learning	70 - 75	70 - 75	Sheet 2, BuS12
South Burlington	Residential	Shamrock Road	70 - 75	70 - 75	Sheet 2, BuR08
South Burlington	Residential	Ethan Allen Drive [3]	65 - 70	65 - 70	Sheet 2, BuR33
South Burlington	Residential	Ethan Allen Drive [3]	65 - 70	65 - 70	Sheet 2, BuR34
South Burlington	Residential	Ethan Allen Drive [3]	65 - 70	65 - 70	Sheet 2, BuR35
South Burlington	Residential	Ethan Allen Drive [3]	65 - 70	65 - 70	Sheet 2, BuR36
South Burlington	Residential	Ethan Allen Drive [3]	65 - 70	65 - 70	Sheet 2, BuR37
South Burlington	Residential	Kitty Street	65 - 70	65 - 70	Sheet 2, BuR09
Colchester	Place of Worship	Saint Stephen Cemetery [2]	65 - 70	65 - 70	Sheet 3, BuW14
Colchester	Residential	Gorge Road [4]	65 - 70	65 - 70	Not shown [4]
Colchester	Residential	Gorge Road	65 - 70	65 - 70	Not shown
Colchester	Residential	Gorge Road	65 - 70	65 - 70	Not shown
Colchester	Residential	Gorge Road	65 - 70	65 - 70	Not shown
Winooski	Residential	Roland Court [4]	65 - 70	65 - 70	Sheet 3, BuR07
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR10
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR11
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR12
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR13
Winooski	Residential	Roland Court	<65	<65	Sheet 3, BuR25
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR26
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR27

City/Town	Type	Facility Name	2015 NEM Contour interval	2020 NEM Contour interval	Location on Figure 14 [7]
Winooski	Residential	Roland Court	65 - 70	65 - 70	Sheet 3, BuR28
South Burlington	Education	Champlain Valley Gymnastics, Inc.	65 - 70	65 - 70	Sheet 3, BuS09
South Burlington	Public Gathering	Knights of Columbus [5]	65 - 70	70 - 75	Sheet 3, BuP01
South Burlington	Residential	Valley Ridge Road	<65	<65	Sheet 3, BuR05
South Burlington	Residential	Airport Parkway/Kirby Road	>75	>75	Sheet 4, BuR04
South Burlington	Place of Worship	Ahavat Gerim Cemetery	65 - 70	65 - 70	Sheet 4, BuW15
South Burlington	Education	Chamberlain Elementary School	65 - 70	65 - 70	Sheet 4, BuS03
South Burlington	Residential	Patrick Street	65 - 70	65 - 70	Sheet 4, BuR03
South Burlington	Place of Worship	Eldridge Cemetery	70 - 75	70 - 75	Sheet 4, BuW11
South Burlington	Place of Worship	Community Lutheran Church and Cemetery [6]	65 - 70	65 - 70	Sheet 4, BuW02
South Burlington	Education	Leaps & Bounds Child Development Center	65 - 70	65 - 70	Sheet 4, BuS11
South Burlington	Education	Centerpoint Adolescent Treatment Services [8]	65 - 70	65 - 70	Sheet 4, BuS13
South Burlington	Place of Worship	Community Bible Church	65 - 70	65 - 70	Sheet 5, BuW13
South Burlington	Education	Union Training Center, IBEW Local 300	65 - 70	65 - 70	Sheet 5, BuS10
South Burlington	Residential	Shunpike Road	65 - 70	65 - 70	Sheet 5, BuR02

Note:
1 None of the above properties are on the National Register of Historic Places.

2 Chapel of Saint Michael and Saint Stephen Cemetery are not depicted in the 65 dB DNL noise contour, but specific point analysis indicates noise levels are at 65 dB DNL. Note: The November 2015 draft reported Saint Stephen Cemetery in Winooski.

3 Five houses on Ethan Allen Drive, South Burlington are on land designated as Agricultural. Four are single family and one is a two family

4 Eleven houses on the southern end of Roland Ct, Winooski and four houses on Gorge Rd. Colchester, have noise level at 65 dB DNL, but this area is too small to generate a noise contour. The Gorge Rd. houses are depicted on all other figures and are just north of Saint Stephen Cemetery shown in Sheet 3. Note: The Roland Ct./Gorge Rd. count was revised after the November 2015 draft of this document.

5 The Knights of Columbus property is on the 70 dB DNL contour for both the 2015 NEM and the 2020 NEM. The primary building is just outside of the 70 dB DNL contour in the 2015 NEM while the building is on the 70 dB DNL contour for the 2020 NEM.

6 Community Lutheran Church and the associated cemetery are listed as two separate parcels according to Chittenden County Regional Planning Commission data.

7 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.

8 The Centerpoint Adolescent Treatment Services at 1025 Airport Drive, South Burlington, VT was added after the November 2015 draft of this document.

9 In a December 4, 2015 comment, an individual mentioned that the residential property at 364 White St. South Burlington is used for a home childcare and preschool program. The property is in the 70 dB – 75 dB DNL contour interval for both years. At the time of this NEM submittal, the property is categorized as residential since residential appears to be the primary use.

5.3.3 Residential Population within the Noise Contours

Table 4 presents the estimated residential population within the 2015 and 2020 contours. These estimates were developed by counting the dwelling units within the contours and assuming that there are 2.32 residents in each dwelling unit, which was the average household size within the wholly encompassed Census blocks within the extents of the 2015 and 2020 65 dB DNL contours with a 1,000 ft. buffer, based on 2010 Census data.

The table presents estimates of the number of residential dwelling units, based on data provided by Chittenden County Regional Planning Commission, airport staff and aerial photography. If a dwelling unit was intersected by a contour, the entire dwelling unit was assumed to experience the higher interval level. For apartment and condominium complexes, only buildings intersected by the contour were counted. Additional residential properties that are not in the contour itself, but specific point analysis indicates are at level of 65 dB DNL, are noted in Table 3 and are included in the population counts in this document.

The estimated dwelling and population counts include all residential properties identified to date, including five houses on agricultural land, 11 houses at the southern end of Roland Ct., Winooski and four houses on Gorge Rd. Colchester.[34] As noted in Section 1.2, the City recommends using the extent of the 2015 and 2020 NEM contours.

The City also would like to continue the FAA-approved NCP element (Section 4.3.1) that calls for acquisition of residences (and relocation of the affected residents). The City will only continue acquiring certain properties, as discussed Section 4.3.2, and then begin implementing a sound insulation program. Therefore, the actual counts for 2020 will likely be lower than presented here as those acquisitions progress.

As discussed previously in this section, the City recommends using the extents of the 2015 and 2020 NEM contours for future land-use planning, rather than simply using the 2020 NEM. The 2015 NEM contours include all of the same residential properties in the 2020 NEM with only the following exceptions.

- the 2015 NEM includes four residential dwelling units, all on single family parcels, that the City of Burlington is in the process of acquiring and therefore at not include in the 2020 NEM counts.[35]

The 2015 NEM and 2020 NEM 65 dB DNL contours extend partially onto Saint Michael's College campus. The 2015 NEM contour includes three Saint Michael's College dormitories, including Cashman Hall (residence for approximately 124 students), Pontigny Hall (approximately 128 students), and one of the Boutin Commons buildings (approximately 12 students). The 2020 NEM contour includes only two of these dormitories, Cashman Hall and one of the Boutin Commons buildings. These dormitory facilities include approximately 264 residents in the 2015 NEM 65 dB DNL contour and 136 residents in the 2020 NEM 65 dB DNL contour.[36] The dwelling units associated with Saint Michael's College are not included

[34] As noted previously, these houses are in an area too small to generate a noise contour.
[35] The City has received an FAA grant for these four properties in August 2015. At the time the draft NEM was prepared, these four properties had not been acquired and are therefore included in the 2015 NEM counts.
[36] Dormitory resident capacity estimates based on Saint Michael's website Campus Map descriptions August 2015. http://www.smcvt.edu/about-smc/campus-map.aspx.

in Table 4 while the population estimates including the Saint Michael's College residents are noted in parenthesis.

Table 4 Estimated Residential Population within for 2015 and 2020 Contour Cases

Sources: US Census (2010), Chittenden County Regional Planning Commission (2012), City of Burlington (2015), Saint Michael's College (2015), HMMH (2015)

Day-Night Average Sound Level, DNL	Metric	2015 Existing Conditions Noise Exposure Map			2020 Forecast Conditions Noise Exposure Map		
		On Single Family Parcels	On Multi-Family Parcels	Estimated Total	On Single Family Parcels	On Multi-Family Parcels	Estimated Total
65-70 dB Contour Interval	Estimated Dwelling Units	417	154	**571** [1]	416	154	**570** [1]
	Estimated Population	968	358	**1,326 (1,590)** [1]	966	358	**1,324 (1,460)** [1]
70-75 dB Contour Interval	Estimated Dwelling Units	193	179	**372**	190	179	**369**
	Estimated Population	448	416	**864**	441	416	**857**
75 dB or Greater	Estimated Dwelling Units	12	21	**33**	12	21	**33**
	Estimated Population	28	49	**77**	28	49	**77**
Total 65 dB or Greater	Estimated Dwelling Units	622	354	**976**	618	354	**972**
	Estimated Population	1,444	823	**2,267 (2,531)** [1]	1,435	823	**2,258 (2,394)** [1]

Notes:

1 Estimated Population numbers in parenthesis include estimates of residents in the dormitory facilities at Saint Michael's College. Additional discussion is presented in Section 5.3.3 above.

2 "On Single Family Parcels" and "On Multi-Family Parcels" counts correspond to the color coding in the NEM Figures, with numbers reduced in the 2020 counts for properties that the City of Burlington is in the process of acquiring. 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. Dormitory facilities at Saint Michael's College are not included in these counts, as discussed in Section 5.3.3.

3 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.

4 Counts differ from the November 2015 draft because of revisions noted previously. In addition, two units that were previously reported as single-family are now reported as multi-family units.

In response to comments on the draft of this document, the location of the 976 dwelling units at 65 dB DNL or greater for the 2015 Existing Conditions Noise Exposure Map that are listed in Table 4 are summarized below by City or Town.

- City of South Burlington
    - Estimated dwelling units within 65 dB or greater DNL: 948
        - 663 dwelling units are south of the airport and west of Kennedy Dr.
            - Four of these units are expected to be purchased by the City of Burlington, as noted above.
        - 38 dwelling units are south of the airport and east of Kennedy Dr.
        - 247 dwelling units are north of the airport
- Town of Williston
    - Estimated dwelling units within 65 dB or greater DNL: 0 [37]
- City of Burlington
    - Estimated dwelling units within 65 dB or greater DNL: 9
        - These seven are single-family units along Bilodeau Ct.
        - Two are multi-family units in a complex along East Ave.
- City of Winooski
    - Estimated dwelling units within 65 dB or greater DNL: 11
        - All of these are single-family units on the southern end of Roland Ct.
- Town of Colchester
    - Estimated dwelling units within 65 dB or greater DNL: 8, plus dormitories as discussed previously
        - This includes a four unit building along College Ave and four individual houses on Gorge Rd.

Table 5 presents the estimated residential population within the three historical contours presented in Figure 15 along with the 2015 and 2020 NEM contours. The purpose of this table is to provide a dwelling and population comparison to the historical contours in presented Figure 15, all with the same land use data and dwelling inventory methodology used of 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 2015/2020 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.

[37] There are two parcels in Williston zoned as single-family residential within both the 2015 and 2020 65 dB DNL contours. These parcels are depicted on Figure 14, Sheet 5, south of the intersection Willison Rd. and Industrial Ave. However, research has shown no dwelling units within the 65 dB DNL contours and on these parcels.

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

Sources: US Census (2010), Chittenden County Regional Planning Commission (2012), City of Burlington (2015), Saint Michael's College (2015), HMMH (2015)

65 dB Day-Night Average Sound Level, DNL Contour	Metric	Land Use Inventoried and Depicted for this 2015/2020 NEM [2]			Comparable Previously Documented Values [3]	
		On Single Family Parcels	On Multi-Family Parcels	Estimated Total	2006 NEM Table 4	2008 NCP Table 3
2006 Noise Exposure Map	Estimated Dwelling Units	210	1,140	**1,350**	**1,300** [3(a)]	**1,207** [3(b)]
	Estimated Population	488	2,645	**3,133**	**2,563** [3(a)]	**2,524** [3(b)]
2011 Noise Exposure Map	Estimated Dwelling Units	47	182	**229**	**316** [3(a)]	**477** [3(b)]
	Estimated Population	110	423	**533**	**624** [3(a)]	**941** [3(b)]
"Baseline" contour from the USAF's September 2013 FEIS, Figure BR3.2-1.	Estimated Dwelling Units	770	763	**1,533** [1]	**1,966** [3(c)]	
	Estimated Population	1,788	1,771	**3,559 (4,291)** [1]	**4,602** [3(c)]	
2015 Existing Conditions Noise Exposure Map	Estimated Dwelling Units	622	354	**976** [1]		
	Estimated Population	1,444	823	**2,267 (2,531)** [1]		
2020 Forecast Conditions Noise Exposure Map	Estimated Dwelling Units	618	354	**972** [1]		
	Estimated Population	1,435	823	**2,258** [1] **(2,394)** [1]		

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.

3(a) 2006 NEM - City of Burlington, Burlington International Airport 14 CFR Part 150 Update 2006 and 2011 Noise Exposure Maps, August 2006. Table 4.
3(b) 2008 NCP - City of Burlington, Burlington International Airport 14 CFR Part 150 Update Noise Compatibility Program, April 2008. Table 3
3(c) USAF's September 2013 FEIS, Table BR3.2-2. 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 2015 and 2020 NEM contours.

6.1 Noise Models

Per FAA guidance[38], NOISEMAP was used to model F-16 flight operations (arrivals, departures and touch-and-goes) for the BTV NEM. INM was used to model the remaining military, transient, and civilian operations for the BTV NEM. The output grid results from these two models were then combined appropriately. NOISEMAP uses many of the same inputs as INM, and are included in discussion and tables below, as appropriate.

Each noise model was run separately and the outputs were combined to present and average annual day contour and grid point values using the hybrid approach recommended by FAA.[39]

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)

6.1.1 INM

The BTV NEM contours were prepared with the most recent version of FAA's Integrated Noise Model (INM) that was available at the time the contours were prepared (Version 7.0d), supplemented by NOISEMAP. The INM model was used without any unauthorized "calibration" or "adjustment." The INM accepts inputs in the following categories:

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

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[38] FAA recommended methodology in its letter dated December 9, 2014 (hybrid modeling approach, with civil aircraft modeled in INM and military F-16 aircraft in the NOISEMAP).
[39] This process is described at Wasmer Consulting's website page titled "Adding Noisemap and INM Noise Grids with NMPlot" http://wasmerconsulting.com/nmplot_adding_noisemap_and_inm_grids.htm

It should be noted that after the noise analysis of the BTV NEM had begun, the FAA adopted the Aviation Environmental Design Tool (AEDT) Version 2b (AEDT 2b) which replaces INM. However, consistent with current FAA policy and practice, the use of AEDT 2b is not required for projects whose analysis had already started.

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.[40]

The BTV NEM contours were prepared with the most recent version of NOISEMAP (Version 7.358) to represent the ANG F-16 flight operations. The modeling inputs can be categorized in a similar manner as INM. NOISEMAP modeling inputs, documented in the following sections, were generally based on the inputs used in the United States Air Force F-35A Operational Basing Final Environmental Impact Statement (USAF EIS).[41]

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 8,320 feet long and 150 feet wide. Runway 1/19 is 4,111 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 INM includes an internal airport layout database, including runway locations, orientation, start-of-takeoff roll points, runway end elevations, landing thresholds, approach angles, etc. The INM data was updated with the latest Airport Layout Plan. Table 6 provides the runway details, including the runway end coordinates.

The primary information that INM 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

[40] BASEOPS is a frequently referenced NOISEMAP module. Additional documentation is available at http://wasmerconsulting.com/baseops.htm
[41] 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

what conditions, and therefore how often a runway would be used relative to the other runways at the airport.

Table 6 Runway Details

Source: Airport Layout Plan, Form 5010

Runway	Latitude[1]	Longitude[1]	Elev. (ft)	Displaced Arrival Threshold (ft)	Arrival Threshold Crossing Height (TCH) (ft)[2]	Displaced Departure Threshold (ft)
1	44.463826 N	73.151004 W	334	225	40	0
15	44.480677 N	73.165882 W	306	0	51	0
19	44.474978 N	73.153352 W	327	500	42	0
33	44.465757 N	73.141764 W	335	500	53	0

Notes:
1 All coordinates are relative to the North American Datum of 1983 (NAD) 83
2 From Form 5010 (available at http://www.faa.gov/airports/airport_safety/airportdata_5010/ July 24, 2014)

The NOISEMAP study used for the BTV NEM F-16 modeling includes airport and runway information provided in the USAF EIS analysis, unchanged. This information has been checked for consistency with the FAA 5010 data.

6.3 Aircraft Noise and Performance Characteristics

Specific noise and performance data must be entered into the INM 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 INM database contains standard noise and performance data for over one hundred different fixed wing aircraft types, most of which are civilian aircraft. The INM 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, the submission to FAA Office of Environment and Energy (AEE-100), and the associated approval are provided in Appendix B. In summary, these changes include the following topics:

- Non-standard substitutions
- Taxiways and ramp activity
- F-16 user-defined profiles

6.3.1 Non-standard substitutions

This study included many different aircraft types. While many aircraft could be modeled by direct assignments from the standard INM database, several were not in the INM database. For those aircraft types not in the INM 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 came from the following two sources:

- INM Version 7.0d 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 and FAA approval documented in Appendix B). These aircraft include the:
  - Embraer EMB-500 Phenom 100 (substitution with CNA510)
  - Embraer EMB-505 Phenom 300 (substitution with CNA560E)
  - BAe/Raytheon Hawker 1000 (substitution with LEAR35)
  - Learjet 40 (substitution with LEAR35)
  - Beech Super King Air 350 (substitution with DO228)
  - Piper Malibu Meridian (substitution with CNA208)
  - Socata TBM-850 (substitution with CNA208)
  - Beechcraft 36 Bonanza (substitution with CNA206)
  - Lancair LC-41 Columbia 400 (substitution with GASEPV)
  - Diamond 40 (substitution with GASEPV)
  - NA145/154 Navion (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 INM could represent taxiway operations. Section 6.7.1 provides additional details.

6.3.3 F-16 user-defined profiles

Profiles for based Air National Guard aircraft were extracted from USAF data, prepared for INM and submitted to FAA for approval. However, per FAA's December 9, 2014 letter, NOISEMAP was used for the BTV NEM F-16. Modeling includes noise and performance information provided in the USAF data analysis. The NOISEMAP study used a standard F-16C aircraft type, with F110-GE-100 engines.

6.4 Aircraft Operations

The existing 2015 operations and fleet mix data were developed from several sources. Civilian baseline operations were developed from a mix of flight plan data,[42] FAA tower counts (as reported by ATADS),[43] FAA forecast (TAF)[44], and BTV airport staff. Flight plan data for calendar year 2013 were adjusted to represent annual 2015 conditions by considering recent activity, historical growth at the airport, and recent changes in commercial operations. The civilian operations were adjusted to account for recent airline service not yet included in the ATADS or TAF data. Operations were also adjusted for the FAA Air Traffic Control Tower (ATCT) being closed midnight through 5:30 AM daily. It is assumed that no local (touch and go) General Aviation operations occur during tower closure periods.

Military operations were developed from multiple sources. The based military operations were developed from the modeling data used in USAF EIS. The USAF EIS modeling data used 228 annual operating

[42] Flight plan data, purchased from a third party-vendor, would be used to provide the destination airports for departing aircraft, which is then used in an FAA approved methodology to estimate aircraft weight.
[43] FAA's Operations Network (OPSNET), https://aspm.faa.gov/opsnet/sys/main.asp
[44] FAA's Terminal Area Forecast (TAF), https://aspm.faa.gov/main/taf.asp

days. These 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. In summary, both the NEM and the USAF EIS assume the same number of annual operations for the based aircraft (Air National Guard F-16s and Army National Guard helicopters).[45] The transient military operations were developed from FAA Traffic Flow Management System Counts (TFMSC) operational data for calendar year 2013.[46]

Appendix C presents the detailed civilian operations development developed for this NEM.

The FAA's ATADS and TAF report aircraft operational activity levels in one of four categories listed below.[47]

- Air Carrier – Operations by aircraft capable of holding 60 seats or more and are flying using a three-letter company designator.
- Air Taxi - Operations by aircraft less than 60 seats and are flying using a three letter company designator or the prefix "Tango".
- Military – all classes of military operations.
- General Aviation – Civil (non-military) aircraft operations not otherwise classified under air carrier or air taxi

Table 7 provides a comparison of the annualized existing 2015 NEM modeled operations, and the associated expected annualized 2015 tower counts to FAA reported data (the 2014 TAF, 204 actual counts and the 2015 TAF). Comparisons in Table 7 should be made between the expected annualized 2015 tower counts and the various FAA reported numbers, since the expected annualized 2015 tower counts consider that the tower is closed between midnight and 5:30 AM and that multiple military aircraft flying in formation maybe considered as a single count. The various forecasts for the expected 2015 tower counts range from 72,215 to 76,563. The differences in forecasts differ by approximately six percent and this range is reasonable since the various forecasts were prepared at different times and make different assumptions. For reference, FAA typically considers forecasts consistent with the TAF if the total number of operations differs by less than 10 percent in the 5-year forecast period.[48]

It should be noted that there are several nearby helicopter operations located at other facilities in the area. The UVM Medical Center Heliport is located approximately 1.5 miles west of BTV. According to the radar sample, helicopter operations associated with this helipad do not interrelate with operations at BTV, therefore, were not included in this NEM. Fort Ethan Allen is located approximately 2 miles north of BTV. A large percent of the military helicopter operations associated with the Vermont Army National

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[45] Operations represent "typical" annual conditions. They do not reflect include brief changes in operations associated with deployments of the units away from BTV as occurred in summer 2015.
[47] Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). Latest version available at http://www.faa.gov/documentLibrary/media/Order/FAC.pdf Also available as FAA Notice N JO 7210.695 "Facility Statistical Data, Reports, and Forms" July 1, 2008 and available at https://aspm.faa.gov/opsnet/JO_7210.695_%20Facility_Statistical_Data_Reports_and_Forms.pdf
[47] Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). Latest version available at http://www.faa.gov/documentLibrary/media/Order/FAC.pdf Also available as FAA Notice N JO 7210.695 "Facility Statistical Data, Reports, and Forms" July 1, 2008 and available at https://aspm.faa.gov/opsnet/JO_7210.695_%20Facility_Statistical_Data_Reports_and_Forms.pdf
[48] FAA, Review and Approval of Aviation Forecasts, June 2008 http://www.faa.gov/airports/planning_capacity/media/approval_local_forecasts_2008.pdf

Guard base at BTV travel to/from Fort Ethan Allen. These operations were included as BTV arrivals/departures in the direction of the Fort, but activities performed at the Fort itself are not represented.

Table 7 Existing 2015 Annual Operations Summary and Comparison

Sources: FAA, 2014, 2015; HMMH, 2014; USAF EIS, 2013; FlightAware, 2014; Campbell & Paris, 2014; Parrish & Partners, 2014

FAA Category [1]		2015 Part 150 Operations			Reported FAA Data and Forecasts		
		Modeled Operations Annual [3]	Modeled Operations AAD [3]	Expected Tower Counts [4]	2014 Forecast Issued February 2014 [5]	Tower 2014 Counts [6]	2015 Forecast Issued January 2015 [7]
Itinerant	Air Carrier	14,553	39.9	14,000	14,300	13,409	13,506
	Air Taxi and Commuter	13,132	36.0	12,860	12,630	12,648	11,970
	GA	19,230	52.7	19,200	18,573	21,118	21,185
	Military [2]	6,776	18.6	4,243	4,243	4,478	4,441
Local	GA	23,440	64.2	23,440	23,517	19,740	18,590
	Military [2]	2,820	7.7	2,820	2,820	2,364	2,523
Total[8]		79,951	219.0	76,563	76,083	73,757	72,215

Notes:
1 Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). See report footnote 43.
2 Military operations were developed using the TFMSC and USAF EIS.
3 Total operations modeled for the 2015 NEM.
4 Expected 2015 tower counts associated with the operations modeled for the 2015 NEM. These counts are comparable to ATADS and the TAF and include adjustments to reflect that the tower is closed between midnight and 5:30 AM daily. In addition, 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.
5 FAA's Terminal Area Forecast (TAF), as available April 2014.
6 FAA's Air Traffic Activity Systems (ATADS) downloaded September 2015.
7 FAA's TAF downloaded September 2015.
8 Some Totals and Subtotals may not match exactly due to rounding

The detailed forecast for 2020 relies on several general assumptions concerning changes to the fleet within the BTV NEM Update period. The detailed forecast methodology has been included in Appendix C. These changes have been made relative to the 2015 fleet. A summary of the assumptions for 2020 are as follows:

- 2015 modeled operations have been scaled to the TAF by operational category to create the 2020 forecast.
- Military operations are identical for 2015 and 2020 conditions. The TAF shows no change and the USAF EIS and associated Record of Decision does not indicate any changes through, and including, 2020. The total annual F-16 operations (arrivals, departures, and touch-and-goes) represented in the NEM are the same as the USAF EIS. As noted in Section 6.4, this NEM assumes that the ANG operates only F-16s throughout forecast period to 2020.

- All civilian aircraft certified to 14 CFR Part 36 Stage 2 will be retired from the fleet by 2015, therefore they will remain in the 2015 fleet but be replaced by Stage 3 or higher versions for the 2020 fleet.[49]
- The day/night ratio and departure stage length ratio for aircraft will remain the same as the 2015 base-year for each aircraft type.

Table 8 provides a comparison of the annualized existing 2020 NEM modeled operations, and the associated expected annualized 2020 tower counts to the FAA's Terminal Area Forecast (TAF) issued in January 2015. Comparisons in Table 8 should be made between the expected annualized 2020 tower counts and the TAF since the expected annualized 2020 tower counts consider that the tower is closed between midnight and 5:30 AM and that multiple military aircraft flying in formation maybe considered as a single count. The differences in the 2020 NEM expected tower count operations and the FAA's TAF issued January differ by approximately six percent and this range is expected since the various forecasts were prepared at different times and make different assumptions. As noted previously, FAA typically considers forecasts consistent with the TAF if the total number of operations differs by less than 10 percent in the 5-year forecast period.

[49] 14 CFR Part 36 describes noise certification of aircraft. Stage 2 aircraft are louder than Stage 3 aircraft of the same weight. 14 CFR Part 36 also defines Stage 4 (quieter than Stage 3) and may in the future define Stage 5. Civilian 14 CFR Stage 2 aircraft will typically not be allowed to operate in continental United States after December 31, 2015 per *the FAA Modernization and Reform Act* of 2012. Currently, civilian aircraft certified to 14 CFR Stage 2 and weighing more than 75,000 lb. have generally been prohibited from operating the in the continental United States since 2000. In practice, the 2012 act affects the remaining civilian aircraft weighing less than 75,000 lb. FAA released a final rule, effective September 3, 2013, that adopts into operating rules the prohibitions from the 2012 act.
Federal Register, July 2, 2013, pp. 39576 – 39583
http://www.gpo.gov/fdsys/pkg/FR-2013-07-02/pdf/2013-15843.pdf
Federal Register, September 20, 2013, pg. 57790
http://www.gpo.gov/fdsys/pkg/FR-2013-09-20/pdf/2013-22850.pdf

Table 8 Forecast 2020 Annual Operations Summary and Comparison

Sources: FAA, 2014, 2015; HMMH, 2014; USAF EIS, 2013; FlightAware, 2014; Campbell & Paris, 2014; Parrish & Partners, 2014

FAA Category [1]		2020 Part 150 Operations			Reported FAA Data and Forecasts
		Modeled Operations Annual [3]	Modeled Operations AAD	Expected Tower Counts [4]	2020 Forecast – Issued January 2015 [5]
Itinerant	Air Carrier	16,420	45.0	15,796	18,025
	Air Taxi and Commuter	13,664	37.4	13,381	8,688
	GA	19,008	52.1	18,978	21,754
	Military [2]	6,776	18.6	4,243	4,441
Local	GA	23,304	63.8	23,304	18,465
	Military [2]	2,820	7.7	2,820	2,523
Total [6]		81,992	224.6	78,522	73,896

Notes:
1 Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). See report footnote 43.
2 Military operations were developed using the TFMSC and USAF EIS.
3 Total model operations for the 2020 NEM.
4 Expected 2020 tower counts associated with the operations modeled for the 2020 NEM. These counts are comparable to the TAF and include adjustments to reflect that the tower is closed between midnight and 5:30 AM daily. In addition, 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.
5 FAA's TAF downloaded September 2015.
6 Some Totals and Subtotals may not match exactly due to rounding

Table 9 and Table 10 present the detailed aircraft modeling fleet mixes for the 2015 Existing Conditions NEM (Table 9) and the 2020 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 am – 10 pm and 10 pm – 7 am, respectively and as discussed in Section 3.1.6), and INM 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). Departures are further subdivided by stage length, the distance to the first destination. The INM 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 2015 Modeled Average Daily Aircraft Operations

Sources: FAA 2014; HMMH, 2014; FlightAware, 2014; Campbell & Paris, 2014; Parrish & Partners, 2014; USAF 2013

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
Air Carrier Jets	727EM2	1	-	<0.1	-	<0.1	-	-	<0.1
	727EM2	2	<0.1	-	-	-	-	-	<0.1
	767300	1	-	-	<0.1	-	-	-	<0.1
	767300	3	-	<0.1	-	-	-	-	<0.1
	A319-131	1	<0.1	-	0.2	<0.1	-	-	0.2
	A319-131	2	<0.1	0.2	-	-	-	-	0.2
	A320-232	1	0.3	0.1	0.3	0.1	-	-	0.8
	A320-232	4	-	<0.1	-	-	-	-	<0.1
	CRJ701	1	2.7	0.5	4.3	1.6	-	-	9.1
	CRJ701	2	1.7	0.9	-	-	-	-	2.6
	CRJ701	3	<0.1	-	-	-	-	-	<0.1
	CRJ9-ER	1	<0.1	<0.1	0.5	<0.1	-	-	0.5
	CRJ9-ER	2	<0.1	0.4	-	-	-	-	0.4
	EMB170	1	0.9	0.2	0.7	0.4	-	-	2.3
	EMB170	2	<0.1	-	-	-	-	-	<0.1
	EMB170	3	<0.1	-	-	-	-	-	<0.1
	EMB175	1	3.7	1.0	3.1	1.6	-	-	9.3
	EMB175	2	<0.1	-	-	-	-	-	<0.1
	EMB175	3	<0.1	-	-	-	-	-	<0.1
	EMB190	1	2.7	0.9	2.6	1.1	-	-	7.3
	MD83	1	-	-	0.2	-	-	-	0.2
	MD83	3	0.2	-	-	-	-	-	0.2
	MD88	1	<0.1	0.3	0.7	0.1	-	-	1.1
	MD88	2	0.2	0.3	-	-	-	-	0.5
	Subtotal		*12.6*	*4.8*	*12.5*	*4.9*	-	-	*34.8*
Air Carrier Cargo Jets	757PW	1	0.1	-	0.1	<0.1	-	-	0.3
	757PW	2	<0.1	<0.1	-	-	-	-	<0.1
	757RR	1	0.6	-	0.6	<0.1	-	-	1.2
	757RR	2	<0.1	<0.1	-	-	-	-	<0.1
	Subtotal		*0.7*	*<0.1*	*0.7*	*<0.1*	-	-	*1.5*
Air Carrier Turbo Prop	CNV640	1	-	<0.1	-	<0.1	-	-	<0.1
	DHC830	1	1.4	0.4	1.4	0.4	-	-	3.6
	Subtotal		*1.4*	*0.4*	*1.4*	*0.4*	-	-	*3.6*
AIR CARRIER SUBTOTAL			**14.7**	**5.3**	**14.6**	**5.3**	**-**	**-**	**39.9**
Air Taxi Jet	BD100	1	0.3	<0.1	0.3	<0.1	-	-	0.6
	BD700	1	0.1	-	0.1	-	-	-	0.2
	BEC400	1	0.3	<0.1	0.3	<0.1	-	-	0.6
	CL600	1	0.1	-	0.1	-	-	-	0.1
	CL601	1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
	CLREGJ	1	6.8	1.1	6.8	1.1	-	-	15.7
	CNA510	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA525C	1	0.1	-	0.1	<0.1	-	-	0.2
	CNA550	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA560E	1	0.2	-	0.2	<0.1	-	-	0.3
	CNA560U	1	<0.1	-	<0.1	<0.1	-	-	<0.1
	CNA560XL	1	0.7	<0.1	0.7	0.1	-	-	1.4
	CNA650	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA680	1	0.2	<0.1	0.2	<0.1	-	-	0.4

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	CNA750	1	0.2	<0.1	0.2	<0.1	-	-	0.5
	D328J	1	<0.1	-	<0.1	-	-	-	<0.1
	E50P*	1	<0.1	-	<0.1	-	-	-	<0.1
	E55P*	1	<0.1	-	<0.1	-	-	-	0.1
	ECLIPSE500	1	<0.1	-	<0.1	-	-	-	<0.1
	EMB135	1	2.3	0.4	2.6	0.5	-	-	5.9
	EMB135	2	0.3	<0.1	-	-	-	-	0.4
	EMB145	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	EMB145	2	<0.1	<0.1	-	-	-	-	<0.1
	EMB14L	1	0.6	<0.1	0.9	0.4	-	-	2.0
	EMB14L	2	0.6	0.1	-	-	-	-	0.7
	FAL10	1	<0.1	-	<0.1	-	-	-	<0.1
	FAL20A	1	0.1	-	0.1	<0.1	-	-	0.1
	FAL50	1	<0.1	-	<0.1	-	-	-	<0.1
	FAL900	1	0.1	<0.1	0.1	<0.1	-	-	0.1
	G200	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	GIV	1	<0.1	-	<0.1	-	-	-	0.1
	HS1258	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	LEAR25	1	<0.1	-	<0.1	-	-	-	<0.1
	LEAR35	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	LEAR45	1	<0.1	-	<0.1	-	-	-	0.1
	LEAR55	1	<0.1	-	<0.1	-	-	-	<0.1
	LEAR60	1	<0.1	-	<0.1	-	-	-	<0.1
	LJ40*	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	R390	1	<0.1	-	<0.1	-	-	-	<0.1
	Subtotal		*13.7*	*1.8*	*13.3*	*2.2*	-	-	*30.9*
Air Taxi Prop	BE36*	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC58P	1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
	CNA172	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA206	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA401	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA402	1	<0.1	-	<0.1	-	-	-	<0.1
	GASEPV	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	PA31	1	<0.1	-	<0.1	-	-	-	<0.1
	PA31CH	1	<0.1	-	-	<0.1	-	-	<0.1
	Subtotal		*0.1*	*<0.1*	*0.1*	*<0.1*	-	-	*0.2*
Air Taxi Turbo Prop	B350*	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC100	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC200	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	BEC90	1	<0.1	-	<0.1	-	-	-	0.1
	BEC99	1	0.8	0.1	0.8	-	-	-	1.7
	CNA208	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	CNA441	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC6	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC8	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC830	1	<0.1	-	<0.1	-	-	-	0.1
	EMB110	1	0.6	-	0.6	-	-	-	1.1
	P180	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	PC12	1	0.7	<0.1	0.6	0.1	-	-	1.4
	SAMER4	1	<0.1	<0.1	<0.1	-	-	-	<0.1
	SD360	1	-	<0.1	-	<0.1	-	-	<0.1

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	TBM8*	1	<0.1	-	<0.1	-	-	-	<0.1
	Subtotal		*2.3*	*0.1*	*2.3*	*0.1*	-	-	*4.8*
AIR TAXI SUBTOTAL			**16.1**	**1.9**	**15.7**	**2.3**	**-**	**-**	**36**
General Aviation Jet	CIT3	1	0.1	-	0.1	-	-	-	0.2
	CL600	1	0.3	-	0.3	<0.1	-	-	0.6
	CL601	1	0.1	-	0.1	-	-	-	0.2
	CNA500	1	1.2	0.3	1.5	<0.1	-	-	3.1
	CNA510	1	0.2	-	0.2	-	-	-	0.3
	CNA525C	1	1.3	0.1	1.4	<0.1	-	-	2.8
	CNA550	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA55B	1	1.0	0.1	1.0	0.1	-	-	2.2
	CNA560E	1	0.3	-	0.3	-	-	-	0.6
	CNA560XL	1	0.5	<0.1	0.5	-	-	-	1.0
	CNA680	1	0.5	-	0.5	<0.1	-	-	1.1
	CNA750	1	0.2	<0.1	0.2	-	-	-	0.4
	E50P*	1	0.2	-	0.2	<0.1	-	-	0.4
	E55P*	1	0.2	-	0.2	-	-	-	0.3
	ECLIPSE500	1	<0.1	-	0.1	-	-	-	0.1
	ECLIPSE500	2	<0.1	-	-	-	-	-	<0.1
	ECLIPSE500	3	<0.1	-	-	-	-	-	<0.1
	EMB145	1	-	-	<0.1	-	-	-	<0.1
	EMB145	2	<0.1	-	-	-	-	-	<0.1
	F10062	1	0.1	-	0.1	-	-	-	0.1
	F10062	3	<0.1	-	-	-	-	-	<0.1
	GII	1	<0.1	-	<0.1	-	-	-	<0.1
	GIIB	1	0.1	-	0.1	<0.1	-	-	0.2
	GIV	1	0.2	<0.1	0.2	<0.1	-	-	0.5
	GV	1	0.4	<0.1	0.3	<0.1	-	-	0.8
	H25C*	1	0.2	-	0.2	-	-	-	0.3
	IA1125	1	0.1	-	0.1	-	-	-	0.2
	LEAR25	1	<0.1	-	<0.1	<0.1	-	-	0.1
	LEAR35	1	0.7	0.1	0.8	<0.1	-	-	1.6
	LJ40*	1	<0.1	-	<0.1	-	-	-	<0.1
	MU3001	1	0.3	0.1	0.4	<0.1	-	-	0.8
	Subtotal		*8.3*	*0.7*	*8.7*	*0.3*	-	-	*18.0*
General Aviation Prop	BE36*	1	0.7	<0.1	0.7	-	-	-	1.4
	BEC58P	1	2.3	0.1	2.3	0.1	-	-	4.7
	CNA172	1	3.1	<0.1	3.1	0.1	30.5	1.6	38.3
	CNA182	1	0.7	-	0.7	-	-	-	1.4
	CNA206	1	0.6	-	0.6	-	-	-	1.2
	CNA20T	1	<0.1	-	<0.1	-	-	-	<0.1
	COL4*	1	0.2	-	0.2	-	0.7	-	1.1
	DA40*	1	0.1	<0.1	0.1	-	0.5	0.1	0.8
	DC3	1	<0.1	-	<0.1	-	-	-	<0.1
	GASEPF	1	0.2	-	0.2	-	11.4	0.6	12.5
	GASEPV	1	4.4	0.1	4.5	0.1	17.6	0.9	27.6
	NAVI*	1	0.1	-	0.1	-	0.3	-	0.4
	PA28	1	0.7	<0.1	0.7	<0.1	-	-	1.4
	PA30	1	0.1	-	0.1	-	-	-	0.2
	PA31	1	0.3	-	0.3	-	-	-	0.6
	Subtotal		*13.4*	*0.3*	*13.5*	*0.2*	*61.0*	*3.2*	*91.7*

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
General Aviation Turbo Prop	B350*	1	0.1	-	0.1	-	-	-	0.3
	BEC300	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA208	1	0.4	<0.1	0.5	<0.1	-	-	0.9
	CNA441	1	2.1	0.1	2.2	0.1	-	-	4.5
	DHC6	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC8	1	<0.1	-	<0.1	-	-	-	0.1
	DHC830	1	<0.1	-	<0.1	-	-	-	<0.1
	DO228	1	0.2	-	0.2	<0.1	-	-	0.3
	P46T*	1	0.2	<0.1	0.2	-	-	-	0.4
	PA42	1	<0.1	-	<0.1	-	-	-	<0.1
	SD330	1	0.1	-	0.1	-	-	-	0.1
	TBM8*	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	Subtotal		*3.4*	*0.2*	*3.5*	*0.1*	-	-	*7.2*
GENERAL AVIATION SUBTOTAL			**25.1**	**1.2**	**25.7**	**0.6**	**61.0**	**3.2**	**116.9**
Military (Fixed wing) – Based F-16s[1]	F16GE	No-AB	0.4	-	7.5	-	7.2 (note 2)	-	15.0
	F16GE	AB	7.1	-	-	-	-	-	7.1
	Subtotal		*7.5*	-	*7.5*	-	*7.2*	-	*22.2*
Military Helicopter[3]	B206L	1	0.3	<0.1	0.3	<0.1	-	-	0.5
	S70	1	0.3	<0.1	0.3	<0.1	-	-	0.7
	Subtotal		*0.6*	*<0.1*	*0.6*	*<0.1*	-	-	*1.3*
Military (Fixed Wing) - Transient	BEC200	1	0.5	<0.1	0.5	<0.1	-	-	1.1
	C130	1	0.1	<0.1	0.1	<0.1	0.6	-	0.8
	C17	1	0.1	<0.1	0.1	<0.1	-	-	0.1
	CAN235	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	CNA560	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	F-18	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	KC-135	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	Subtotal		*1.1*	*<0.1*	*1.1*	*<0.1*	*0.6*	-	*2.9*
MILITARY SUBTOTAL			**9.2**	**0.1**	**9.2**	**0.1**	**7.7**	**-**	**26.1**
Total			**65.1**	**8.4**	**65.2**	**8.3**	**68.7**	**3.2**	**218.9**

Notes:
* User defined aircraft. See Section 6.3.
1 Based Vermont Air National Guard Aircraft and modeled in NOISEMAP. See Section 6.3.
2 A portion of the F-16 Touch and Go operations are modeled with performance profiles similar to that described in the USAF's FEIS Table BR3.2-1 as "Low Approach and Go (downwind leg, 1,500 feet AGL, gear down)." F-16 touch and go tracks are depicted in Figure 23 and Figure 24. (This note was added in response to a comment on the November 2015 draft document)
3 Based Vermont Army National Guard Helicopter.
4 Departure Stage Length of 1 is for departures to a destination between 1 and 500 nautical miles. Stage Length 2 is for departures to a destination between 500 and 1000 nautical miles. Stage Length 3 is for departures to a destination between 1000 and 1500 nautical miles. For F16GE, “No-AB” are operations without the use of afterburner and “AB” refers to departures with afterburners.
5 Some Totals and Subtotals may not match exactly due to rounding

Table 10 2020 Modeled Average Daily Aircraft Operations

Sources: FAA 2014; HMMH, 2014; FlightAware, 2014; Campbell & Paris, 2014; Parrish & Partners, 2014; USAF 2013

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
Air Carrier Jets	727EM2	1	-	<0.1	-	<0.1	-	-	<0.1
	727EM2	2	-	-	<0.1	-	-	-	<0.1
	767300	1	<0.1	-	-	-	-	-	<0.1
	767300	3	-	-	-	<0.1	-	-	<0.1
	A319-131	1	0.2	<0.1	<0.1	-	-	-	0.2
	A319-131	2	-	-	<0.1	0.2	-	-	0.2
	A320-232	1	0.3	0.1	0.3	0.1	-	-	0.9
	A320-232	4	-	-	-	<0.1	-	-	<0.1
	CRJ701	1	4.8	1.8	3.1	0.6	-	-	10.3
	CRJ701	2	-	-	2	1	-	-	2.9
	CRJ701	3	-	-	<0.1	-	-	-	<0.1
	CRJ9-ER	1	0.5	<0.1	<0.1	<0.1	-	-	0.6
	CRJ9-ER	2	-	-	<0.1	0.5	-	-	0.5
	EMB170	1	0.8	0.4	1	0.3	-	-	2.5
	EMB170	2	-	-	<0.1	-	-	-	<0.1
	EMB170	3	-	-	<0.1	-	-	-	<0.1
	EMB175	1	3.5	1.8	4.2	1.1	-	-	10.5
	EMB175	2	-	-	<0.1	-	-	-	<0.1
	EMB175	3	-	-	<0.1	-	-	-	<0.1
	EMB190	1	2.9	1.2	3.1	1	-	-	8.2
	MD83	1	0.3	-	-	-	-	-	0.3
	MD83	3	-	-	0.3	-	-	-	0.3
	MD88	1	0.8	0.1	<0.1	0.3	-	-	1.3
	MD88	2	-	-	0.3	0.3	-	-	0.6
	Subtotal		*14.1*	*5.6*	*14.2*	*5.5*	-	-	*39.3*
Air Carrier Cargo Jets	757PW	1	0.1	<0.1	0.1	-	-	-	0.3
	757PW	2	-	-	<0.1	<0.1	-	-	<0.1
	757RR	1	0.7	<0.1	0.6	-	-	-	1.3
	757RR	2	-	-	<0.1	<0.1	-	-	<0.1
	Subtotal		*0.8*	*<0.1*	*0.8*	*<0.1*	-	-	*1.6*
Air Carrier Turbo Prop	CNV640	1	-	<0.1	-	<0.1	-	-	<0.1
	DHC830	1	1.6	0.4	1.6	0.5	-	-	4.1
	Subtotal		*1.6*	*0.4*	*1.6*	*0.5*	-	-	*4.1*
AIR CARRIER SUBTOTAL			**16.5**	**6**	**16.5**	**5.9**	**-**	**-**	**45**
Air Taxi Jet	BD100	1	0.3	<0.1	0.3	<0.1	-	-	0.6
	BD700	1	0.1	-	0.1	-	-	-	0.2
	BEC400	1	0.3	<0.1	0.3	<0.1	-	-	0.6
	CL600	1	0.1	-	0.1	-	-	-	0.1
	CL601	1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
	CLREGJ	1	7	1.1	7	1.1	-	-	16.3
	CNA510	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA525C	1	0.1	<0.1	0.1	-	-	-	0.2
	CNA550	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA560E	1	0.2	<0.1	0.2	-	-	-	0.3
	CNA560U	1	<0.1	<0.1	<0.1	-	-	-	<0.1
	CNA560XL	1	0.7	0.1	0.7	<0.1	-	-	1.5
	CNA650	1	<0.1	-	<0.1	-	-	-	<0.1

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	CNA680	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	CNA750	1	0.2	<0.1	0.2	<0.1	-	-	0.5
	D328J	1	<0.1	-	<0.1	-	-	-	<0.1
	E50P*	1	<0.1	-	<0.1	-	-	-	<0.1
	E55P*	1	<0.1	-	<0.1	-	-	-	0.1
	ECLIPSE500	1	<0.1	-	<0.1	-	-	-	<0.1
	EMB135	1	2.7	0.5	2.4	0.4	-	-	6.1
	EMB135	2	-	-	0.4	<0.1	-	-	0.4
	EMB145	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	EMB145	2	-	-	<0.1	<0.1	-	-	<0.1
	EMB14L	1	1	0.4	0.6	<0.1	-	-	2.1
	EMB14L	2	-	-	0.6	0.1	-	-	0.7
	FAL10	1	<0.1	-	<0.1	-	-	-	<0.1
	FAL20A	1	0.1	<0.1	0.1	-	-	-	0.1
	FAL50	1	<0.1	-	<0.1	-	-	-	<0.1
	FAL900	1	0.1	<0.1	0.1	<0.1	-	-	0.1
	G200	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	GIV	1	<0.1	-	<0.1	-	-	-	0.1
	HS1258	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	LEAR25	1	-	-	-	-	-	-	-
	LEAR35	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	LEAR45	1	<0.1	-	<0.1	-	-	-	0.1
	LEAR55	1	<0.1	-	<0.1	-	-	-	<0.1
	LEAR60	1	<0.1	-	<0.1	-	-	-	<0.1
	LJ40*	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	R390	1	<0.1	-	<0.1	-	-	-	<0.1
	Subtotal		*13.8*	*2.2*	*14.2*	*1.8*	-	-	*32.2*
Air Taxi Prop	BE36*	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC58P	1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
	CNA172	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA206	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA401	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA402	1	<0.1	-	<0.1	-	-	-	<0.1
	GASEPV	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	PA31	1	<0.1	-	<0.1	-	-	-	<0.1
	PA31CH	1	-	<0.1	<0.1	-	-	-	<0.1
	Subtotal		*0.1*	*<0.1*	*0.1*	*<0.1*	-	-	*0.3*
Air Taxi Turbo Prop	B350*	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC100	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC200	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	BEC90	1	<0.1	-	<0.1	-	-	-	0.1
	BEC99	1	0.9	-	0.8	0.1	-	-	1.7
	CNA208	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	CNA441	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC6	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC8	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC830	1	<0.1	-	<0.1	-	-	-	0.1
	EMB110	1	0.6	-	0.6	-	-	-	1.2
	P180	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	PC12	1	0.7	0.1	0.7	<0.1	-	-	1.5
	SAMER4	1	<0.1	-	<0.1	<0.1	-	-	<0.1

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	SD360	1	-	<0.1	-	<0.1	-	-	<0.1
	TBM8*	1	<0.1	-	<0.1	-	-	-	<0.1
	Subtotal		*2.4*	*0.1*	*2.4*	*0.1*	-	-	*5*
AIR TAXI SUBTOTAL			**16.4**	**2.4**	**16.8**	**1.9**	**-**	**-**	**37.4**
General Aviation Jet	CIT3	1	0.1	-	0.1	-	-	-	0.2
	CL600	1	0.3	<0.1	0.3	-	-	-	0.6
	CL601	1	0.1	-	0.1	-	-	-	0.2
	CNA500	1	1.5	<0.1	1.2	0.3	-	-	3
	CNA510	1	0.2	-	0.2	-	-	-	0.3
	CNA525C	1	1.4	<0.1	1.3	0.1	-	-	2.8
	CNA550	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA55B	1	1	0.1	1	0.1	-	-	2.2
	CNA560E	1	0.3	-	0.3	-	-	-	0.5
	CNA560XL	1	0.5	-	0.5	<0.1	-	-	0.9
	CNA680	1	0.5	<0.1	0.5	-	-	-	1.1
	CNA750	1	0.2	-	0.2	<0.1	-	-	0.4
	E50P*	1	0.2	<0.1	0.2	-	-	-	0.4
	E55P*	1	0.2	-	0.2	-	-	-	0.3
	ECLIPSE500	1	0.1	-	<0.1	-	-	-	0.1
	ECLIPSE500	2	-	-	<0.1	-	-	-	<0.1
	ECLIPSE500	3	-	-	<0.1	-	-	-	<0.1
	EMB145	1	<0.1	-	-	-	-	-	<0.1
	EMB145	2	-	-	<0.1	-	-	-	<0.1
	F10062	1	0.1	-	0.1	-	-	-	0.1
	F10062	3	-	-	<0.1	-	-	-	<0.1
	GII	1	-	-	-	-	-	-	-
	GIIB	1	-	-	-	-	-	-	-
	GIV	1	0.3	<0.1	0.3	<0.1	-	-	0.7
	GV	1	0.3	<0.1	0.4	<0.1	-	-	0.8
	H25C*	1	0.2	-	0.2	-	-	-	0.3
	IA1125	1	0.1	-	0.1	-	-	-	0.2
	LEAR25	1	-	-	-	-	-	-	-
	LEAR35	1	0.8	<0.1	0.8	<0.1	-	-	1.6
	LJ40*	1	<0.1	-	<0.1	-	-	-	<0.1
	MU3001	1	0.4	<0.1	0.3	0.1	-	-	0.8
	Subtotal		*8.6*	*0.3*	*8.2*	*0.7*	-	-	*17.8*
General Aviation Prop	BE36*	1	0.7	-	0.6	<0.1	-	-	1.3
	BEC58P	1	2.3	0.1	2.2	0.1	-	-	4.7
	CNA172	1	3	0.1	3	<0.1	30.3	1.6	38.1
	CNA182	1	0.7	-	0.7	-	-	-	1.4
	CNA206	1	0.6	-	0.6	-	-	-	1.2
	CNA20T	1	<0.1	-	<0.1	-	-	-	<0.1
	COL4*	1	0.2	-	0.2	-	0.7	-	1.1
	DA40*	1	0.1	-	0.1	<0.1	0.5	0.1	0.8
	DC3	1	<0.1	-	<0.1	-	-	-	<0.1
	GASEPF	1	0.2	-	0.2	-	11.4	0.6	12.4
	GASEPV	1	4.4	0.1	4.4	0.1	17.5	0.9	27.4
	NAVI*	1	0.1	-	0.1	-	0.3	-	0.4
	PA28	1	0.7	<0.1	0.7	<0.1	-	-	1.4
	PA30	1	0.1	-	0.1	-	-	-	0.2
	PA31	1	0.3	-	0.3	-	-	-	0.6

Aircraft Category	INM Aircraft Type	Departure Stage Length[4]	Itinerant Operations				Local Operations (Touch and Go)		Total
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	Subtotal		*13.3*	*0.2*	*13.3*	*0.3*	*60.7*	*3.2*	*91*
General Aviation Turbo Prop	B350*	1	0.1	-	0.1	-	-	-	0.3
	BEC300	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA208	1	0.4	<0.1	0.4	<0.1	-	-	0.9
	CNA441	1	2.1	0.1	2.1	0.1	-	-	4.5
	DHC6	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC8	1	<0.1	-	<0.1	-	-	-	0.1
	DHC830	1	<0.1	-	<0.1	-	-	-	<0.1
	DO228	1	0.2	<0.1	0.2	-	-	-	0.3
	P46T*	1	0.2	-	0.2	<0.1	-	-	0.4
	PA42	1	<0.1	-	<0.1	-	-	-	<0.1
	SD330	1	0.1	-	0.1	-	-	-	0.1
	TBM8*	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	Subtotal		*3.4*	*0.1*	*3.4*	*0.2*	*-*	*-*	*7.1*
GENERAL AVIATION SUBTOTAL			**25.4**	**0.6**	**24.9**	**1.2**	**60.7**	**3.2**	**115.9**
Military (Fixed wing) – Based F-16s[1]	F16GE	No-AB	0.4	-	7.5	-	7.2 (note 2)	-	15.0
	F16GE	AB	7.1	-	-	-	-	-	7.1
	Subtotal		*7.5*	*-*	*7.5*	*-*	*7.2*	*-*	*22.2*
Military Helicopter[3]	B206L	1	0.3	<0.1	0.3	<0.1	-	-	0.5
	S70	1	0.3	<0.1	0.3	<0.1	-	-	0.7
	Subtotal		*0.6*	*<0.1*	*0.6*	*<0.1*	*-*	*-*	*1.3*
Military (Fixed Wing) - Transient	BEC200	1	0.5	<0.1	0.5	<0.1	-	-	1.1
	C130	1	0.1	<0.1	0.1	<0.1	0.5	-	0.7
	C17	1	0.1	<0.1	0.1	<0.1	-	-	0.1
	CAN235	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	CNA560	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	F-18	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	KC-135	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	Subtotal		*1.1*	*<0.1*	*1.1*	*<0.1*	*0.5*	*-*	*2.8*
MILITARY SUBTOTAL			**9.2**	**0.1**	**9.2**	**0.1**	**7.7**	**-**	**26.3**
Total			**67.5**	**9**	**67.4**	**9.1**	**68.4**	**3.2**	**224.6**

Notes:
* User defined aircraft. See Section 6.3.
1 Based Vermont Air National Guard Aircraft and modeled in NOISEMAP. See Section 6.3.
2 A portion of the F-16 Touch and Go operations are modeled with performance profiles similar to that described in the USAF's FEIS Table BR3.2-1 as "Low Approach and Go (downwind leg, 1,500 feet AGL, gear down)." F-16 touch and go tracks are depicted in Figure 23 and Figure 24. (This note was added in response to a comment on the November 2015 draft document)
3 Based Vermont Army National Guard Helicopter.
4 Departure Stage Length of 1 is for departures to a destination between 1 and 500 nautical miles. Stage Length 2 is for departures to a destination between 500 and 1000 nautical miles. Stage Length 3 is for departures to a destination between 1000 and 1500 nautical miles. For F16GE, “No-AB” are operations without the use of afterburner and “AB” refers to departures with afterburners.
5 Some Totals and Subtotals may not match exactly due to rounding

6.4.1 Decision to include ANG F-16s in forecast 2020 modeling

This NEM assumes that the ANG operates only F-16 aircraft throughout forecast period 2020.

In accordance with Part 150, the City shall update the NEMs if a change in the operation of the airport would establish a substantial new noncompatible use. As part of this Part 150 requirement, the City will evaluate the NEM in the future when the local Air National Guard’s operations change. At such time, it is anticipated that the City, with assistance from the Air National Guard, will be able to develop an NEM update with operational data relevant to local operations. Relevant USAF and ANG documents related to the future ANG operations are discussed below.

On December 2, 2013, the United States Air Force (Air Force) issued a Record of Decision (ROD) for the F-35A Operational Basing Final Environmental Impact Statement, September 2013 (USAF EIS).[50] The ROD documents the Air Force's decision to base eighteen (18) F-35A aircraft, with associated construction, at the Burlington, Vermont Air Guard Station (AGS). The eighteen F-16 aircraft currently assigned to Burlington AGS are schedule to retire as the F-35A are brought into the Air Force inventory.[51]

The ROD acknowledges that,
"Given the relative immaturity of the F-35 program, identification of new data and information relative to the F-35A may arise and it is possible that the impacts identified in the FEIS (Table 2-12) and the effectiveness of prescribed management and mitigation measures may be different from those expected. Consequently, new information may become available, or the effectiveness of mitigation measures may be different than expected. An understanding of various aspects that are part of a complex interrelated F-35A operational environment may not be achieved without a more long-term process built around a continuous cycle of experimentation, evaluation, learning and improvement over time." [52]

The ROD included several provisions related to noise mitigation. The most relevant of the FAA's NEM process, and documenting future noise levels, is "Once the full complement of F-35A aircraft are operating at the base, prepare a noise study at Burlington AGS to validate the operational data in order to re-evaluate projected noise levels." [53]

The Department of the Air Force released the F-35A Operational Basing Environmental Impact Statement Mitigation and Management Plan (MMP) for Burlington on 18 April 2014. [54] The MMP provided further "Current mitigation measures and management actions in place for F-16 operations will continue as F-35A operations begin, and additional mitigation measures will be assessed and implemented before and after arrival of the new aircraft. This will necessarily be an evolving process, as the local operating procedures for the F-35A and noise abatement procedures that may be implemented will not be fully developed until the aircraft begins to be flown at the Burlington AGS, which is anticipated to be in the year 2020."[55]

"The F-35A aircraft is currently flying under a restricted flight envelope at an early stage of overall lifecycle development. As the Air Force gains more experience flying the F-35A prior to basing the aircraft at Burlington AGS, operational parameters such as airspeed and power setting requirements will be refined. Changes in these parameters will be compared to those used in the FEIS, and the AF and NGB will evaluate how these changes would affect the noise contours calculated for Burlington AGS. Changes in operational parameters developed by the AF in advance of basing the aircraft in Burlington will inform the 158 FW/F-35PIO as to potential local operational mitigation measures that may be evaluated. Performance and other characteristics may also change as the aircraft is adapted to flying

[50] Federal Register, October 4, 2013, pg. 61845 http://www.gpo.gov/fdsys/pkg/FR-2013-10-04/pdf/2013-24315.pdf

[51] ROD, pg. 1.
[52] ROD, pg. 4.
[53] ROD, pg. 5.
[54] "Burlington AGS F-35A Mitigation Plan Final 18 April 2014." http://www.158fw.ang.af.mil/f-35information.asp
[55] MMP, pg. 2.

conditions at Burlington AGS. Additional noise modeling will be conducted by NGB after local operations mature, and the resulting noise contours and related impacts will be compared to those in the FEIS."[56]

The anticipated schedule of the F-35A beddown at BTV was also a factor in the decision to model F-16s in NEM forecast year 2020. Local operating procedures for the F-35A, and noise abatement procedures that may be implemented, will not be fully developed until the aircraft begin to be flown at the Burlington AGS, which is anticipated to be in 2020. The MMP, in particular Table 1, indicates that a follow-on noise study at BTV will occur once "Full Operational Capability" for the F-35A has been achieved in FY2021. Table 11 of this NEM replicates the noise portion of the MMP Table 1.

Table 11 Burlington AGS F-35A Operational Basing FEIS – Mitigation and Management Actions (Excerpt)

Source: "Burlington AGS F-35A Mitigation Plan Final 18 April 2014."
http://www.158fw.ang.af.mil/f-35information.asp

Number	Management Actions to Reduce the Potential for Environmental Impacts (See 2 Dec 2013 ROD, pages 5-7 and USAF EIS Sections 2.6 and BR2.8)	Method for Execution / Monitoring (Monitoring of all items will be done by 158 FW ESOHC-ISC by incorporating into 158 FW EMS)	Entity Responsible for Implementation of Mitigation	Funding Responsibility	Completion Date
5	Follow-on noise study at Burlington AGS to validate the operational data in order to reevaluate projected noise levels.	Noise contours from the FEIS will be verified through BIAP's ongoing NCP as required through the CFR Part 150 process. NGB will program funding for FY2021 in anticipation of FOC being achieved at that time.	NGB and 158 FW (in conjunction w/ BTV)	NGB	Initiate effort once 18 F35A PAA at Burlington AGS

Notes:
ESOHC-ISC = Environment, Safety and Occupational Health Council-Installation Safety Council
EMS = Environmental Management System
FOC = Full Operational Capability
NGB = National Guard Bureau

6.5 Runway Utilization

Runway utilization percentages, that is the percent of time a runway is used, were based upon discussions with FAA Air Traffic Control Tower (ATCT) personnel as well as sample radar data from 2012. ATCT personnel estimated that most jet and turbo prop traffic uses Runway 15 more often than Runway 33, with certain exemptions for cargo operations and propeller aircraft. The radar sample generally agrees with this estimate. Military aircraft were not included in the data sample.

Table 12, Table 13 and Table 14 present the modeled runway use for arrival, departure, and pattern operations, respectively, for the 2015 and 2020 NEM contours. Like arrivals and departures, pattern operations, which include circuits and touch-and-go operations, must be assigned to specific runways.

[56] MMP, pp. 4-5.

Table 12 Runway Utilization Rates for Arrival Operations for 2015 and 2020 Noise Exposure Map Contours

Source: 42-day radar data sample from FAA's Terminal Approach Control (TRACON) at BTV

Aircraft Category	Runway End				Source
	15	33	01	19	
Air Carrier	73%	27%	0%	0%	Radar Sample
Air Carrier Cargo Jets	83%	17%	0%	0%	Radar Sample
Air Taxi Jets General Aviation Jets	65%	35%	0%	0%	Radar Sample
Air Taxi Turbo Prop	68%	28%	1%	4%	Radar Sample
General Aviation Turbo Prop	66%	26%	0%	7%	Radar Sample
Air Taxi Prop General Aviation Prop	41%	21%	18%	20%	Radar Sample
Military (Fixed wing) – Based F-16s[2]	73%	27%	0%	0%	Radar Sample of Air Carrier Operations
Military (Fixed wing) – Transient	73%	27%	0%	0%	Radar Sample of Air Carrier Operations

Notes:
1 Air Carrier operations include Air Carrier jets and turboprops.
2 F-16 operations were modeled in NOISEMAP. Runway use was based discussions with ATCT that the F-16s have similar runway use as Air Carrier aircraft.

Table 13 Runway Utilization Rates for Departure Operations for 2015 and 2020 Noise Exposure Map Contours

Source: 42-day radar data sample from FAA's Terminal Approach Control (TRACON) at BTV

Aircraft Category	Runway End				Source
	15	33	01	19	
Air Carrier	73%	27%	0%	0%	Radar Sample
Air Carrier Cargo Jets	21%	79%	0%	0%	Radar Sample
Air Taxi Jets General Aviation Jets	65%	35%	0%	0%	Radar Sample
Air Taxi Turbo Prop	55%	40%	0%	5%	Radar Sample
General Aviation Turbo Prop	56%	33%	3%	8%	Radar Sample
Air Taxi Prop General Aviation Prop	21%	29%	2%	49%	Radar Sample
Military (Fixed wing) – Based F-16s[2]	73%	27%	0%	0%	Radar Sample of Air Carrier Operations
Military (Fixed wing) – Transient	73%	27%	0%	0%	Radar Sample of Air Carrier Operations

Notes:
1 Air Carrier operations include Air Carrier jets and turboprops.
2 F-16 operations were modeled in NOISEMAP. Runway use was based discussions with ATCT that the F-16s have similar runway use as Air Carrier aircraft.

Table 14 Runway Utilization Rates for Touch and Go (Pattern) Operations for 2015 and 2020 Noise Exposure Map Contours

Source: 42-day radar data sample from FAA's Terminal Approach Control (TRACON) at BTV

Aircraft Category	Runway End				Source
	15	33	01	19	
Air Taxi Prop General Aviation Prop	11%	14%	73%	3%	Radar Sample
Military (Fixed wing) – Based F-16s[1]	73%	27%	0%	0%	Radar Sample of Air Carrier Operations
Military (Fixed wing) – Transient	73%	27%	0%	0%	Radar Sample of Air Carrier Operations

1 F-16 operations were modeled in NOISEMAP. Runway use was based discussions with ATCT that the F-16s have similar runway use as Air Carrier aircraft.

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 INM 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.

To maximize the accuracy of the flight track modeling inputs, actual flight operations ("radar") data were obtained for 42 days from calendar year 2012. The flight operations data 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 INM 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 F-16 modeling includes flight track geometry and utilization provided in the USAF EIS analysis, unchanged. 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 2015 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 2015 and 2020 cases unless otherwise noted.

Table 15 Arrival Flight Track Utilization Rates

Sources: Radar Sample (2012), USAF EIS (2013)

Aircraft Group	Runway	Track Name	Percentage Utilization
Air Carrier Jet	15	15A01	15
		15A02	85
	33	33A01	9
		33A02	43
		33A03	2
		33A04	43
		33A06	3
Air Carrier Cargo Jet	15	15A01	87
		15A02	4
		15A03	9
	33	33A01	25
		33A03	25
		33A04	25
		33A06	25
Air Taxi Jet	15	15A01	39
		15A02	57
		15A03	2
		15A04	3
	33	33A01	24
		33A02	34
		33A03	13
		33A04	23
		33A05	1
		33A06	3
		33A07	2
General Aviation Jet	15	15A01	18
		15A02	59
		15A03	15
		15A04	9
	33	33A01	10
		33A02	20
		33A03	10
		33A04	18
		33A05	6

Aircraft Group	Runway	Track Name	Percentage Utilization
		33A06	16
		33A07	18
Air Carrier Turbo Prop	**15**	15A07	37
		15A08I	13
		15A08V	50
	33	33A10	38
		33A11	17
		33A12	46
Air Taxi Turbo Prop	**01**	01A01	30
		01A02	70
	15	15A05	29
		15A06	8
		15A07	6
		15A08I	12
		15A08V	39
		15A09	5
	19	19A01	25
		19A02	25
		19A03	25
		19A04	25
	33	33A09	45
		33A10	18
		33A11	30
		33A12	7
General Aviation Turbo Prop	**01**	01A01	30
		01A02	70
	15	15A05	10
		15A07	24
		15A08I	24
		15A08V	38
		15A09	3
	19	19A01	18
		19A02	29
		19A03	21
		19A04	32
	33	33A09	58
		33A10	8
		33A11	17
		33A12	17
Air Taxi Prop	**01**	01A01	30
		01A02	70
	15	15A08I	50
		15A08V	50
	19	19A01	25
		19A02	25
		19A03	25
		19A04	25
	33	33A09	60
		33A10	20
		33A17	20

Aircraft Group	Runway	Track Name	Percentage Utilization
General Aviation Prop	01	01A01	30
		01A02	70
	15	15A05	12
		15A08I	14
		15A08V	38
		15A12	12
		15A13I	8
		15A13V	15
	19	19A01	18
		19A02	29
		19A03	21
		19A04	32
	33	33A09	34
		33A10	17
		33A11	23
		33A12	11
		33A17	14
Military Helicopter	VTARNG Apron	MLHA2	37
		MLHA3	5
		MLHA4	16
		MLHA5	16
		MLHA6	11
		MLHA7	16
Military (Fixed wing) – Transient	15	15A01	15
		15A02	85
	33	33A01	9
		33A02	43
		33A03	2
		33A04	43
		33A06	3
Military (Fixed wing) – Based F-16s	15	AE_15A1	65
		AE_15A2	26
		AE_15A3	8
	33	AE_33A1	88
		AE_33A2	8
		AE_33A3	4

Notes:
Tracks with names starting with “AE_” are developed from the USAF EIS. The F-16 tracks are modeled in NOISEMAP, without the “AE_” prefix.
Military helicopter tracks were developed from the helicopter tracks used in the USAF EIS.

Table 16 Departure Flight Track Utilization Rates

Sources: Radar Sample (2012), USAF EIS (2013)

Aircraft Group	Runway	Track Name	Percentage Utilization
Air Carrier Jet	15	15D01	13
		15D02	1
		15D03	76
		15D04	8
		15D06	2
	33	33D01	2
		33D02	13
		33D03	2
		33D04	83
Air Carrier Cargo Jet	15	15D02	60
		15D06	40
	33	33D01	14
		33D02	5
		33D03	64
		33D04	18
Air Taxi Jet	15	15D01	29
		15D02	12
		15D03	48
		15D04	8
		15D05	1
		15D06	1
	33	33D01	2
		33D02	34
		33D03	13
		33D04	51
General Aviation Jet	15	15D01	12
		15D02	17
		15D03	42
		15D04	9
		15D05	17
		15D06	4
	33	33D02	3
		33D03	24
		33D04	74
Air Carrier Turbo Prop	15	15D07	100
	33	33D06	19
		33D07	78
		33D08	3
Air Taxi Turbo Prop	15	15D07	60
		15D08	40
	19	19D01	14
		19D02	29
		19D04	57
	33	33D05	40
		33D06	5
		33D07	38
		33D08	10

Aircraft Group	Runway	Track Name	Percentage Utilization
		33D09	8
General Aviation Turbo Prop	**01**	AE_01D1	100
	15	15D07	83
		15D08	17
	19	19D01	20
		19D02	40
		19D03	20
		19D04	21
	33	33D05	11
		33D06	26
		33D07	58
		33D09	5
Air Taxi Prop	**01**	AE_01D1	100
	15	15D07	75
		15D08	25
	19	19D01	14
		19D02	29
		19D04	57
	33	33D05	25
		33D07	50
		33D08	25
General Aviation Prop	**01**	AE_01D1	100
	15	15D07	49
		15D08	51
	19	19D01	20
		19D02	40
		19D03	20
		19D04	21
	33	33D05	19
		33D06	12
		33D07	47
		33D08	12
		33D11	10
Military Helicopter	**VTARNG Apron**	MLHD1	22
		MLHD2	22
		MLHD3	33
		MLHD4	22
Military (Fixed wing) – Transient	**15**	15D01	13
		15D02	1
		15D03	76
		15D04	8
		15D06	2
	33	33D01	2
		33D02	13
		33D03	2
		33D04	83
Military (Fixed wing) – Based F-16s	**15**	AE_15D1	10
		AE_15D3	27
		AE_15D4	53
		AE_15D5	10

Aircraft Group	Runway	Track Name	Percentage Utilization
	33	AE_33D1	54
		AE_33D2	10
		AE_33D3	10
		AE_33D4	27

Notes:
Tracks with names starting with "AE_" are developed from the USAF EIS. The F-16 tracks are modeled in NOISEMAP, without the "AE_" prefix.
Military helicopter tracks were developed from the helicopter tracks used in the USAF EIS.

Table 17 Touch and Go (Pattern) Operation Flight Track Utilization Rates

Sources: Radar Sample (2012), USAF EIS (2013)

Runway	Track Name	Percentage Utilization
1	01T1	50
	01T2	50
15	15T1	50
	15T2	50
19	19T1	40
	19T2	60
33	33T1	29
	33T2	71
15 (Military Based)	AE_15C1	90
	AE_15C2	10
33 (Military Based)	AE_33C1	90
	AE_33C2	10

Notes:
Tracks with names starting with "AE_" are developed from the USAF EIS. The F-16 tracks are modeled in NOISEMAP, without the "AE_" prefix.

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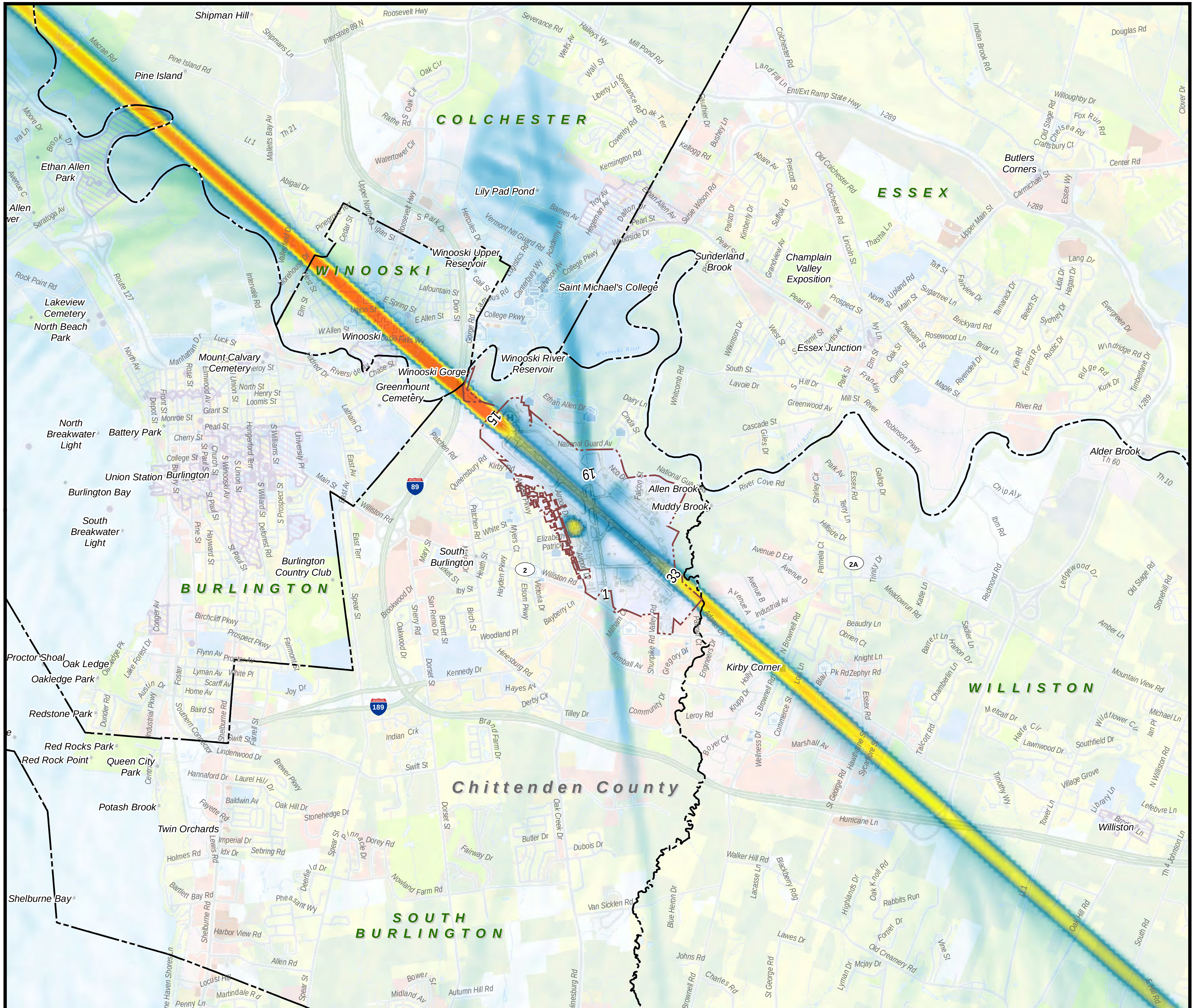
Figure 16
Radar Sample Arrival Tracks



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
- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

hmmh

CAMPBELL AND PARIS ENGINEERS, P.C.

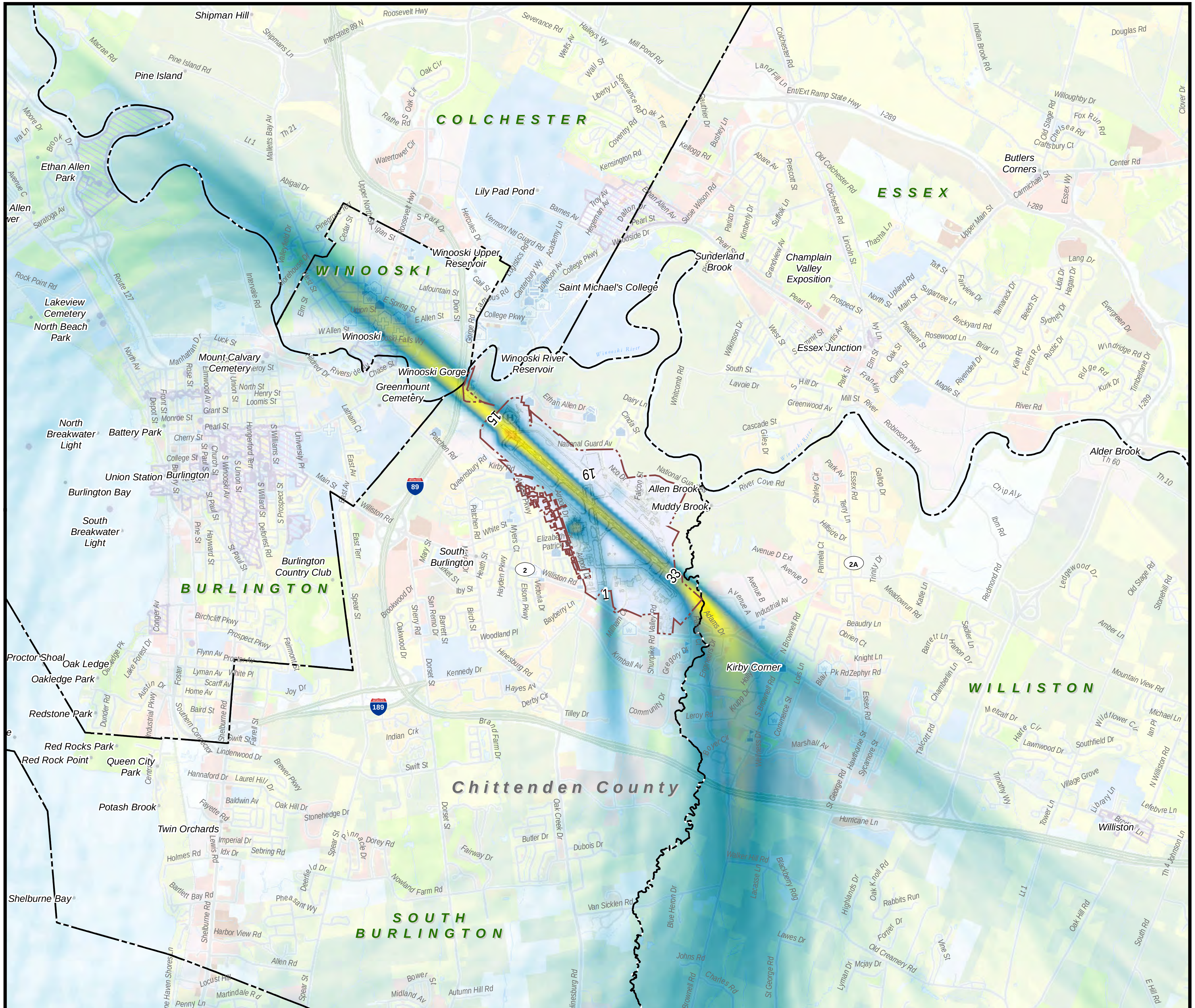
December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure16_Radar_Sample_ARR.mxd

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

Single Family Residential (1)

Multi Family Residential (1)

Residence or Accomodation Functions (1)

General Sales or Services (2)

Mixed Use (1)

Manufacturing and Wholesale Trade (2)

Education, Public Admin., Health Care (1)

Religious Institutions (1)

Arts, Entertainment, and Recreation (1)

Agriculture, Forestry, Fishing and Hunting (1)

Mining and Extraction Establishments

Construction-Related Businesses

Transportation, Communication, and Utilities (2)

Open Water

Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

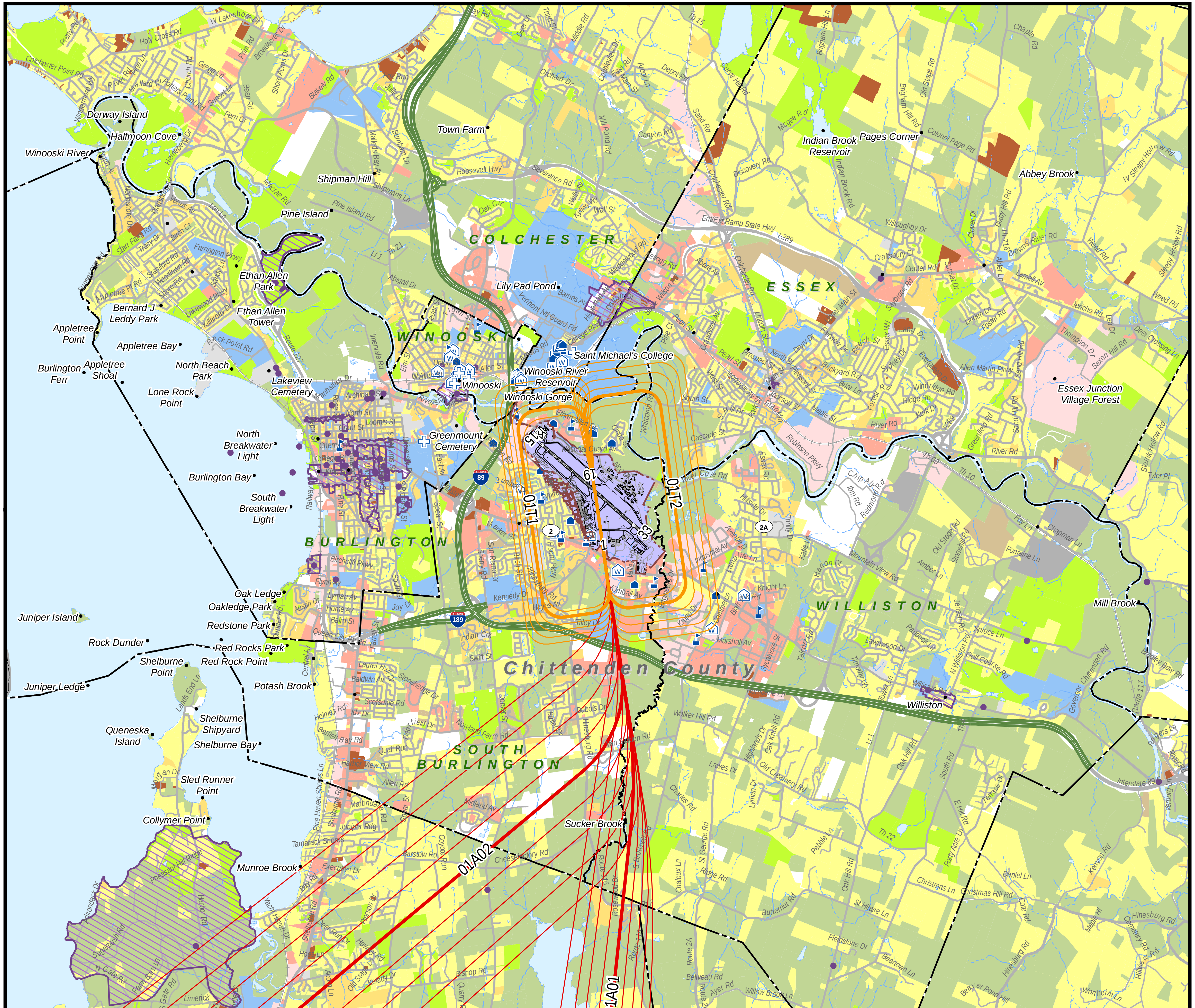
North

hmmh

CAMPBELL AND PARIS ENGINEERS, P.C.

December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure17_Radar_Sample_DEP.mxd



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

Dispersed 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
- Education
- Place of Worship
- Residential
- Health Care
- Public Gathering
- National Register Historic District
- National Register Historic Site

- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

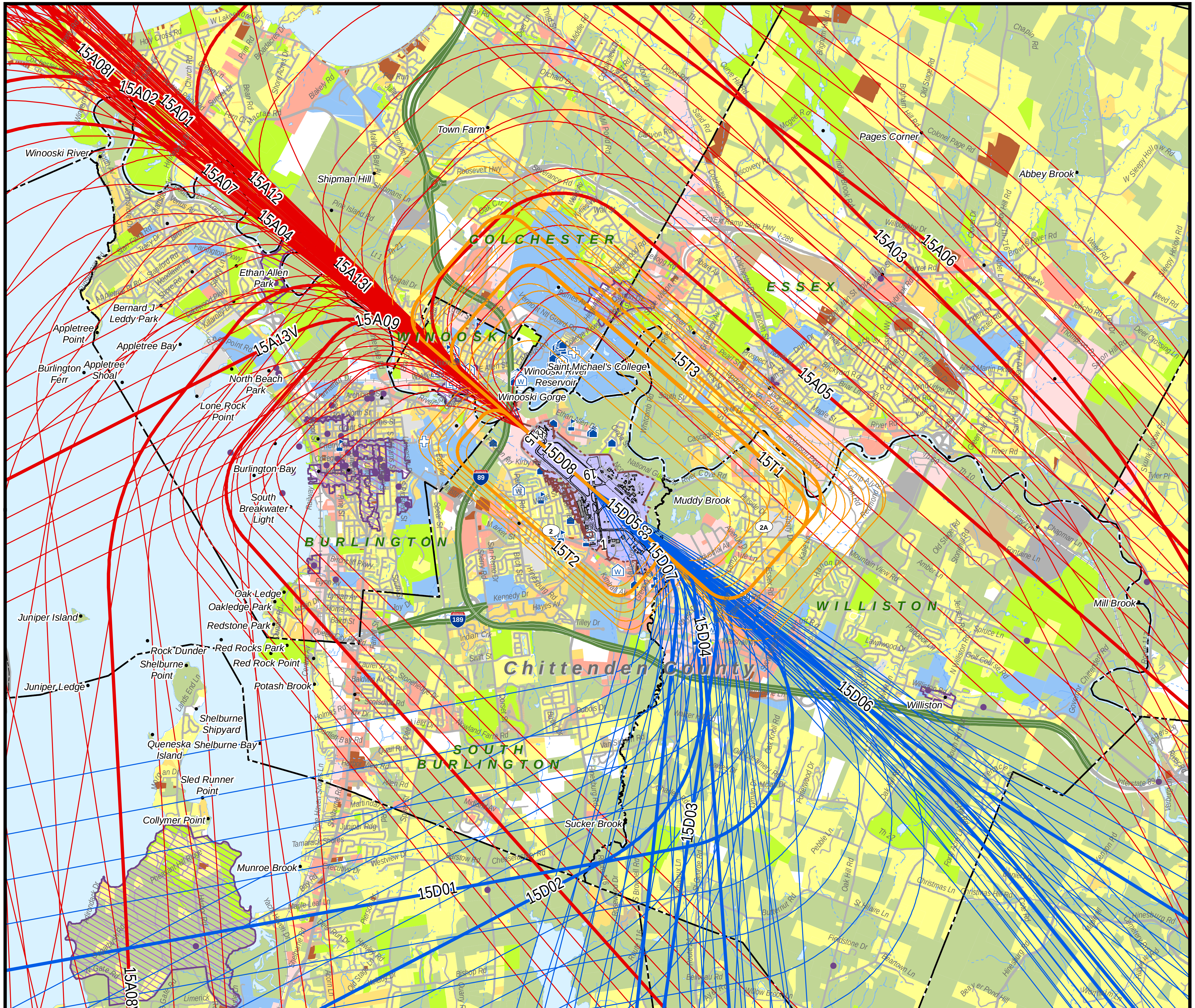
North

hmmh

CAMPBELL AND PARIS ENGINEERS, P.C.

December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure18_Model_Tracks_RWY1.mxd



BURLINGTON INTERNATIONAL AIRPORT

Part 150 - Noise Exposure Map Update

Figure 19
Civilian and Transient Military Modeled Tracks for Runway 15

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks

Dispersed 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
- Education
- Place of Worship
- Residential
- Health Care
- Public Gathering
- National Register Historic District
- National Register Historic Site

- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

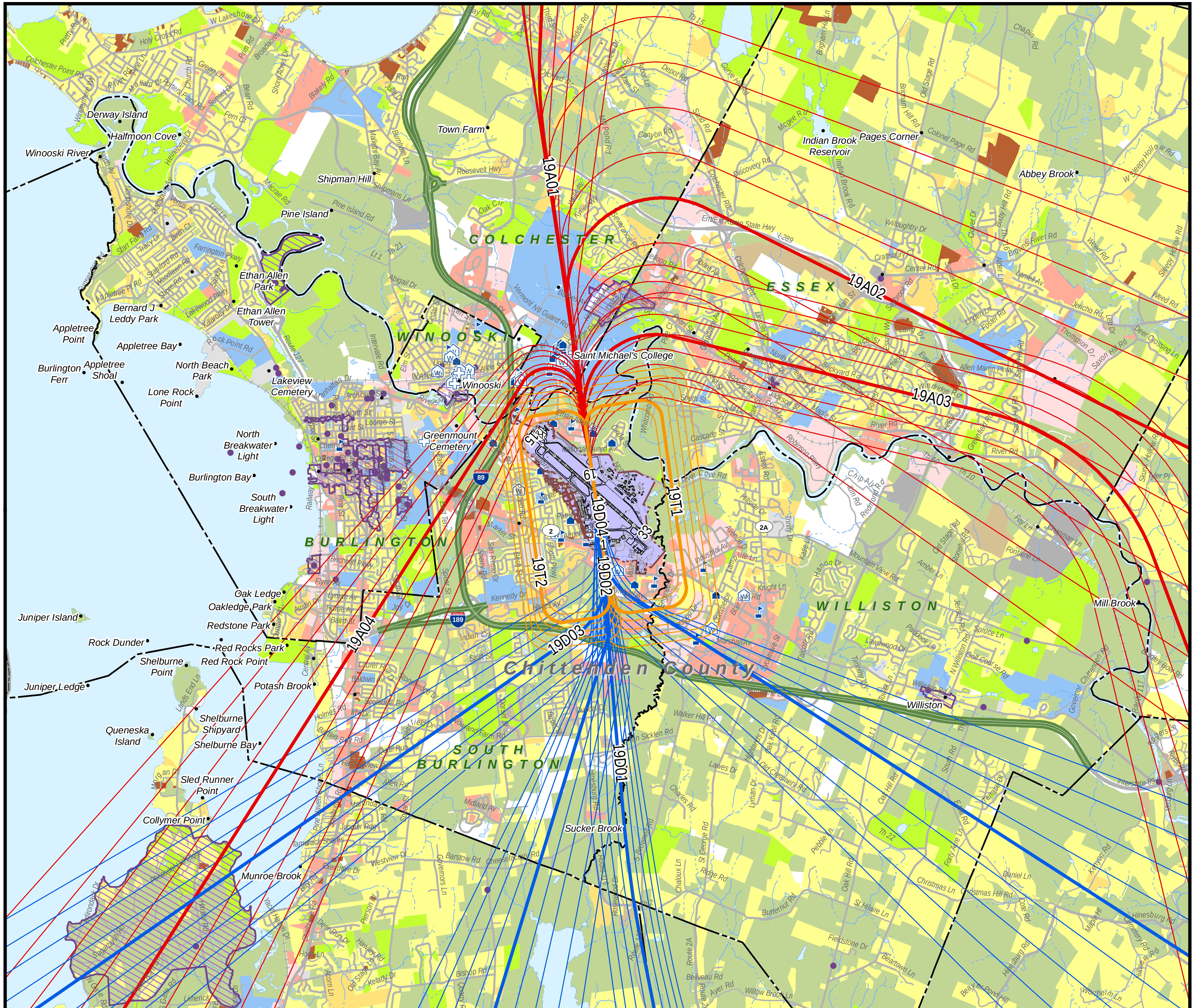
North

hmmh

CAMPBELL AND PARIS ENGINEERS, P.C.

December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure19_Model_Tracks_RWY15.mxd



Burlington International Airport

Part 150 - Noise Exposure Map Update

Figure 20
Civilian and Transient Military Modeled Tracks for Runway 19

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks

Dispersed 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
- Education
- Place of Worship
- Residential
- Health Care
- Public Gathering
- National Register Historic District
- National Register Historic Site
- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

CAMPBELL AND PARIS ENGINEERS, P.C.

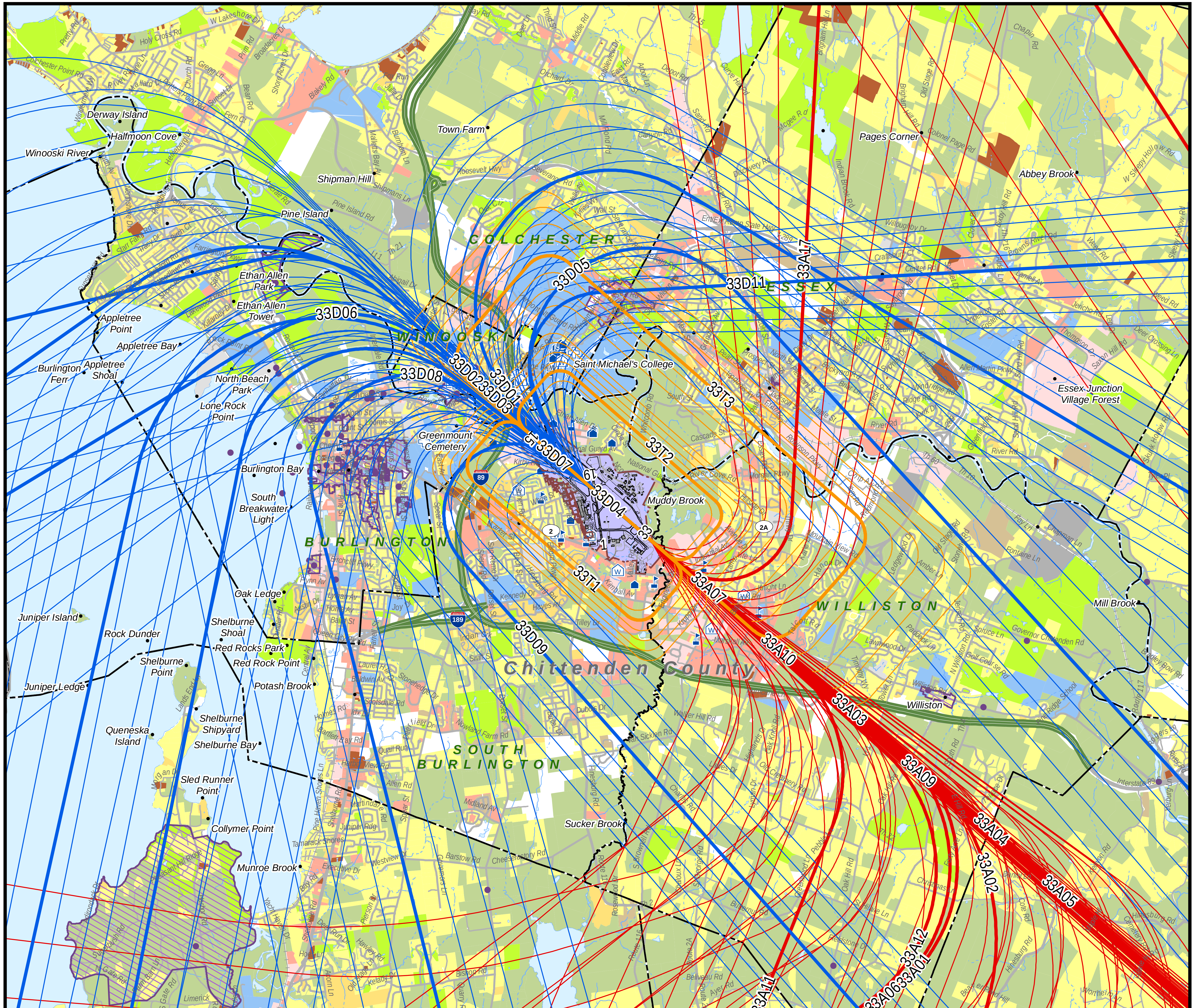
December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure20_Model_Tracks_RWY19.mxd

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

Dispersed 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
- Education
- Place of Worship
- Residential
- Health Care
- Public Gathering
- National Register Historic District
- National Register Historic Site

- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

CAMPBELL AND PARIS ENGINEERS, P.C.

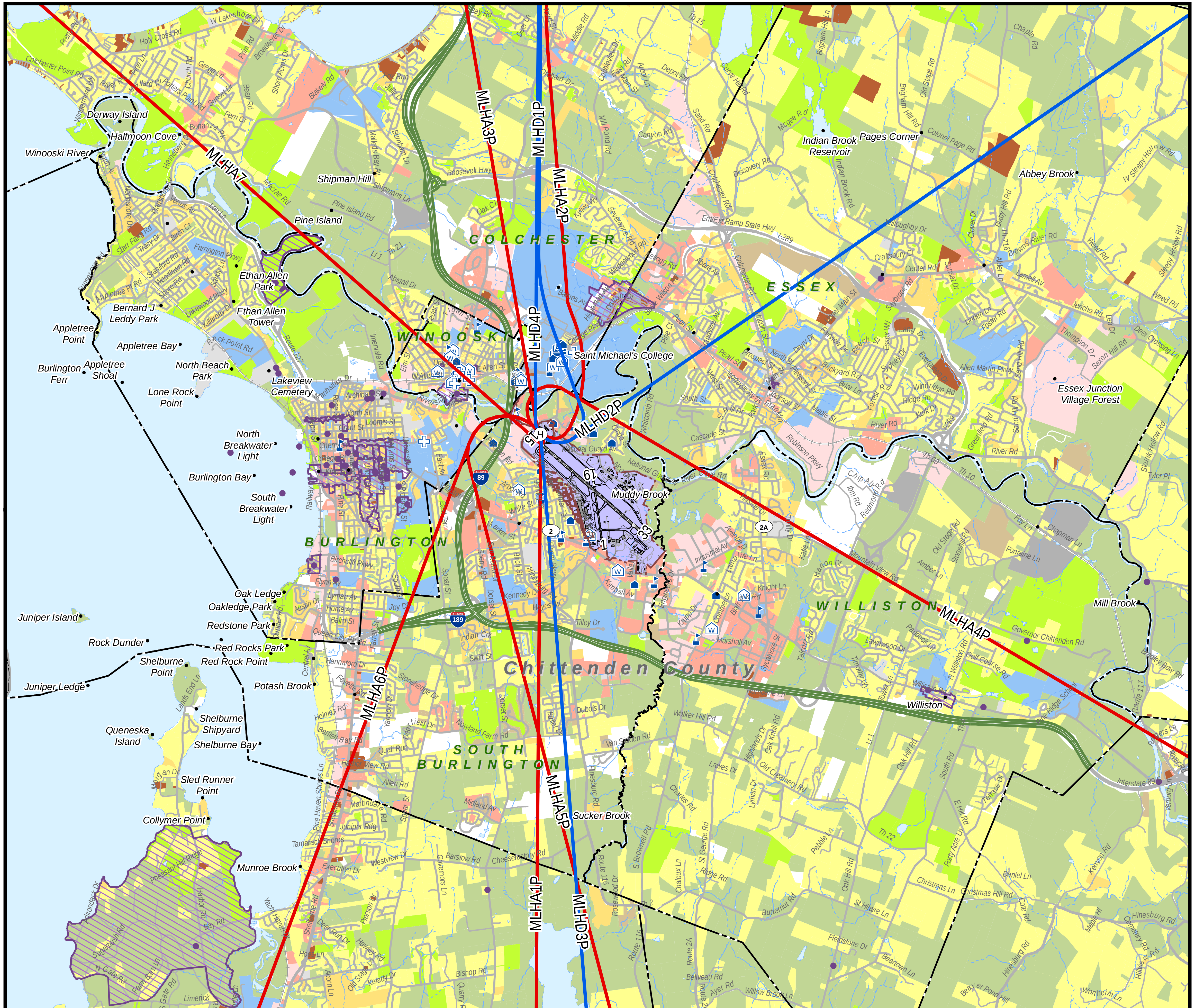
December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure21_Model_Tracks_RWY33.mxd

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 22
Helicopter Modeled Tracks for Vermont Army National Guard Apron



Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks

Dispersed 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
Education
Place of Worship
Residential
Health Care
Public Gathering
National Register Historic District
National Register Historic Site

- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.

(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

CAMPBELL AND PARIS ENGINEERS, P.C.

December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure22_Model_Tracks_Helo_Military.mxd

December 2015

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 23
Military Based F-16 Modeled Tracks for Runway 15

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks

Dispersed 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
Education
Place of Worship
Residential
Health Care
Public Gathering
National Register Historic District
National Register Historic Site

Single Family Residential (1)
Multi Family Residential (1)
Residence or Accomodation Functions (1)
General Sales or Services (2)
Mixed Use (1)
Manufacturing and Wholesale Trade (2)
Education, Public Admin., Health Care (1)
Religious Institutions (1)
Arts, Entertainment, and Recreation (1)
Agriculture, Forestry, Fishing and Hunting (1)
Mining and Extraction Establishments
Construction-Related Businesses
Transportation, Communication, and Utilities (2)
Open Water
Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

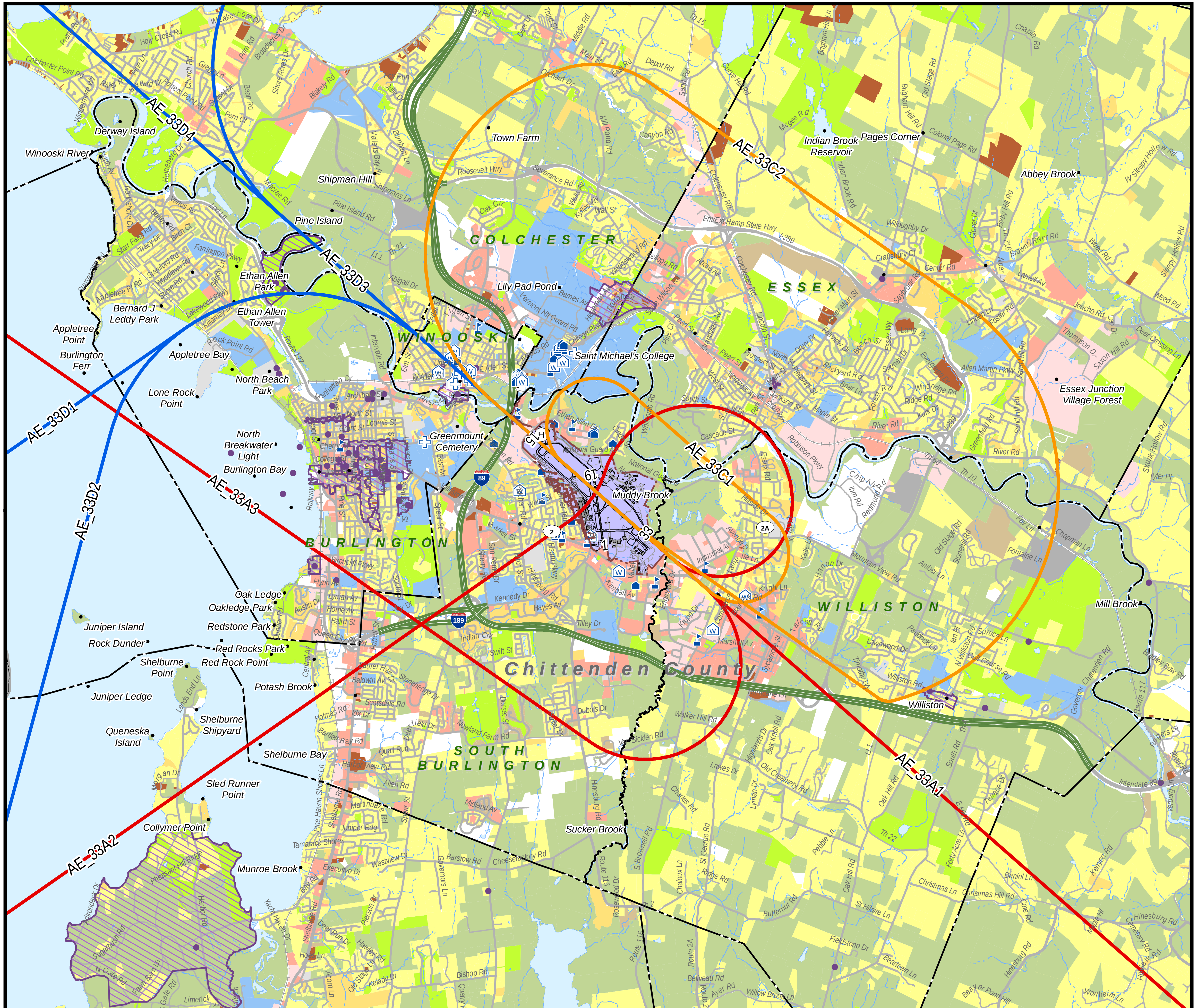
0 0.5 1 2 Nautical Miles

North

hmmh

CAMPBELL AND PARIS ENGINEERS, P.C.

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure23_Model_Tracks_F16_Military.mxd



Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure24_Model_Tracks_F16_Military.mxd

December 2015

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 24
Military Based F-16 Modeled Tracks for Runway 33

Backbone Model Tracks
- Arrival Model Tracks
- Departure Model Tracks
- Touch and Go Model Tracks

Dispersed 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

Education
Place of Worship
Residential
Health Care
Public Gathering

National Register Historic District
National Register Historic Site

- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

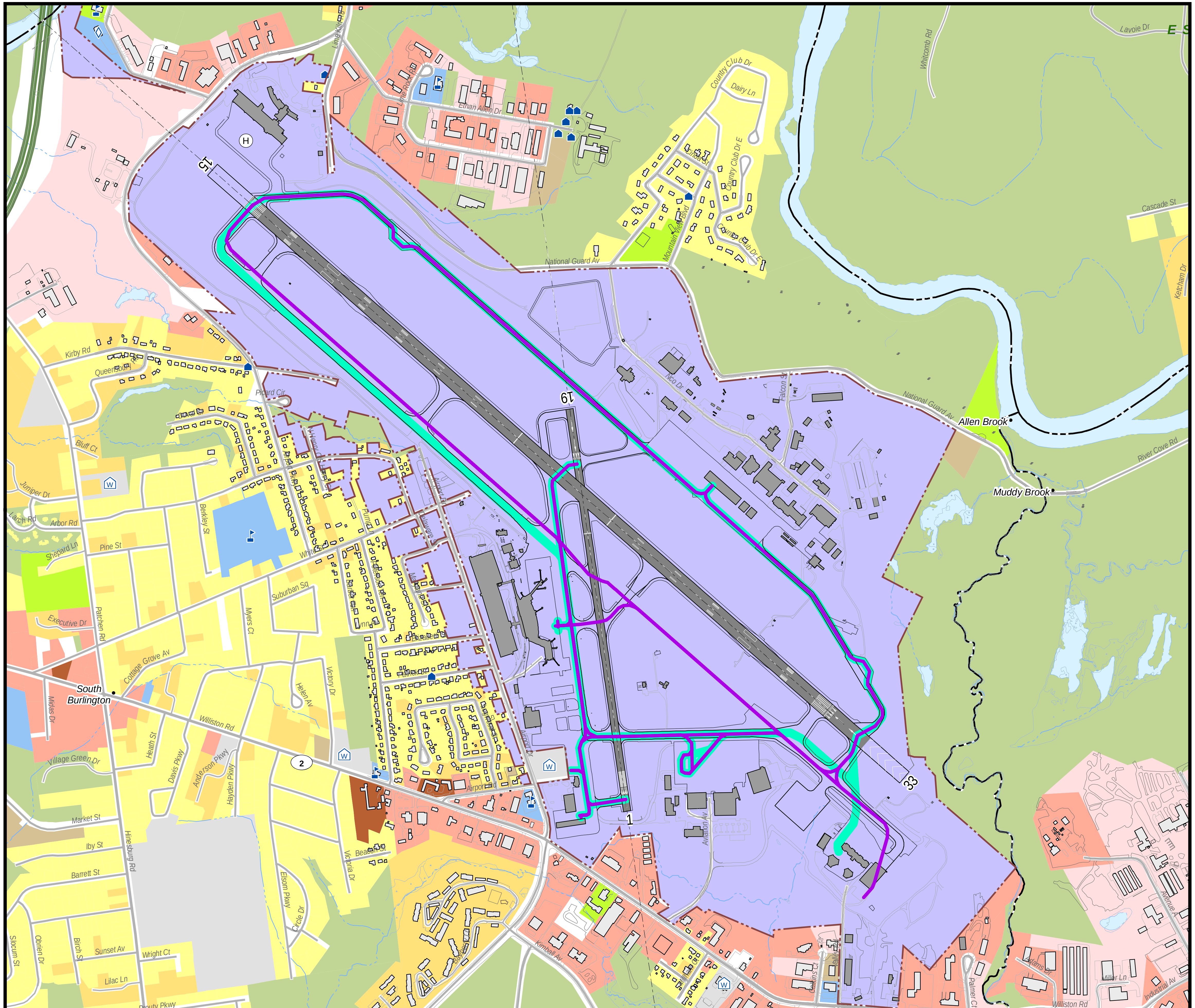
hmmh

CAMPBELL AND PARIS ENGINEERS, P.C.

BURLINGTON INTERNATIONAL AIRPORT

Part 150 - Noise Exposure Map Update

Figure 25
Taxi Model Tracks



2020 Taxi Model Tracks
2015 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

Single Family Residential (1)
Multi Family Residential (1)
Residence or Accomodation Functions (1)
General Sales or Services (2)
Mixed Use (1)
Manufacturing and Wholesale Trade (2)
Education, Public Admin., Health Care (1)
Religious Institutions (1)
Arts, Entertainment, and Recreation (1)
Agriculture, Forestry, Fishing and Hunting (1)
Mining and Extraction Establishments
Construction-Related Businesses
Transportation, Communication, and Utilities (2)
Open Water
Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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

CAMPBELL AND PARIS ENGINEERS, P.C.

December 2015

Path: G:\Projects\305XXX\305660_BTV\GIS\305661_BTV_Figure25_Taxi_Model_Tracks.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 INM 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 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.

Five primary ramp areas modeled are:

- Terminal Gates,
- Cargo area,
- Air National Guard Ramp,
- South West general aviation ramp, and
- South East general aviation ramp.

Details of the FAA-approved taxiway noise modeling are provided in Appendix B. INM was used for all taxiway modeling, including the ANG F-16s.

Figure 25 shows the modeled taxiway tracks for both 2015 and 2020. The 2015 taxipaths reflect the existing airport layout. The 2020 taxipaths represent the anticipated runway layout in 2020, including the extended Taxiway G.[57]

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. INM was used to model all run-ups, including for the Air National Guard F-16s. 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.

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

6.8 Meteorological Conditions

The INM has several settings that account for the effects that meteorological conditions have on aircraft performance profiles and sound propagation. INM's meteorological settings include average temperature, barometric pressure, relative humidity, and wind direction and speed. Weather data for 2003 through 2012 were obtained from the National Climatic Data Center (NCDC)[58] for BTV (Station ID: 14742) and analyzed. Based on analysis of the NCDC data, the following are the average annual conditions for BTV and used in the INM for noise modeling:

- Temperature: 47.1° Fahrenheit
- Sea level pressure: 29.98 inches of Mercury (in-Hg)
- Relative humidity: 69.3 percent.

For modeling purposes, the average headwind speed was set to the INM default of 8.0 knots.

For consistency, the same NCDC weather data used in the INM study was used in the BTV NEM NOISEMAP study. This NCDC weather data is slightly different than the weather data used in the USAF EIS.

6.9 Terrain

Terrain data describes the elevation of the ground surrounding the airport and on airport property. The INM and NOISEMAP both use terrain data to adjust the ground level under the flight paths. Neither the INM study nor the NOISEMAP study used for the BTV NEM evaluate shielding effects from terrain or buildings. The terrain data do not affect the aircraft's performance or emitted noise levels, but do affect the vertical distance between the aircraft and a "receiver" on the ground. This in turn affects the noise levels received at a particular point on the ground. The terrain data were obtained from the United States Geological Survey (USGS) in 1/3 arc second (approx. 33 ft.) GridFloat format.[59]

For consistency, the same USGS terrain data used in the INM study were used in the BTV NEM NOISEMAP study. This USGS terrain data is slightly different than the terrain data used in the USAF EIS.

[58] http://www.ncdc.noaa.gov
[59] Data downloaded from http://viewer.nationalmap.gov/viewer/ on 01/07/2013.

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 November 9, 2015 and ending on December 10, 2015, was provided for public review and comment of the draft Noise Exposure Map. Copies of the draft document were available for public review at the airport offices, South Burlington City Hall, and Chittenden County Regional Planning.

- The draft NEM document and notification of meetings were also available through the Burlington International Airport's Community Connection website: http://www.btv.aero/airport-guide/community-connection

- The draft Noise Exposure Map was presented at a public workshop from 6:00 p.m. to 8:00 p.m. on November 9, 2015 at Chamberlin School in South Burlington. The sign-in sheets include 106 individuals. Of those, several were elected officials and represented organizations such as Chittenden County Regional Planning Commission.

    - The meeting was advertised in seven local newspapers.

    - Staff from BTV and HMMH were present to answer questions about the presentation boards which displayed information on the results of the study.

    - At the beginning of the workshop, BTV and HMMH representatives gave a presentation. Following the presentation Mr. Gene Richards, Director of Aviation, and HMMH representatives, facilitated a question and answer period.

    - 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.

    - Channel 17, Town Meeting Television recorded the workshop as "Chamberlin Neighborhood - Noise Exposure and Mapping Session" [60]

Appendix D 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. In all, 69 individuals submitted a total of 125 written comments. Several comments warranted clarifying edits to this NEM document. Those changes are summarized in Section 7.1 .

Appendix E presents copies of all comments received at the Airport's offices by December 10, 2015.

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[60] As of December 18, the program is still available at https://www.cctv.org/watch-tv/programs/chamberlin-neighborhood-noise-exposure-and-mapping-session the

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.

During the NEM comment period, Airport staff had meetings with various government leaders and verbally briefed them about the draft NEM. Airport staff offered and distributed physical copies of the November 2015 draft NEM document during those meetings.

7.1 Changes to the Document

As a result of the public workshop and comments received during the comment period, the following changes were made to the draft NEM document since it was released to the public on November 9, 2015. The changes are arranged in the first section that the change occurred.

- Section 4.3 and Table 4: Additional information regarding FAA's sound insulation mitigation eligibility criteria, in particular references to FAA's Airport Improvement Program (AIP) Handbook, was added.
- Section 5.2 : Details were added regarding the F-16 operational changes between the 2006/2011 NEM and this 2015/2020 NEM.
- Section 5.2 : A note was expanded to explain the "bulges" in the 2015/2020 NEM contours compared to previous contours.
- Section 5.3.2, Table 3 and all figures: Centerpoint Adolescent Treatment Services at 1025 Airport Drive South Burlington, was identified. The facility was not included in the November 2015 draft. The facility is now included in the NEM map.
- Section 5.3.2, Table 3: There is a note with a revised inventory for the Roland Court Winooski/Gorge Rd. Colchester Neighborhood.
- Section 5.3.2, Table 3: There is a note in this table acknowledging a comment regarding a home childcare and preschool program at 364 White St. South Burlington.
- Section 5.3.2, Table 3 and all figures: Confirmation that Leaps & Bounds Child Development Center, at 1600 Williston Road, South Burlington, is included in the NEM map (no change required to the document).
- Section 5.3.3: Additional details were added to of the NEM document regarding dwelling and population counts by jurisdiction.
- Section 6.1 : A note was added the Wasmer Consulting website page titled "Adding Noisemap and INM Noise Grids with NMPlot".
- Section 6.4 : Table 9 and Table 10: Notes were added to these tables to regarding "low approaches."
- Section 6.4.1: A typographical error was corrected.

APPENDIX A FAA'S 2008 RECORD OF APPROVAL ON 2008 PART 150 NOISE COMPATIBILITY PROGRAM SUBMISSION

Federal Aviation Administration

Memorandum

Date: June 19, 2008

From: Richard Doucette, Environmental Protection Specialist

To: LaVerne Reid, Airports Division Manager

John Donnelly, Regional Counsel's Office

Subject: Burlington International Airport, Part 150 Record of Approval

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Attached is the Draft Record of Approval for the Noise Compatibility Program developed by Burlington International Airport. Only one new measure was under consideration. The prior Part 150 Noise Compatibility Program recommended acquisition of residences within the 70DNL contour. This new measure allows for land acquisition within the 65DNL contour.

No written comments were received during the FAA comment period.

In conformance with Regional and National procedures, AEE-1 has reviewed the draft Record of Approval and has no national policy concerns; and APP-400 has concurred with the draft Record of Approval. As soon as your concurrence is obtained, the Federal Register Notice on FAA's approval of the Noise Compatibility Program can be submitted.

John R. Donnelly
John Donnelly
Regional Counsel, ANE-7

6/23/08
Date

✓ Concur
Nonconcur

LaVerne F. Reid
LaVerne F. Reid
Airports Division Manager

6/23/08
Date

✓ Approved
Disapproved

RECORD OF APPROVAL

Burlington International Airport, South Burlington VT

FAR Part 150 Noise Compatibility Program

INTRODUCTION

The Burlington International Airport sponsored an Airport Noise Compatibility Planning Study under a Federal Aviation Administration (FAA) grant, in compliance with Federal Aviation Regulation, Part 150. Burlington produced a report entitled "Burlington International Airport, 14 CFR Part 150 Update, Noise Compatibility Program Update". The Noise Compatibility Program (NCP) was submitted to FAA for review and approval on April 23, 2008. The Noise Exposure Maps were determined to be in compliance in November 2006. That determination was announced in the Federal Register on November 17, 2006.

The study focused on one administrative measure to improve compatibility between airport operations and community land use. This one measure under consideration is the acquisition of homes within the 65dB DNL contour. Burlington International Airport's most recent Noise Compatibility Program (approved September 21, 1990) recommended land acquisition within the 70dB DNL noise contour. This change will allow more incompatible land use to be converted to compatible land use, through voluntary land acquisition.

The approvals listed herein include approvals of actions that the airport recommends be taken. It should be noted that these approvals indicate only that the actions would, if implemented, be consistent with the purposes of Part 150. These approvals do not constitute decisions to implement the actions. Later decisions concerning possible implementation of these actions may be subject to applicable environmental or other procedures or requirements. Approval does not constitute a commitment by the FAA to financially assist in the implementation of the program nor a determination that all measures covered by the program are eligible for grant-in-aid funding from the FAA. Eligibility for federal funding of measures that are determined in this Record of Approval to meet the approval criteria of 150.33 will be determined at the time the FAA receives an application for funding, using the criteria in the most current version of FAA Order 5100.38, Airport Improvement Program Handbook.

The program measures below summarize as closely as possible the airport operator's recommendations in the noise compatibility program and are cross-referenced to the program with page numbers that follow the title of each measure. The statements contained within the summarized program measures and before the indicated FAA approval, disapproval, or other determination, do not represent the opinions or decisions of the FAA.

EXISTING NOISE COMPATIBILITY PROGRAM

The prior NCP, developed in the original (1987-1990) Part 150 study, includes a mix of operational, implementation, and land use elements. While this update addresses only a revision to a single NCP measure, this NCP and Record of Approval provide a summary of the entire program to provide context. All measures recommended for implementation in 1989 were approved in 1990 and remain in effect, with the one revision resulting from this Program Update.

Airport Operations Measures

1. Extension of Taxiway G (pg 13)
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.
Status: Not yet implemented. The FAA has approved the extended Taxiway G at the planning level and it is shown on the updated 2006 Airport Layout Plan; the City has scheduled it for completion sometime after the 2011 planning horizon of the accepted NEM.

2. Terminal Power Installation and APU/GPU Restrictions (pg 13)
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.
Status: Not fully implemented. The Airport terminal has "aircraft ground power" (referred to as "terminal power hooks" in the ROA and the 1989 NCP document) capability at nine gate locations that have passenger boarding bridges. Eight of the passenger gates - 3, 4, 5, 6, 11, 12, 14, and 15 are airport owned and available to any aircraft that uses these gates. Gate 8 has ground power that is owned and operated by United Airlines.

3. Nighttime Bi-direction Runway Use (pg 13)
To minimize late-night operations over the City of Winooski, the air traffic control tower would use Runways 15 for departure and Runway 33 for arrivals, traffic conditions permitting.
Status: Not implemented. The BTV ATCT is closed from 10:00 PM until 5:00 AM, which makes implementation of this measure infeasible during these hours. The ATCT has not implemented the procedure during the remaining "nighttime" hours, from 5:00 to 7:00 AM.

4. Noise Abatement Flight Paths for Runway 15 and 33 Departures, and 15 Arrivals (pg 14)
New procedures 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.
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 Runway 33 departures initiating right hand turns over Winooski.

5. Voluntary Limits of Military C-5A Training (pg 14)
An informal agreement with the military limits C-5A operations to only necessary takeoffs and landings.
Status: Implemented. This informal agreement continues in place. BTV Operations strongly discourages C-5 training at the airport, because the runways are only 150 feet wide and wake turbulence from C-5 operations tear up the runway-edge lighting.

6. Voluntary Minimization of F-16 Multiple Aircraft Flights (pg 14)
Military personnel will schedule as many single-aircraft, as opposed to multiple-aircraft, flights as possible.
Status: Not fully implemented. Based on observations during data collection for this study, F-16s in multiple aircraft flights typically operated 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.

7. Voluntary Army Guard Helicopter Training Controls (pg14)
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.
Status: Not implemented. The National Guard has continued training operations at BTV.

Monitoring and Review Elements

8. Ongoing Monitoring and Review of Noise Exposure Map (NEM) and Noise Compatibility Program (NCP) Status (pg 14)
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 as a Noise Abatement Committee and purchase of a permanent noise monitoring system.
Status: Not implemented. The City of Burlington updated its NEM in 1997 and 2006. This documentation represents the first NCP update.

9. Flight Track Monitoring (pg 15)
Utilize an outside firm to perform flight track analysis of radar data on a temporal sampling basis.
Status: Not implemented. Flight tracks for the 2006 NEM were developed from information provided by the Air National Guard, the 1997 NEM update, and interviews with FAA ATCT staff.

Land Use Measures

The City will use the 2006 and 2011 NEM contours to the extent that the following land use measures require definition of eligibility and implementation areas. The City will continuously monitor conditions affecting NEM validity, to determine when and if the contours require revision to reflect changes in the adequacy of the NEM contours.

10. Land Acquisition and Relocation (pg 15)
Incompatible land use includes mobile homes within the 65 dB DNL contour and residences within the 70 dB DNL contour. A purchase and relocation program would be voluntary and comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Status: Implemented. There are no mobile homes within the 65 dB DNL contour. The City has purchased some, and is in the process of purchasing additional, permanent residences in the 70 dB DNL contour. The City proposes to change this element to include residences in the 65 dB DNL contour, as described at the end of this document.

11. Sound Insulation (pg 15)
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.
Status: Not implemented. As discussed in Section 3.3.1 of the NCP document, the City has chosen to apply available funding to land acquisition.

12. Easement Acquisition Related to Soundproofing (pg15)
The City would attempt to negotiate avigation easements within the 65 dB DNL contour, in return for sound attenuation assistance.

Status: Not implemented. The City has chosen to apply available funding to land acquisition within the 70 dB DNL contour interval prior to providing treatment to homes in the 65-70 dB DNL contour interval.

13. Airport Zoning Overlay District (pg15)
Land use measures that would restrict uses which are highly sensitive to noise and could also feature construction standards for sound insulation.
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.

14. Easement Acquisition for New Development (pg 16)
Easements above would be obtained for new development within the 65, 70 and 75 dB DNL contours.
Status: Not implemented.

15. Real Estate Disclosure (pg 16)
A real estate disclosure policy would be developed for land uses within the 65 dB DNL contour, and implemented through revisions to zoning ordinances.
Status: Not implemented. The Airport has not actively encouraged the use of Real Estate Disclosures for properties within the 65 dB DNL contour but will be working with the City of South Burlington and the City of Winooski in that regard.

RECOMMENDED NOISE COMPATIBILITY PROGRAM REVISION

This NCP update proposes modification of one existing NCP element, as described below.

Land Acquisition and Relocation (pg 17)
The City of Burlington proposes to modify the existing Land Acquisition and Relocation Program (Land Use measure #10) to expand eligibility to the 65 dB DNL contour. This program is voluntary. Eligible property owners will be paid fair market value for their property at its 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 implementing Department of Transportation (DOT) regulations. The City, in coordination with the applicable jurisdiction, will conduct studies to define program boundaries and to identify options for compatible reuse of the acquired properties.

The City, and the jurisdiction within which the program is implemented, 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.

FAA Action: Approved.

Appendix B NON-STANDARD NOISE MODELING SUBSTITUTION REQUEST AND FAA APPROVAL

HMMH memorandum "Burlington International Airport Noise Exposure Map Update - Requested Review and Approval of Integrated Noise Model Non-Standard Inputs" dated September 11, 2014. This memorandum describes the contractor's recommended non-standard modeling methodology and prepared in accordance to FAA July 2009 guidance.
http://www.faa.gov/airports/environmental/policy_guidance/media/nonstd_inm_modeling.pdf

The Federal Aviation Administration's Office of Environment and Energy (AEE) responded via a letter dated December 9, 2014.

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U.S. Department of Transportation
Federal Aviation Administration

Office of Environment and Energy

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

Date: December 9, 2014

Richard Doucette
Environmental Program Manager
Airports Division, FAA New England Region
Federal Aviation Administration

Dear Mr. Doucette:

The Office of Environment and Energy (AEE) has received your email dated September 17, 2014 requesting the approval of non-standard noise modeling using the Integrated Noise Model (INM) in support of the Part 150 Noise Exposure Map (NEM) update at the Burlington International Airport (BTV). The attached memo in your email was prepared by Harris Miller Miller & Hanson Inc (HMMH).

The request includes three parts: (1) Non-standard aircraft substitution - this airport has operations for aircraft that are not included in the INM. Substitutions for 4 jet aircraft, 3 turbo prop aircraft and 7 piston prop aircraft have been proposed; (2) Taxiways and ramp activity – the existing practice in INM modeling is used with user defined operation profiles and an estimate of aircraft taxing thrust values; (3) F-16 user-defined profiles – The profiles are based on NOISEMAP profiles developed for BTV in a previous Environmental Impact Study (EIS).

AEE reviewed the proposed substitutions for aircraft that do not have standard substitutions in the INM. AEE approves the use of the proposed aircraft models – see the table below.

Aircraft Type	Aircraft code and represented Aircraft Models	Proposed INM aircraft as substitution	AEE Response
Jet	E50P, Embraer EMB-500 Phenom 100	CNA510	Concur
Jet	E55P, Embraer EMB-505 Phenom 300	CNA560E	Concur
Jet	H25C, BAe/Raytheon Hawker 1000	LEAR35	Concur
Jet	LJ40, Learjet 40	LEAR35	Concur
Turbo Prop	B350, Beech Super King Air 350	DO228	Concur
Turbo Prop	P46T, Piper Malibu Meridian	CNA208	Concur
Turbo Prop	TBM8, Socata TBM-850	CNA208	Concur
Piston Prop	BE36, Beechcraft 36 Bonanza	CNA206	Concur
Piston Prop	COL4, Lancair LC-41 Columbia 400	GASEPV	Concur
Piston Prop	DA40, Diamond 40	GASEPV	Concur
Piston Prop	NAVI, NA145/154 Navion	GASEPV	Concur

AEE reviewed the user-defined taxi operation profiles and the estimate of the thrust values for taxi operations as well as the user-defined F-16 profiles. The proposed non-standard modeling approaches for taxi operations seem reasonable and the steps taken to demonstrate the benefit of the non-standard modeling approaches are consistent with the AEE process. AEE approves the use of these proposed modeling approaches for modeling the taxiways and ramp activity.

With respect to the F-16 user-defined profiles, because of the significant noise contribution of military aircraft operation at BTV, AEE recommends a hybrid modeling approach instead of modeling the F-16s using user-defined profiles in INM. In this approach, the civil aircraft would be modeled in the INM and the military aircraft in the NOISEMAP. The resulting noise contours would then be merged using appropriate methods.

Please understand that this approval is limited to the Part 150 noise study for BTV. Any additional projects or non-standard aircraft input will require separate approval.

Sincerely,

Rebecca Cointin

Rebecca Cointin, Manager
AEE/Noise Division

cc: Jim Byers, APP-400

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Subject:	Burlington International Airport Noise Exposure Map Update - Requested Review and Approval of Integrated Noise Model Non-Standard Inputs
Prepared for:	Richard Doucette, FAA
Prepared by:	David Crandall
Date:	September 11, 2014
Reference:	HMMH Job #305660

1. INTRODUCTION

Harris Miller Miller & Hanson Inc. (HMMH) and Campbell & Paris Engineers P.C. are assisting the City of Burlington, Vermont prepare a 14 CFR Part 150 Noise Exposure Map Update for the Burlington International Airport (BTV). We are using the Integrated Noise Model (INM) Version 7.0d for all aircraft noise modeling. Consistent with Federal Aviation Administration (FAA) policies and procedures, we submit this request for approval for the following:

- Non-standard substitutions – This airport has operations for aircraft that are not included in the INM. This attachment covers civil aircraft.
- Taxiways and ramp activity – The airport has several residential neighborhoods near the airports taxiways and ramp areas. These areas were identified as community concerns in the airport's original Part 150 study (circa 1988-1989) and were modeled for the 2006 and for the 2011 NEM.
- F-16 user-defined profiles – The proposed F-16 profiles were developed from the 2013 United States Air Force F-35A Operational Basing Final Environmental Impact Statement (EIS) NOISEMAP modeling data for operations specifically at BTV.

In accordance with FAA policy, we expect that this request will be reviewed by the FAA's Airport Planning and Environmental Division (APP-400) and Office of Environment and Energy Noise Division (AEE-100). This non-standard input request is similar to the previously approved memo July 2006 for the 2006 and 2011 NEMs, though updated for more recent information. We will be happy to respond to questions regarding this request via phone or email.

Thank you for your assistance in this matter.

Sincerely yours,

HARRIS MILLER MILLER & HANSON INC.

David A. Crandall
Principal Consultant
dcrandall@hmmh.com

Attachment A: INM Civilian Aircraft Substitutions
Attachment B: INM Aircraft Taxi Profiles
Attachment C: F-16 user-defined Profiles
Attachment D: INM Study for Profiles

ATTACHMENT A

INM CIVILIAN AIRCRAFT SUBSTITUTIONS

The aircraft types listed in Table 1-1 are included in the Noise Exposure Map (NEM) Update and require a FAA approved substitution. In each case, we have identified a substitute for each aircraft using the INM 7.0d database. The bases for our recommendations are discussed following Table 1-1.

Table 1-1. Aircraft Types and Recommended INM Substitutions

#	Group	Aircraft Code	Represented Aircraft Models	Recommended INM Substitution
1.1	Jet	E50P	Embraer EMB-500 Phenom 100	CNA510[1,2]
1.2	Jet	E55P	Embraer EMB-505 Phenom 300	CNA560E[1,2]
1.3	Jet	H25C	BAe/Raytheon Hawker 1000	LEAR35[1,2]
1.4	Jet	LJ40	Learjet 40	LEAR35[1,2]
1.5	Turbo Prop	B350	Beech Super King Air 350	DO228[1,2]
1.6	Turbo Prop	P46T	Piper Malibu Meridian	CNA208[1,2]
1.7	Turbo Prop	TBM8	Socata TBM-850	CNA208[1,2]
1.8	Piston Prop	BE36	Beechcraft 36 Bonanza	CNA206[1,2]
1.9	Piston Prop	COL4	Lancair LC-41 Columbia 400	GASEPV[1,2]
	Piston Prop	DA40	Diamond 40	GASEPV[1,2]
	Piston Prop	NAVI	NA145/154 Navion	GASEPV

Notes:
1 FAA approved type for PSM NEM
2 FAA approved type for BWI NEM

This discussion refers, in some cases, to recent guidance FAA provided HMMH for noise studies including:

- Portsmouth International Airport (PSM) Noise Exposure Map (NEM) Update with INM 7.0d, HMMH Project No. 305310.000, FAA approval issued January 28, 2014.
- Baltimore-Washington International Thurgood Marshall Airport (BWI) Noise Exposure Map (NEM) Update with INM 7.0d, HMMH Project No. 305160.011, FAA approval issued October 1, 2013.

We can provide copies of these past submission and approval documents upon request.

1.1 Embraer EMB-500 Phenom 100 – E50P

We propose to model EMB-500 Phenom 100 operations with INM type CNA510 as most recently approved for the PSM NEM, HMMH Job # 305310.000.

Table 1-2 presents certification data for the EMB-500 and similar types that are available in INM. The Cessna Mustang, identified in INM 7.0d as CNA510, has the same series of engines as the EMB-500 and provides the closest match in certification levels.

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Table 1-2. Noise Certification Data for Embraer EMB 500 Phenom 100, Cessna Citation Mustang, Eclipse 500 and Cessna Bravo

Manufacturer	Type Designation	MTOW (lb)	MLW (lb)	Engine Manufacturer / Type Designator	Noise Level (EPN dB)		
					Fly Over	Lateral	Approach
Embraer	EMB 500	10,472	9,766	Pratt & Whitney Canada / PW617F-E	70.4	81.4	86.1
Cessna Aircraft Company	Cessna 510 / Citation Mustang	8,644	8,001	Pratt & Whitney Canada / PW615F-A	73.9	85.0	86.0
Eclipse Aerospace, Inc.	EA500	6,001	5,600	Pratt & Whitney Canada / PW610F-A	69.2	78.9	81.9
Cessna Aircraft Company	Model 550 / Bravo	14,800	13,499	Pratt & Whitney Canada / PW530A	73.7	85.2	91.2
Notes: All weights converted from certification data from kilograms to pounds "TCDSN Jets (080711).xls", at http://easa.europa.eu/ws_prod/c/c_tc_noise.php on January 4, 2010.							

1.2 Embraer EMB-505 Phenom 300 – E55P

We propose to model EMB-505 Phenom 300 operations with INM type CNA560E as most recently approved for the PSM NEM, HMMH Job # 305310.000.

Both the EMB-505 Phenom 300 and the CNA560E have Pratt & Whitney 535 series engines.[1]

1.3 BAe/Raytheon Hawker-125-1000 – H25C

We propose to model H25C operations with INM type LEAR35 as most recently approved for the PSM NEM, HMMH Job # 305310.000.

Table 1-3 compares the Hawker 125-1000 with the Hawker 800 and LEAR35 aircraft. Based on the comparison, the LEAR35 appears to be a good match.

Table 1-3 Noise Certification Data from BAe-125-1000 and -800 and LEAR35

Manufacturer	Type Designation	MTOW (lb)	MLW (lb)	Engine Manufacturer / Type Designator	Noise Level (EPNdB)		
					Takeoff	Sideline	Approach
Raytheon	Hawker 125-1000	31,000	25,000	PW305	81.8	85.9	91.6
Raytheon	Hawker 125-800	27,400	23,350	TFE731-5R-1H	80.9	87.2	96.5
Learjet	LEAR 35 A	18,000	14,300	TFE731-2-2B	83.6	87.4	91.3
Source: FAA AC 36-1H, at http://www.faa.gov/about/office_org/headquarters_offices/AEP/noise_levels/media/uscert_appendix_01_030210.xls							

[1] Comparison of INM 7.0d CNA560E Aircraft data and Embraer's website http://www.embraerexecutivejets.com/en-US/jets/phenom-300/Pages/technology.aspx

1.4 Learjet 40 – LJ40

We propose to model LJ40 operations with INM type LEAR35 as most recently approved for the PSM NEM, HMMH Job # 305310.000.

The LJ40 is a derivative of the Learjet 45 (LJ45) with a shorter fuselage. The LJ40 and LJ45 engines are both versions of the Honeywell TFE731-20AR. In INM 7.0d, the LJ45 is mapped to the substitution aircraft, LEAR35.

1.5 Beech Super King Air 350 – B350

We propose to model the B350 operations with INM type DO228 as most recently approved for the PSM NEM, HMMH Job # 305310.000.

1.6 Piper Malibu Meridian – P46T

We propose to model the P46T operations with INM type CNA208 as most recently recommended/approved for the PSM NEM, HMMH Job # 305310.000.

1.7 Socata TBM-850 – TBM8

We propose to model the TBM8 operations with INM type CNA208 as most recently approved for the PSM NEM, HMMH Job # 305310.000.

1.8 Beechcraft Bonanza 36 - BE36

We propose to model BE36 operations with INM type CNA206 as most recently approved for the PSM NEM, HMMH Job # 305310.000.

The BE36 Beechcraft Bonanza is a single-engine propeller aircraft that is similar in weight and engines with the Cessna 206 as shown in Table 1-4.

Table 1-4 Estimated Maximum A-weighted Sound Levels for Cessna 206, Beechcraft 36

Manufacturer	Type Designation	MTOW (lb)	MLW (lb)	Engine Manufacturer / Type Designator	Noise Level (Est Lmax dB)	
					Takeoff	Approach
Cessna	206	3,300	3,300	IO-520-A	70.2	63.5
Beech	A36	3,600	3,600	IO-520-BA	71.0	64.0
Source: FAA AC 36-3H, as posted on http://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/22945, as viewed May 30, 2013						

1.9 Single Engine Piston with Variable Pitch Propeller

We propose to model the following aircraft with INM type GASEPV:

- Lancair Columbia 400 –COL4 (as approved for the PSM NEM)
- Diamond – DA40 (as approved for the PSM NEM)
- North American 154 – NAVI

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ATTACHMENT B

INM AIRCRAFT TAXI PROFILES

1. BACKGROUND

Harris Miller Miller & Hanson Inc. (HMMH) and Campbell & Paris Engineers P.C. are assisting the City of Burlington, Vermont with a 14 CFR Part 150 NEM Update for the Burlington International Airport (BTV). Noise for a base year and for a future year is to be computed using INM 7.0d. There are residences in close proximity to the taxiways. Taxiway noise has been mentioned in several prior Part 150 documents since the 1989 Noise Compatibility Program. Modeling of taxiway noise was included in the 2006 Noise Exposure Map. The ground noise contribution from taxi operations must be considered in the noise model to accurately represent the noise conditions at these nearby residences. HMMH requests approval to conduct a reasonable ground noise analysis without adversely affecting the project's cost or schedule constraints. This attachment and accompanying INM v7.0d study present the taxiway noise modelling inputs prepared by HMMH.

Our proposed modeling techniques are almost identical to the techniques submitted to, and approved for the Part 150 Noise Exposure Map Updates

- Burlington International Airport (HMMH Project 301320). Approval was provided in July 2006.
- Portsmouth International Airport (HMMH Project 305310). Approval was provided in January of 2014.

The proposed technique of modeling the aircraft operations on the taxiways with INM overflight profiles is consistent with the methodology described in section 9.8.7 of the INM v7.0 User Guide.

2. PROPOSED PROFILES

Several overflight profiles are used to represent the operations for the taxiways in this project, all of which are described below and found in and the accompanying INM v7.0d electronic files. These profiles include various stationary segments where appropriate. These stationary segments include:[2]

- 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[3])
- Two minute idle warm-up
- Seven minute idle for F-16 arming procedures
- Ninety second idle for F-16 dis-arming procedures
- One minute hold for crossing Runway 1/19 (HMMH experience)

[2] Data are consistent with the 2006 NEM taxiway modeling unless otherwise noted.

[3] 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

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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 INM overflight profiles cannot model 0 velocity profile segments, and the slow movement area represent multiple "average annual" positions at which individual aircraft may actually stop.

Each INM aircraft used in this study has up to twenty-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 INM 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 OP_MODE setting of A and an ALTITUDE of 10 ft[4]. 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[5]. 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 prof_pts.dbf file, as described in Table 2-1. 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 1.1.1.

Table 2-2 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.

[4] 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.
[5] When the aircraft thrust in the noise-power-distance curves is not expressed in pounds (as determined from the THRSET_TYP field in nois_grp.dbf and milnois_grp.dbf), the thrust is modeled using 10% of the highest thrust value in the noise-power-distance curves.

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Table 2-1 Profile Points for Taxi to Departure

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	PT_NUM	DISTANCE (ft)	ALTITUDE (ft)	SPEED (Knots)	THR_SET	OP_MODE
	V	[TX]	1	1	0	10	10.0	[IDLE]	A
	V	[TX]	1	2	[START]-50	10	10.0	[IDLE]	A
	V	[TX]	1	3	[START]	10	[AS]	[IDLE]	A
	V	[TX]	1	4	[END]-10	10	[AS]	[IDLE]	A
	V	[TX]	1	5	[END]	10	[AS]	[ACL]	A
	V	[TX]	1	6	[END]+50	10	10.0	[ACL]	A
	V	[TX]	1	7	[END]+60	10	10.0	[IDLE]	A
	V	[TX]	1	8	[S]	10	10.0	[IDLE]	A

Where,
[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 2-2 Profile Points for Taxi from Arrival

ACFT_ID	OP_TYPE	PROF_ID1	PROF_ID2	PT_NUM	DISTANCE (ft)	ALTITUDE (ft)	SPEED (Knots)	THR_SET	OP_MODE
	V	[TX]	1	1	0	10	10.0	[IDLE]	A
	V	[TX]	1	2	[S]	10	10.0	[IDLE]	A

Where,
[TX] = Name of the taxi way track
[S] = The length of the taxiway track.
[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

1.1.1 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[6]. The result of the analysis is that

[6] Estimated by comparison of static thrust and maximum take-off weights for various INM types used in this study, as provided in the INM 7.0d aircraft.dbf file.

approximately 30% static thrust is required to accelerate the aircraft from 0 to 10 knots (16.88 ft/s) within 50 ft. The derivation is presented below.

Equation 1 represents one of the equations of motion and relates acceleration and distance to a change in velocity.	
$\text{Velocity}_{\text{Final}}^2 = \text{Velocity}_{\text{Initial}}^2 + 2*\text{Acceleration}*\text{Distance}$	(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.	
$\text{Acceleration}_{\text{Desired}} = (16.88\text{ ft/s})^2/(2*50\text{ ft}) = 2.85\text{ ft/s}^2$	(2)
Equation 3 represents the relationship between force, mass and acceleration (Newton's Second Law of Motion).	
Force = Mass*Acceleration	(3)
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)	
$\text{Weight} = \text{Mass}*32.17\text{ ft/s}^2$	(4)
Equation 5 is based on Equation 3 and relates the desired thrust to the desired acceleration.	
$\text{Thrust}_{\text{Desired}} = \text{Mass} * \text{Acceleration}_{\text{Desired}}$	(5)
Equation 6 replaces the mass in Equation 5 with the relationship presented in equation 4.	
$\text{Thrust}_{\text{Desired}} = (\text{Weight}/32.17\text{ ft/s}^2) * \text{Acceleration}_{\text{Desired}}$	(6)
Equation 7 presents the observed relationship between the static thrust and aircraft weight, based on comparison of relevant aircraft in the INM 7.0d aircraft.dbf file.	
$\text{Thrust}_{\text{Static}} = 0.30*\text{Weight}$	(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.	
$\text{Thrust}_{\text{Desired}} = ((\text{Thrust}_{\text{Static}}/0.30)/32.17\text{ ft/s}^2) * \text{Acceleration}_{\text{Desired}}$	(8)
$\text{Thrust}_{\text{Desired}} = ((\text{Thrust}_{\text{Static}}/0.30)/32.17\text{ ft/s}^2) * 2.85\text{ ft/s}^2$	
$\text{Thrust}_{\text{Desired}} = 0.30*\text{Thrust}_{\text{Static}}$	

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3. EFFECT ON DNL CONTOURS

DNL contours for the draft NEM DNL contours, taxi DNL contours, and draft NEM DNL contours with taxi noise are presented in the figures on the following pages.

The FAA airport diagram is shown as Figure 3-1 for reference. A taxiway diagram representing the current taxiways is presented in Figure 3-2, and a diagram representing the future taxiways with the Taxiway G extension is presented in Figure 3-3.

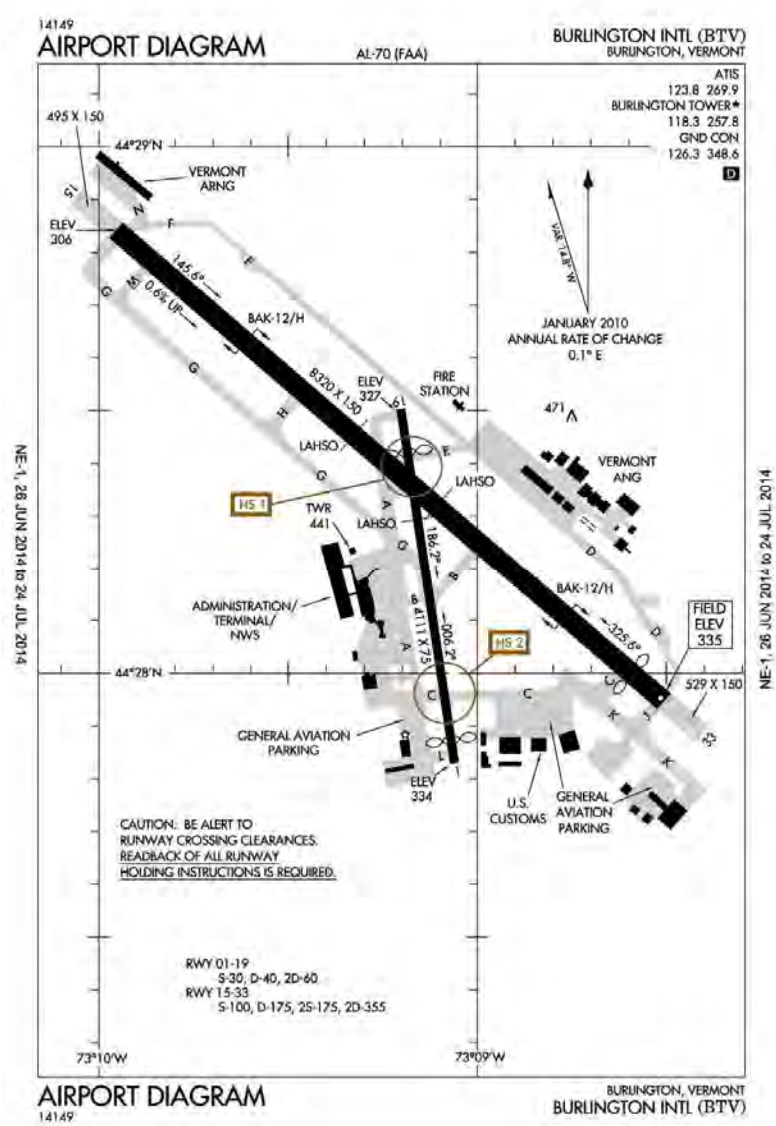

Figure 3-1 FAA Airport Diagram

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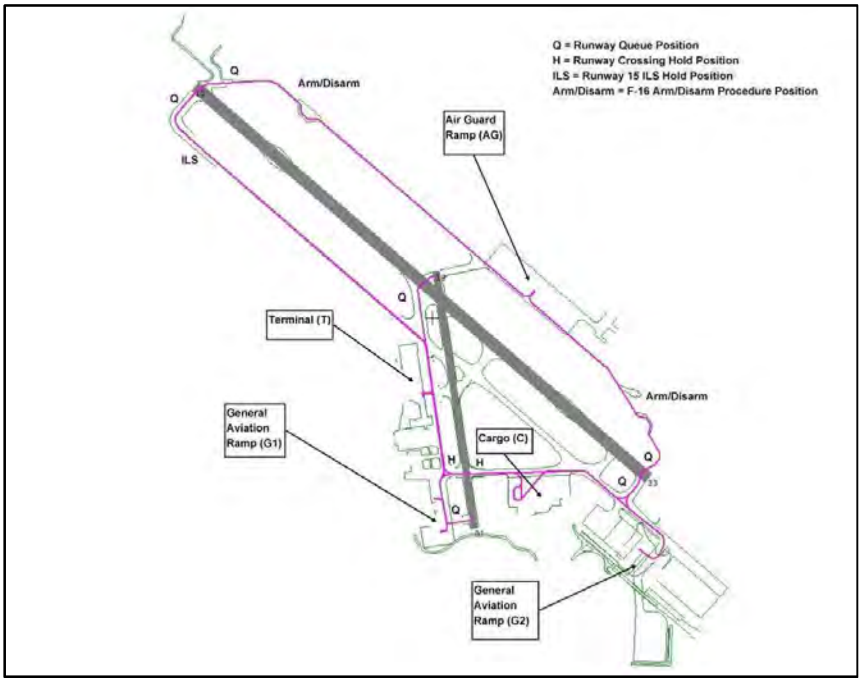

Figure 3-2 Current Taxiway Modeling Paths and Hold Areas

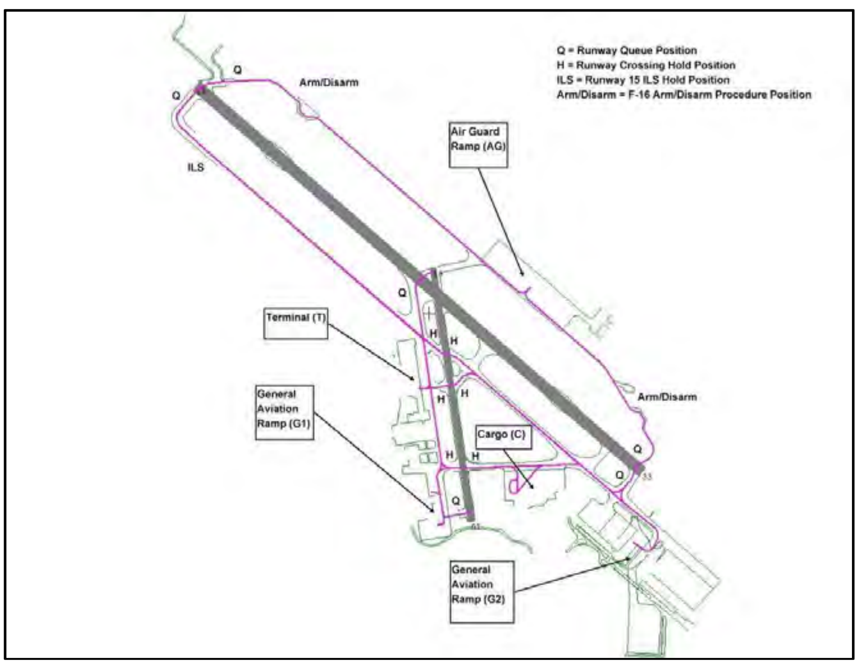

Figure 3-3 Draft Future Taxiway Modeling Paths and Hold Areas

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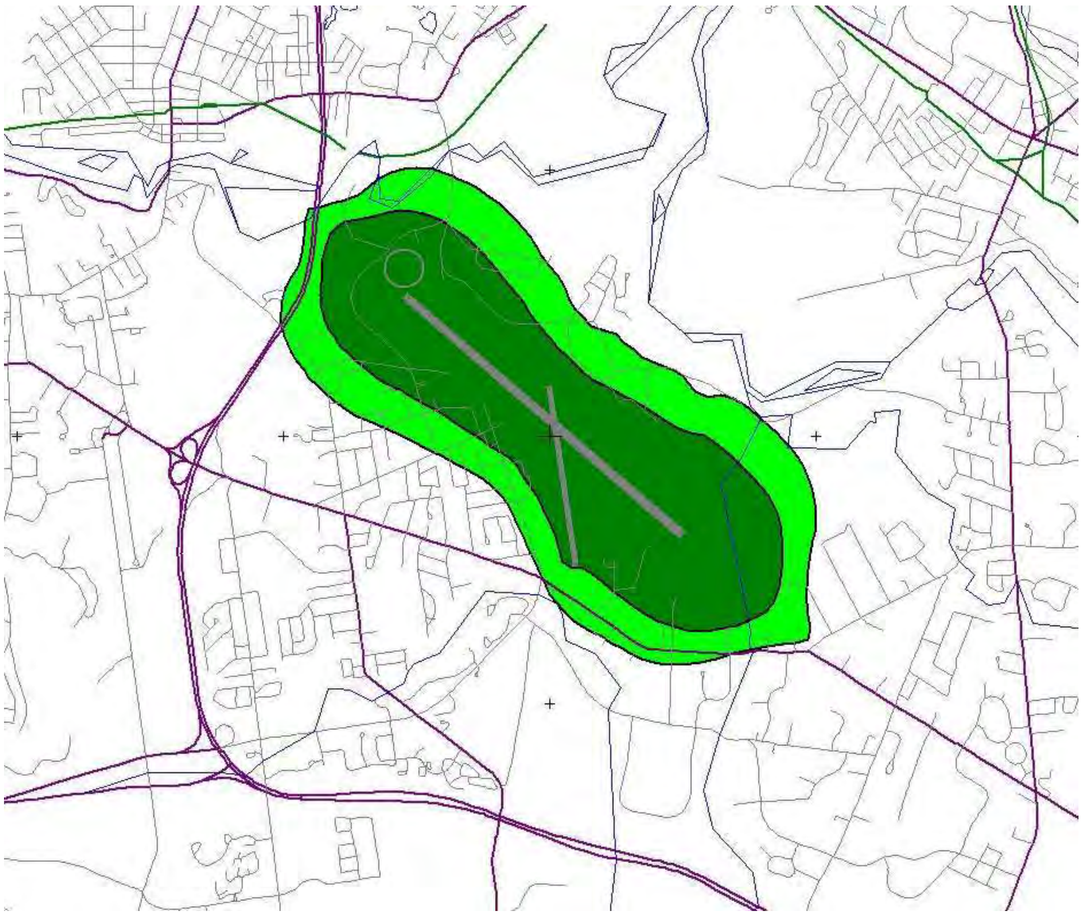

Figure 3-4 Draft 65 dB and 70 dB NEM DNL Contours no Taxiway Modeling

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Figure 3-5 Draft 65 and 70 dB DNL Contours for Current Taxiway only Operations (pink lines show taxi tracks)

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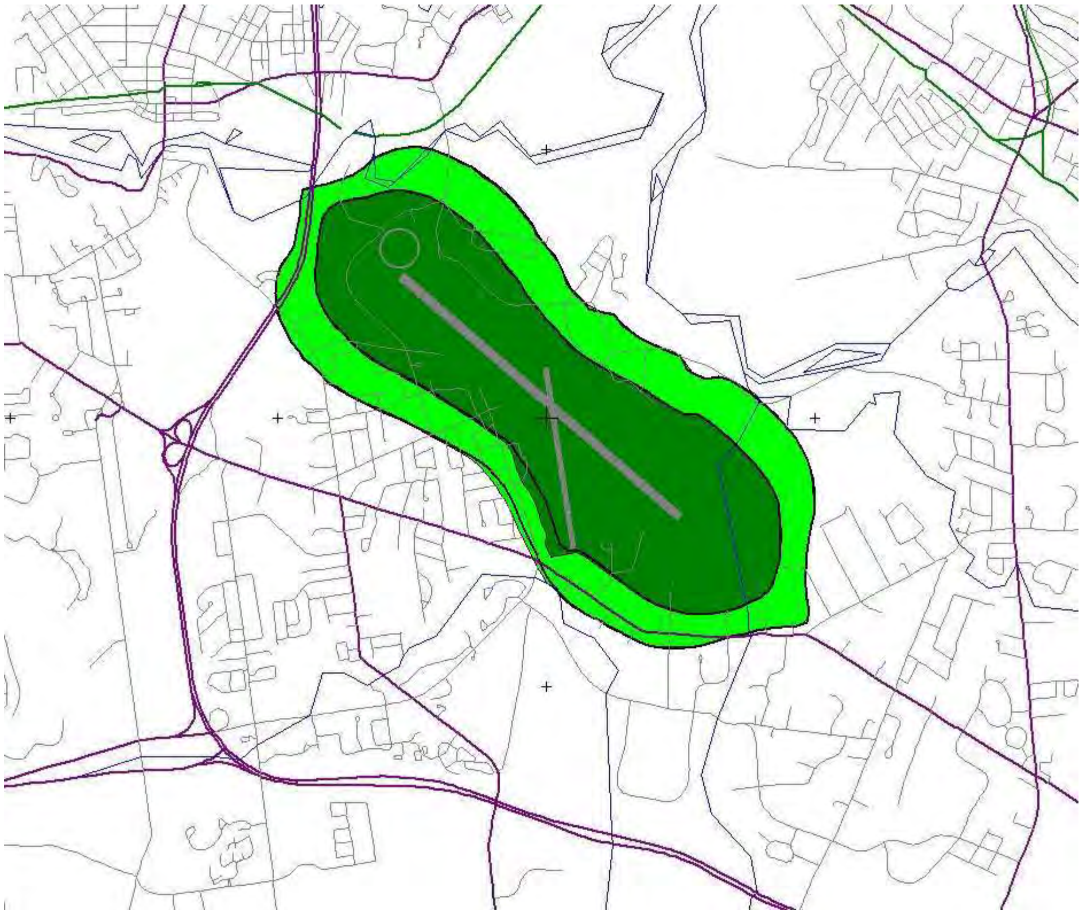

Figure 3-6 Draft 65 dB and 70 dB NEM DNL Contours with Current Taxiway Operations (black line shows contours without the inclusion of taxiway noise, same as Figure 3-4)

ATTACHMENT C

F-16 PROFILES

1. BACKGROUND

HMMH is assisting the City of Burlington, VT with a Part 150 NEM update. The profiles described in this attachment will be used for the base year and forecast year modeling in INM 7.0d. The Vermont Air National Guard 158th Fighter Wing (VTANG) F-16 aircraft conduct a large number of the military operations at BTV. This aircraft is represented by the F16GE type in INM 7.0d.

2. STATEMENT OF BENEFIT

The last NEM discussed that the F-16s were a major contributor to the BTV airport noise environment[7]. The USAF recently completed an EIS in 2013.[8] During our discussions with VTANG staff for this NEM update, and requests for profiles, they recommended that the efforts used to develop noise modeling for the EIS were still relevant. The FAA is listed in the EIS as a cooperating agency and FAA staff assisted with us receiving a copy of the BASEOP/NOISEMAP files used in the EIS.

The NOISEMAP profiles developed for BTV in the EIS were translated to INM for the F16GE. Before starting, we verified that the INM 7.0d NPD curve was essentially the same as the curves used by NOISEMAP.[9] Additional information regarding the NOISEMAP to INM conversion process is presented Section 4.

3. ANALYSIS DEMONSTRATING BENEFIT

The following tables compare the Sound Exposure Level (SEL) for the INM Standard and User Defined profiles at a series of points along runway centerline spaced at 0.5 nmi increments. Negative valued gridpoints are used for arrivals approaching the runway. Zero nmi is located at the runway end. Positive value gridpoints at 0.5 nmi and 1.0 nmi are on the runway. The user defined arrival profiles are compared to either INM standard NOISEMAP 1 or NOISEMAP 2, depending which is most similar.

[7] City of Burlington, Burlington International Airport 14 CFR Part 150 Update 2006 and 2011 Noise Exposure Maps, August 2006.
[8] 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
[9] Variations of 1/10th dB were found at same intervals.

3.1 Arrival profiles

Table 3-1 Comparison of F16GE INM NOISEMAP 1 and NOISEMAP 2 Arrival Noise Levels

Grid Points (nmi)	SEL (dB) INM Standard Profile NOISEMAP 1	INM Standard Profile NOISEMAP 2	Difference
-10.0	79.1	72.7	-6.4
-9.5	79.3	73.4	-5.9
-9.0	79.4	74.3	-5.1
-8.5	79.4	75.2	-4.2
-8.0	79.4	76.2	-3.2
-7.5	79.4	76.8	-2.6
-7.0	79.4	77.3	-2.1
-6.5	79.5	77.8	-1.7
-6.0	79.6	78.3	-1.3
-5.5	79.6	78.9	-0.7
-5.0	79.6	79.6	0.0
-4.5	79.6	80.3	0.7
-4.0	79.6	81.3	1.7
-3.5	79.8	82.8	3.0
-3.0	80.3	84.0	3.7
-2.5	81.2	85.3	4.1
-2.0	83.1	86.9	3.8
-1.5	86.3	88.9	2.6
-1.0	92.3	91.6	-0.7
-0.5	96.2	95.5	-0.7
0.0	104.6	104.6	0.0
0.5	54.9	55.2	0.3
1.0	47.5	46.9	-0.6
Note: The INM STANDARD profile is identical to NOISEMAP 1			

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Table 3-2 Comparison of F16GE INM NOISEMAP 2 and User Defined USAF_A1 Arrival Noise Levels

Grid Points (nmi)	SEL (dB)		
	INM Standard Profile NOISEMAP 2	User Defined Profile USAF_A1	Difference
-10.0	72.7	65.8	-6.9
-9.5	73.4	66.3	-7.1
-9.0	74.3	66.9	-7.4
-8.5	75.2	67.5	-7.7
-8.0	76.2	68.1	-8.1
-7.5	76.8	68.8	-8.0
-7.0	77.3	69.5	-7.8
-6.5	77.8	70.3	-7.5
-6.0	78.3	71.1	-7.2
-5.5	78.9	71.9	-7.0
-5.0	79.6	73.0	-6.6
-4.5	80.3	74.0	-6.3
-4.0	81.3	75.1	-6.2
-3.5	82.8	76.4	-6.4
-3.0	84.0	77.9	-6.1
-2.5	85.3	79.4	-5.9
-2.0	86.9	81.2	-5.7
-1.5	88.9	83.5	-5.4
-1.0	91.6	86.4	-5.2
-0.5	95.5	90.6	-4.9
0.0	104.6	99.6	-5.0
0.5	55.2	50.3	-4.9
1.0	46.9	42.0	-4.9

Table 3-3 Comparison of F16GE INM NOISEMAP 2 and User Defined USAF_A2 Arrival Noise Levels

Grid Points (nmi)	SEL (dB)		
	INM Standard Profile NOISEMAP 2	User Defined Profile USAF_A2	Difference
-10.0	72.7	55.7	-17.0
-9.5	73.4	56.3	-17.1
-9.0	74.3	57.3	-17.0
-8.5	75.2	58.4	-16.8
-8.0	76.2	59.6	-16.6
-7.5	76.8	61.0	-15.8
-7.0	77.3	62.6	-14.7
-6.5	77.8	64.5	-13.3
-6.0	78.3	66.8	-11.5
-5.5	78.9	69.8	-9.1
-5.0	79.6	72.8	-6.8
-4.5	80.3	74.0	-6.3
-4.0	81.3	75.1	-6.2
-3.5	82.8	76.4	-6.4
-3.0	84.0	77.9	-6.1
-2.5	85.3	79.4	-5.9
-2.0	86.9	81.2	-5.7
-1.5	88.9	83.5	-5.4
-1.0	91.6	86.4	-5.2
-0.5	95.5	90.6	-4.9
0.0	104.6	99.6	-5.0
0.5	55.2	50.3	-4.9
1.0	46.9	42.0	-4.9

Table 3-4 Comparison of F16GE INM NOISEMAP 1 and User Defined USAF_A3 Arrival Noise Levels

Grid Points (nmi)	SEL (dB) INM Standard Profile NOISEMAP 1	User Defined Profile USAF_A3	Difference
-10.0	79.1	46.3	-32.8
-9.5	79.3	52.3	-27.0
-9.0	79.4	53.1	-26.3
-8.5	79.4	48.9	-30.5
-8.0	79.4	49.3	-30.1
-7.5	79.4	49.6	-29.8
-7.0	79.4	49.8	-29.6
-6.5	79.5	50.2	-29.3
-6.0	79.6	51.2	-28.4
-5.5	79.6	52.4	-27.2
-5.0	79.6	53.0	-26.6
-4.5	79.6	54.3	-25.3
-4.0	79.6	56.1	-23.5
-3.5	79.8	58.2	-21.6
-3.0	80.3	60.5	-19.8
-2.5	81.2	63.2	-18.0
-2.0	83.1	66.6	-16.5
-1.5	86.3	71.1	-15.2
-1.0	92.3	77.8	-14.5
-0.5	96.2	83.6	-12.6
0.0	104.6	98.5	-6.1
0.5	54.9	50.9	-4.0
1.0	47.5	41.3	-6.2

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Table 3-5 Comparison of F16GE INM NOISEMAP 1 and User Defined USAF_A4 Arrival Noise Levels

Grid Points (nmi)	SEL (dB)		
	INM Standard Profile NOISEMAP 1	User Defined Profile USAF_A4	Difference
-10.0	79.1	51.1	-28.0
-9.5	79.3	51.6	-27.7
-9.0	79.4	52.1	-27.3
-8.5	79.4	52.8	-26.6
-8.0	79.4	53.6	-25.8
-7.5	79.4	54.4	-25.0
-7.0	79.4	55.5	-23.9
-6.5	79.5	56.6	-22.9
-6.0	79.6	57.9	-21.7
-5.5	79.6	59.2	-20.4
-5.0	79.6	60.5	-19.1
-4.5	79.6	61.8	-17.8
-4.0	79.6	63.1	-16.5
-3.5	79.8	64.5	-15.3
-3.0	80.3	66.1	-14.2
-2.5	81.2	68.1	-13.1
-2.0	83.1	70.3	-12.8
-1.5	86.3	73.0	-13.3
-1.0	92.3	76.6	-15.7
-0.5	96.2	81.8	-14.4
0.0	104.6	98.2	-6.4
0.5	54.9	49.6	-5.3
1.0	47.5	38.6	-8.9

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Table 3-6 Comparison of F16GE INM NOISEMAP 1 and User Defined USAF_A5 Arrival Noise Levels

Grid Points (nmi)	SEL (dB)		
	INM Standard Profile NOISEMAP 1	User Defined Profile USAF_A5	Difference
-10.0	79.1	60.7	-18.4
-9.5	79.3	61.2	-18.1
-9.0	79.4	61.5	-17.9
-8.5	79.4	61.8	-17.6
-8.0	79.4	62.1	-17.3
-7.5	79.4	62.4	-17.0
-7.0	79.4	62.7	-16.7
-6.5	79.5	62.9	-16.6
-6.0	79.6	63.2	-16.4
-5.5	79.6	63.6	-16.0
-5.0	79.6	64.6	-15.0
-4.5	79.6	66.1	-13.5
-4.0	79.6	68.3	-11.3
-3.5	79.8	70.9	-8.9
-3.0	80.3	73.1	-7.2
-2.5	81.2	74.1	-7.1
-2.0	83.1	75.2	-7.9
-1.5	86.3	76.6	-9.7
-1.0	92.3	79.9	-12.4
-0.5	96.2	85.3	-10.9
0.0	104.6	99.7	-4.9
0.5	54.9	51.8	-3.1
1.0	47.5	42.4	-5.1

Table 3-7 Comparison of F16GE INM NOISEMAP 2 and User Defined USAF_A6 Arrival Noise Levels

Grid Points (nmi)	SEL (dB)		
	INM Standard Profile NOISEMAP 2	User Defined Profile USAF_A6	Difference
-10.0	72.7	63.5	-9.2
-9.5	73.4	64.0	-9.4
-9.0	74.3	64.6	-9.7
-8.5	75.2	65.4	-9.8
-8.0	76.2	66.4	-9.8
-7.5	76.8	67.3	-9.5
-7.0	77.3	68.2	-9.1
-6.5	77.8	69.1	-8.7
-6.0	78.3	70.0	-8.3
-5.5	78.9	71.0	-7.9
-5.0	79.6	72.0	-7.6
-4.5	80.3	73.1	-7.2
-4.0	81.3	74.3	-7.0
-3.5	82.8	75.5	-7.3
-3.0	84.0	76.9	-7.1
-2.5	85.3	78.4	-6.9
-2.0	86.9	80.3	-6.6
-1.5	88.9	82.6	-6.3
-1.0	91.6	85.6	-6.0
-0.5	95.5	90.1	-5.4
0.0	104.6	99.7	-4.9
0.5	55.2	50.7	-4.5
1.0	46.9	42.1	-4.8

Table 3-8 Comparison of F16GE INM NOISEMAP 1 and User Defined USAF_A7 Arrival Noise Levels

Grid Points (nmi)	SEL (dB) INM Standard Profile NOISEMAP 1	SEL (dB) User Defined Profile USAF_A7	SEL (dB) Difference
-10.0	79.1	58.5	-20.6
-9.5	79.3	60.0	-19.3
-9.0	79.4	61.9	-17.5
-8.5	79.4	64.1	-15.3
-8.0	79.4	66.4	-13.0
-7.5	79.4	68.5	-10.9
-7.0	79.4	74.8	-4.6
-6.5	79.5	84.9	5.4
-6.0	79.6	92.7	13.1
-5.5	79.6	93.4	13.8
-5.0	79.6	93.8	14.2
-4.5	79.6	94.2	14.6
-4.0	79.6	94.6	15.0
-3.5	79.8	90.8	11.0
-3.0	80.3	86.4	6.1
-2.5	81.2	82.2	1.0
-2.0	83.1	80.3	-2.8
-1.5	86.3	82.6	-3.7
-1.0	92.3	85.6	-6.7
-0.5	96.2	90.1	-6.1
0.0	104.6	99.3	-5.3
0.5	54.9	50.0	-4.9
1.0	47.5	42.1	-5.4

3.2 Departure Profiles – Afterburner

Table 3-9 Comparison of F16GE INM Standard and User Defined Departure Noise Levels with afterburner

Grid Points (nmi)	SEL (dB) INM Standard Profile NOISEMAP 2	User Defined Profile USAF_DAB	Difference
0.0	151.4	151.5	0.1
0.5	140.0	143.1	3.1
1.0	130.1	134.2	4.1
1.5	121.2	128.8	7.6
2.0	102.2	103.1	0.9
2.5	100.4	96.2	-4.2
3.0	97.5	92.4	-5.1
3.5	94.9	89.8	-5.1
4.0	92.9	87.5	-5.4
4.5	91.3	85.5	-5.8
5.0	89.9	83.5	-6.4
5.5	88.6	81.2	-7.4
6.0	87.4	79.3	-8.1
6.5	86.4	78.5	-7.9
7.0	85.5	78.3	-7.2
7.5	84.6	78.2	-6.4
8.0	83.8	78.1	-5.7
8.5	83.0	78.0	-5.0
9.0	82.2	77.9	-4.3
9.5	81.4	77.9	-3.5
10.0	80.7	77.9	-2.8

3.3 Departure Profiles – Military Power (i.e. No Afterburner)

Table 3-10 Comparison of F16GE INM Standard and User Defined Departure Noise Levels without afterburner

Grid Points (nmi)	SEL (dB) INM Standard Profile NOISEMAP 1	User Defined Profile USAF_DMI	Difference
0.0	141.1	131.7	-9.4
0.5	129.9	124.4	-5.5
1.0	115.2	116.6	1.4
1.5	103.5	111.2	7.7
2.0	101.7	102.1	0.4
2.5	100.3	96.6	-3.7
3.0	97.5	92.8	-4.7
3.5	94.9	90.1	-4.8
4.0	92.9	87.8	-5.1
4.5	91.3	85.7	-5.6
5.0	89.8	83.6	-6.2
5.5	88.6	81.3	-7.3
6.0	87.4	79.3	-8.1
6.5	86.4	78.5	-7.9
7.0	85.5	78.3	-7.2
7.5	84.6	78.2	-6.4
8.0	83.8	78.1	-5.7
8.5	83.0	78.0	-5.0
9.0	82.2	77.9	-4.3
9.5	81.4	77.9	-3.5
10.0	80.7	77.9	-2.8

3.4 Touch and Go profiles

The Vermont Air National Guard conducts touch-and-goes at BTV with F-16’s. However, F-16 touch-and-go profiles are not included in the INM standard database. The NOISEMAP modeling data from the EIS includes F-16 touch-and-go profiles, so custom profiles were created in INM to match the NOISEMAP profiles as thoroughly as possible.

The following figures provide SEL contours of the proposed tough-and-go profiles. Each figure shows the 90, 95, and 100 dB SEL contour generated using annual average atmospheric data for BTV. The tracks assigned for each profile are consistent with the EIS modeling data.

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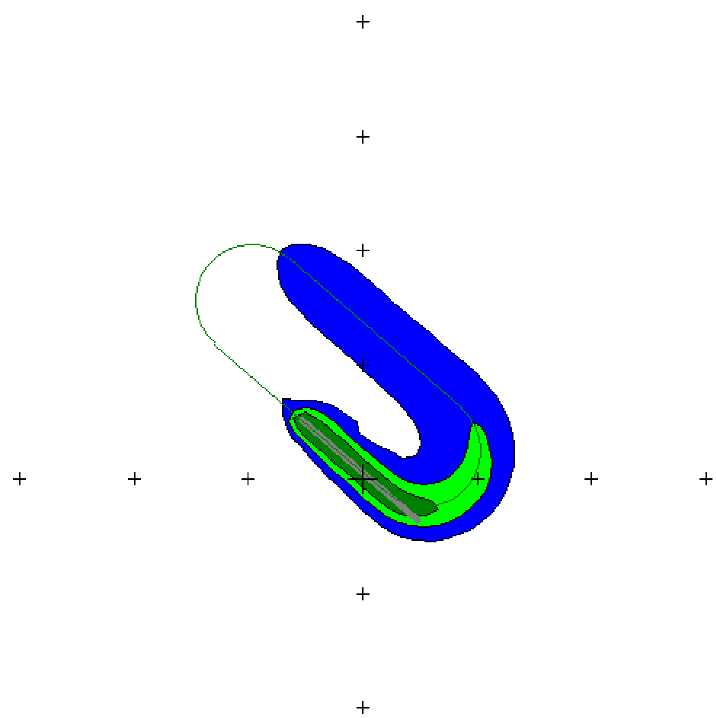

Figure 7 - 90, 95, 100 dB SEL Contours for Proposed F16GE USAF_C1 Touch and Go Profile on Runway 15 (1 nautical mile grid spacing)

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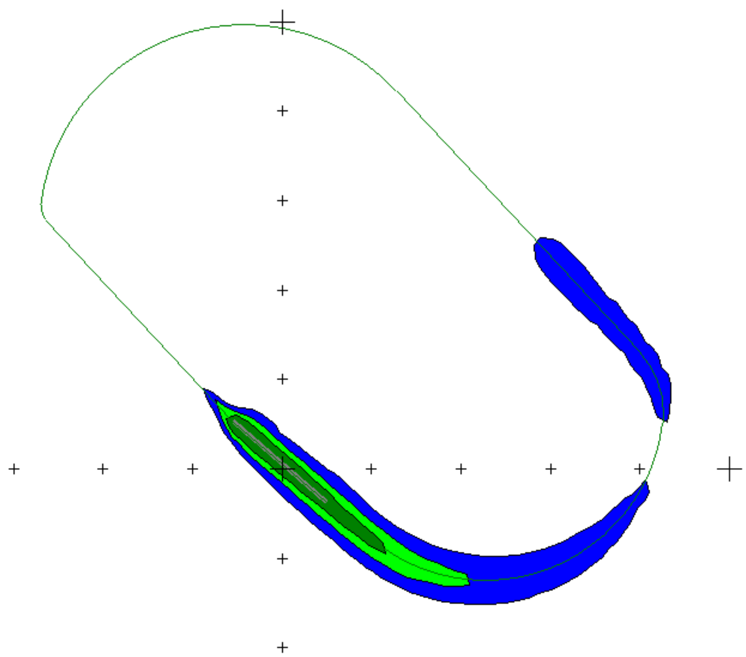

Figure 8 - 90, 95, 100 dB SEL Contours for Proposed F16GE USAF_C2 Touch and Go Profile on Runway 15 (1 nautical mile grid spacing)

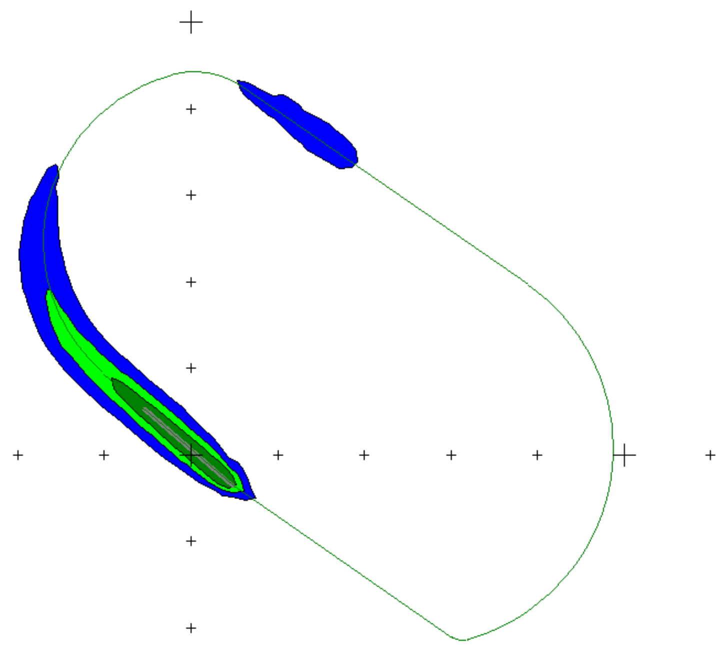

Figure 9 - 90, 95, 100 dB SEL Contours for Proposed F16GE USAF_C3 Touch and Go Profile on Runway 33 (1 nautical mile grid spacing)

4. CONCURRENCE ON AIRCRAFT PERFORMANCE

The F-16 profiles presented in this memorandum were developed from the United States Air Force F-35A Operational Basing Final Environmental Impact Statement (EIS) NOISEMAP modeling data.

We propose to use the EIS's NOISEMAP files as "Concurrence on Aircraft Performance" as requested by the FAA Profile Review Checklist (INM 7.0 User's Guide, Appendix B).

During the transformation of the profile data from NOISEMAP to INM, we used the following process.

- The United States Air Force provided the EIS BASEOPS file "BurlingtonAGS 20111103.baseops"
- HMMH opened the file in BASEOPS and used the "Reports" feature, to export report "Flight Profile Details". (HMMH applied a filter to only export the F16 aircraft as file "F-16 Profile Export.txt")
- The text file was parsed and translated into INM format. MSL altitudes were also translated into AGL altitudes.
- Afterburner thrust was set to THR_SET = 105, OP_MODE = X to be consistent with INM 7.0d milprof_pts.dbf and milnpd_curv.dbf (NOISE_ID = M04404). The EIS files used a

different designation for afterburner NPD curve, but we confirmed the afterburner NPD curve data were identical for the distances used in INM's milnpd_curv.dbf.

- For arrival profiles, a 954 ft. offset and extra landing roll points were then added. (NOISEMAP profiles end at 50 feet above the runway; the additional landing roll points are consistent with other INM default profiles that have been developed from NOISEMAP. We used a 3 deg glideslope from a 50 ft to develop 954 ft.)
- Added transition points to the profile so that speed is interpolated by INM rather than being interpreted as a step function. This represents acceleration/deceleration.
- Added transition points in some instances so that thrust is a step function in INM rather than being interpolated between thrust settings over long distances. These added points create a thrust profile like what NOISEMAP uses. NOISEMAP does not interpolate thrust.
- The provided NOISEMAP files did not provide weights of the individual aircraft operations. However, since the aircraft performance was provide in a profile points format, aircraft weight as already been considered and is not used dynamically in the noise calculations by NOISEMAP or INM. Weights are not presented as they do not affect aircraft with profile points. Therefore, weighs were assigned the same as INM default data for NOISEMAP profiles
    - Arrivals = 26,334 lb.
    - Departures = 35,995 lb.
    - Touch and Goes = 35,995 lb.

5. CERTIFICATION OF NEW PARAMETERS

All of the proposed profiles at defined in terms of profile points. We entered the profiles into INM (file milprof_pts.dbf) in terms of

- Altitudes are entered into INM as above field elevation in feet;
- Speed is true airspeed in knots; and
- The units of thrust-setting match the thrust-setting parameters used in the aircraft's associated NPD curves.

We certify that we have prepared the data to these requirements.

6. GRAPHICAL AND TABULAR COMPARISON

The following section provides tabular and graphical comparison of the profiles. The comparison of each user-defined profiles and INM standard profile is presented in the same order as Section 3.

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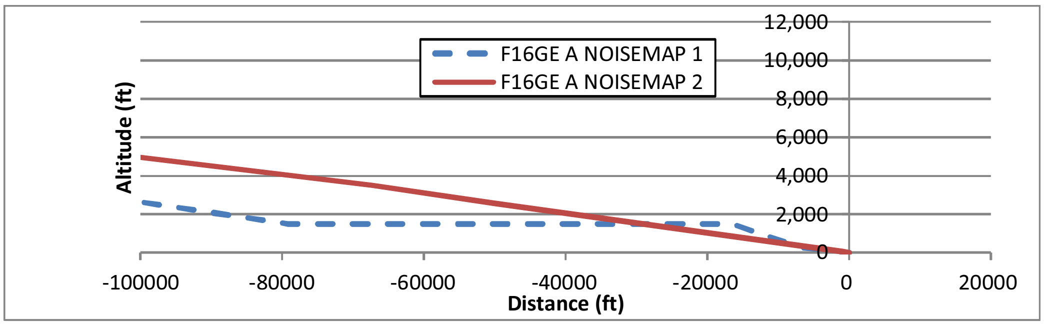
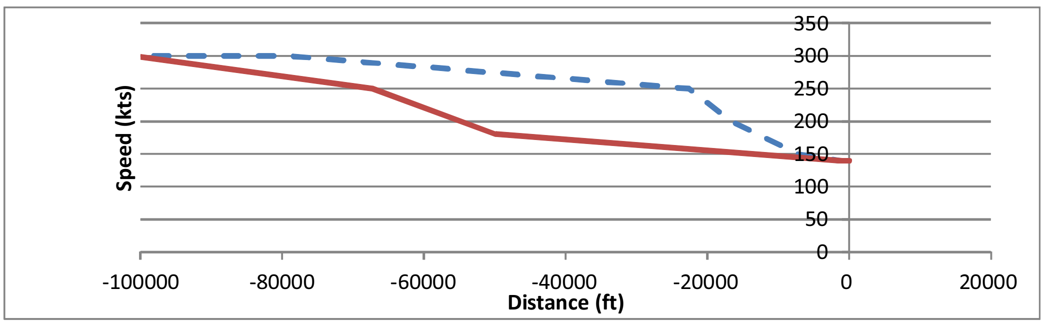
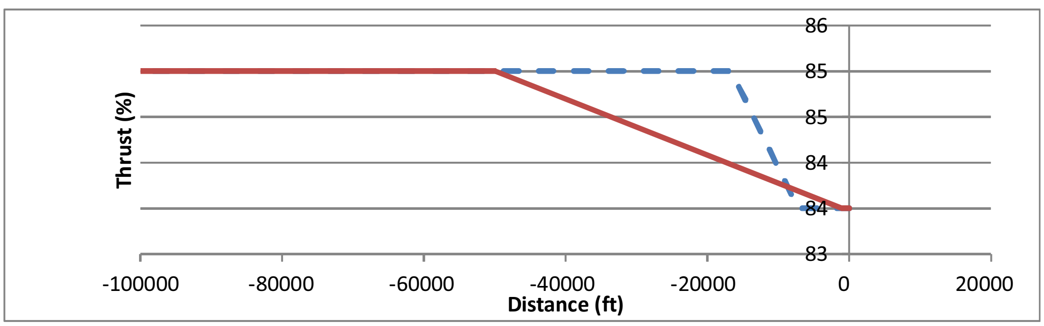
6.1 Arrival Profiles

INM Standard NOISEMAP 1				INM Standard NOISEMAP 2			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-251200	10000	300	85	-200977	10000	300	85
-151200	5000	300	85	-100977	5000	300	85
-101200	2700	300	85	-67277	3500	250	85
-79200	1500	300	85	-49827	2550	180	85
-22625	1500	250	85	-977	50	140	83.5
-16625	1500	200	85	0	0	140	83.5
-7200	300	150	83.5	10	0	140	83.5
-1200	50	140	83.5				
0	0	140	83.5				
10	0	140	83.5				







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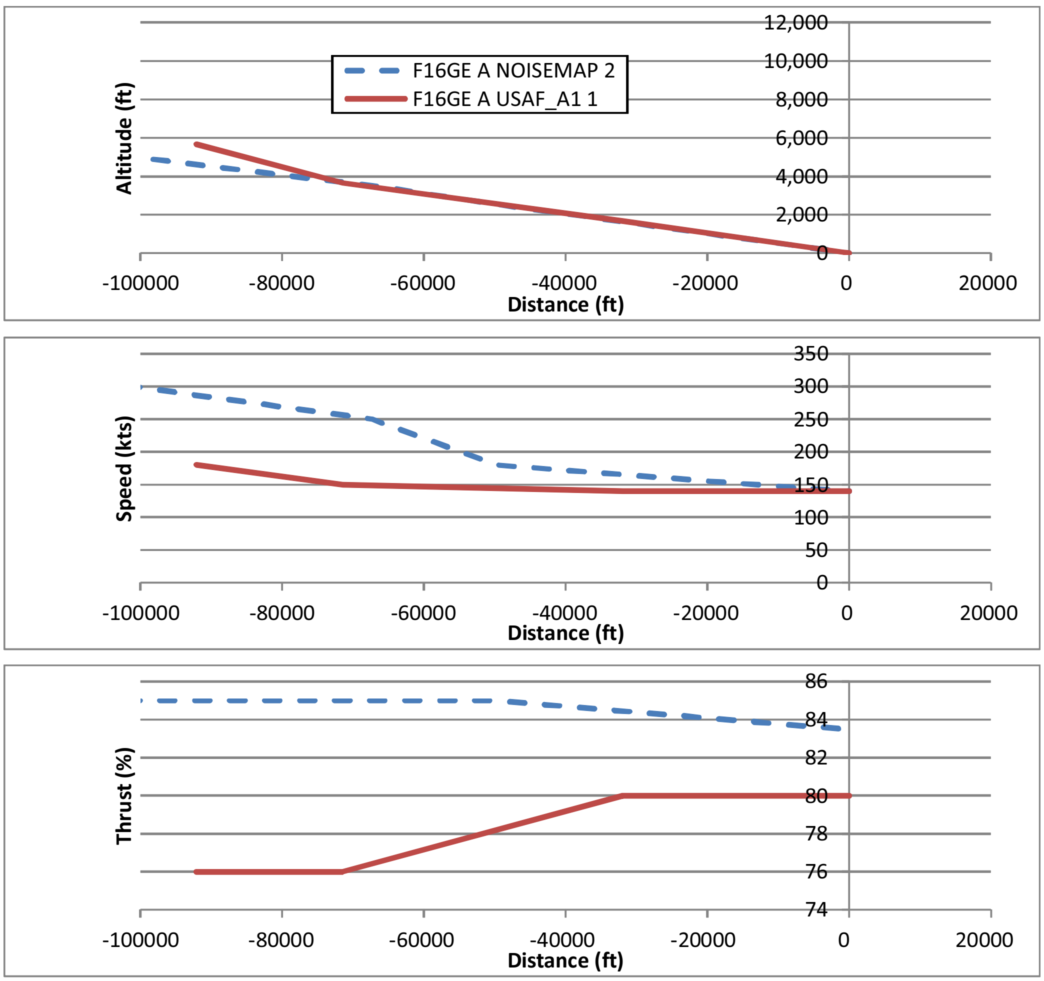
INM Standard NOISEMAP 2				User Defined USAF_A1			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-200977	10000	300	85	-92096	5665	180	76
-100977	5000	300	85	-71437	3665	150	76
-67277	3500	250	85	-31942	1665	140	80
-49827	2550	180	85	-954	50	140	80
-977	50	140	83.5	0	0	140	80
0	0	140	83.5	10	0	140	80
10	0	140	83.5				



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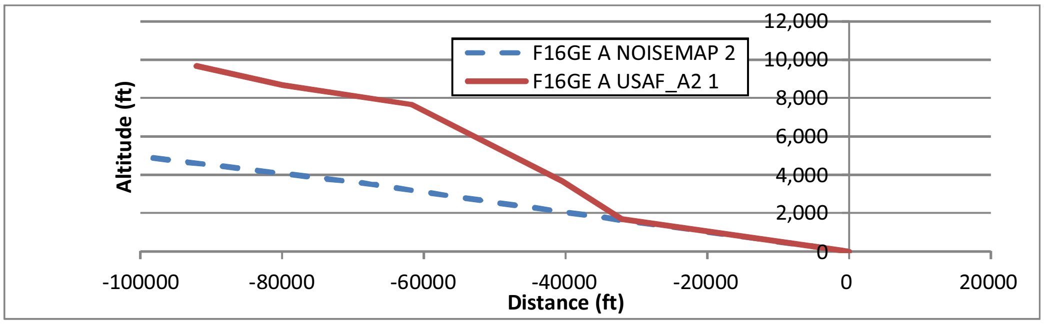
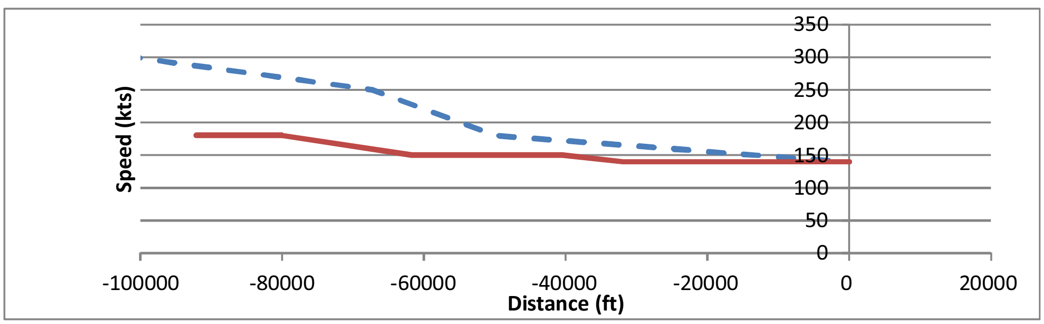
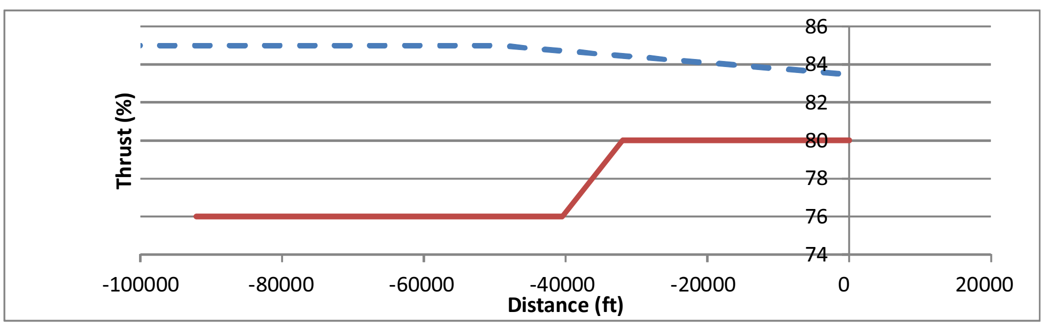
INM Standard NOISEMAP 2				User Defined USAF_A2			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-200977	10000	300	85	-92096	9665	180	76
-100977	5000	300	85	-79944	8665	180	76
-67277	3500	250	85	-61715	7665	150	76
-49827	2550	180	85	-40449	3665	150	76
-977	50	140	83.5	-31942	1665	140	80
0	0	140	83.5	-954	50	140	80
10	0	140	83.5	0	0	140	80
				10	0	140	80







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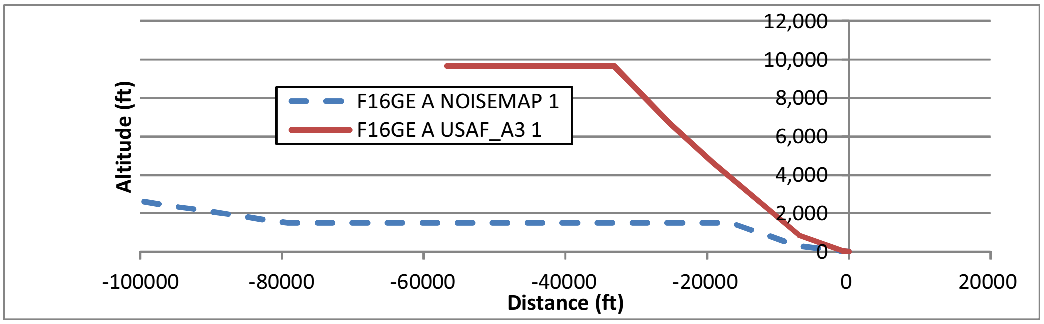
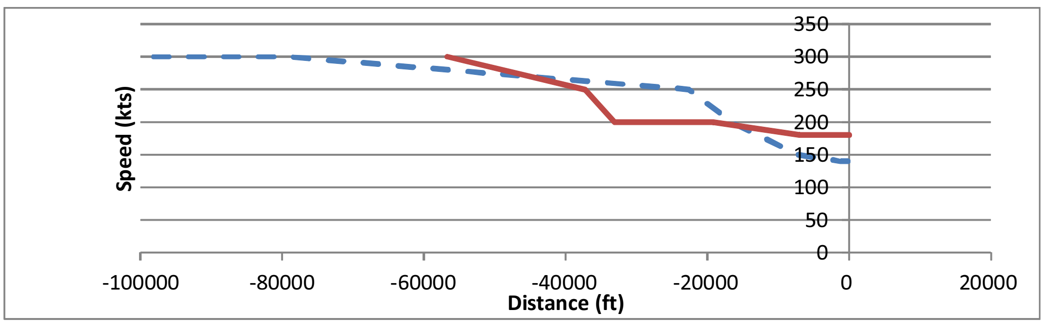
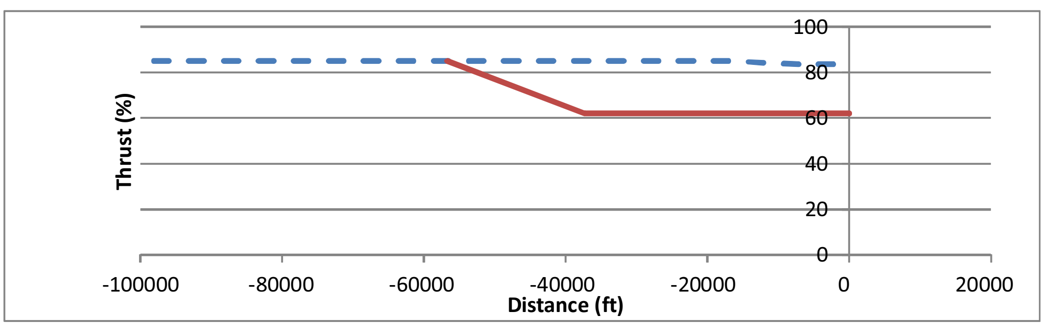
INM Standard NOISEMAP 1				User Defined USAF_A3			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-251200	10000	300	85	-56714	9665	300	85.0
-151200	5000	300	85	-37271	9665	250	62.0
-101200	2700	300	85	-33157	9665	200	62.0
-79200	1500	300	85	-25258	6665	200	62.0
-22625	1500	250	85	-19182	4665	200	62.0
-16625	1500	200	85	-7030	865	180	62.0
-7200	300	150	83.5	-954	50	180	62.0
-1200	50	140	83.5	0	0	180	62.0
0	0	140	83.5	10	0	180	62.0
10	0	140	83.5				







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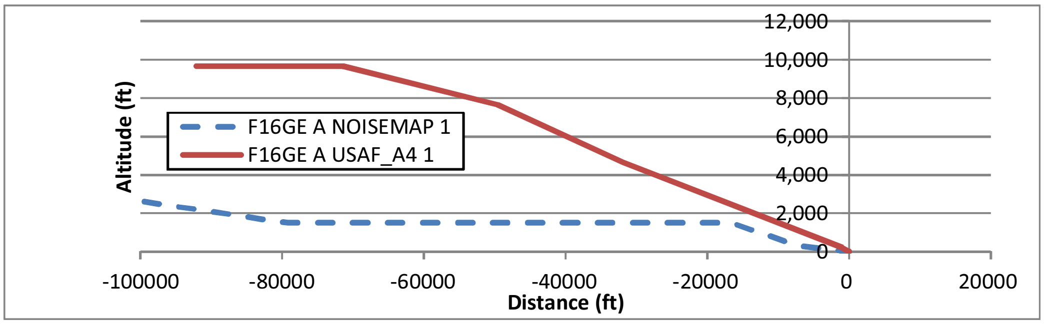
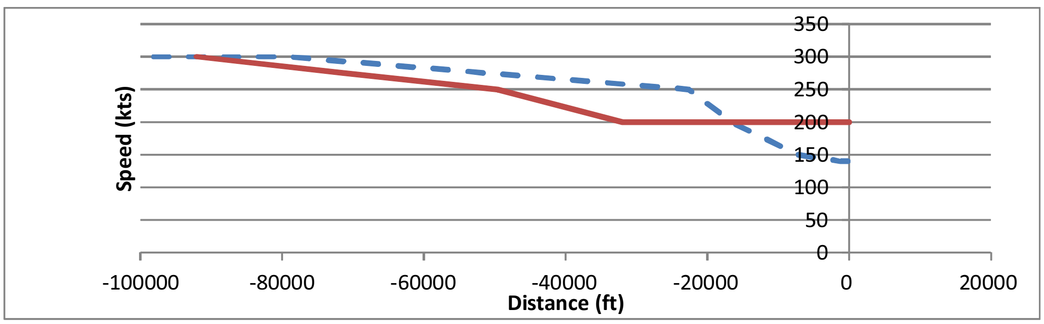
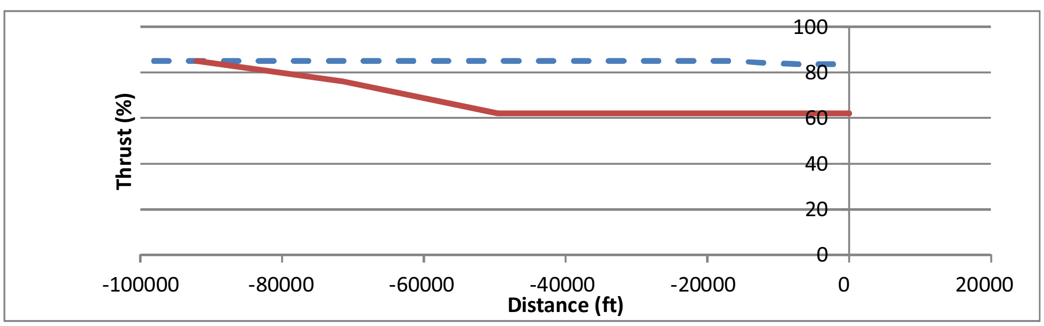
INM Standard NOISEMAP 1				User Defined USAF_A4			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-251200	10000	300	85	-92096	9665	300	85
-151200	5000	300	85	-71437	9665	275	76
-101200	2700	300	85	-49563	7665	250	62
-79200	1500	300	85	-31942	4665	200	62
-22625	1500	250	85	-954	200	200	62
-16625	1500	200	85	0	0	200	62
-7200	300	150	83.5	10	0	200	62
-1200	50	140	83.5				
0	0	140	83.5				
10	0	140	83.5				







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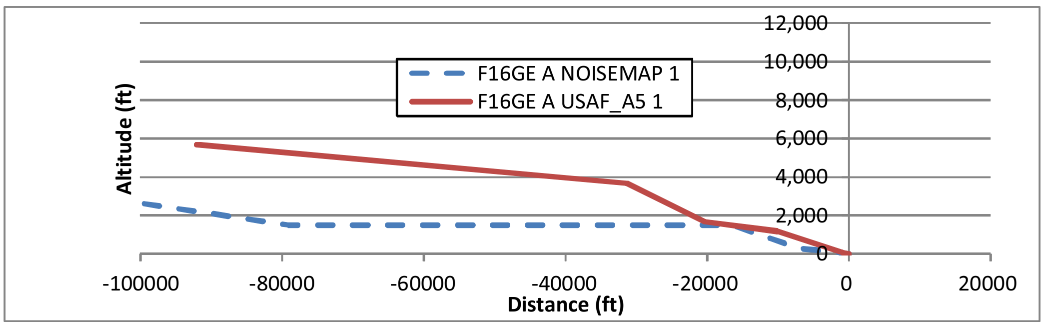
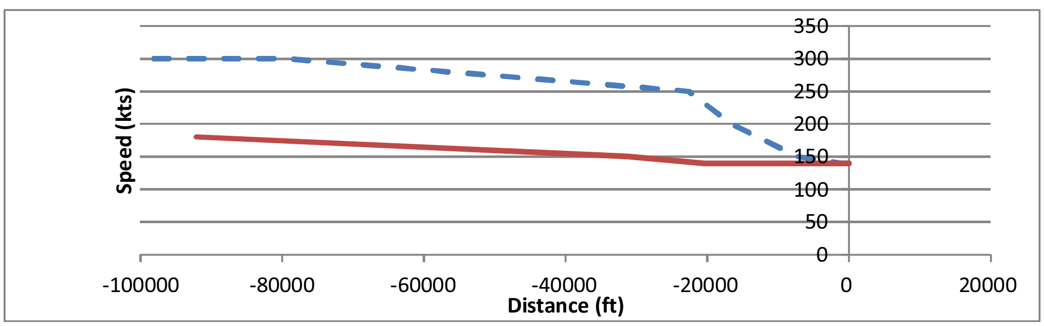
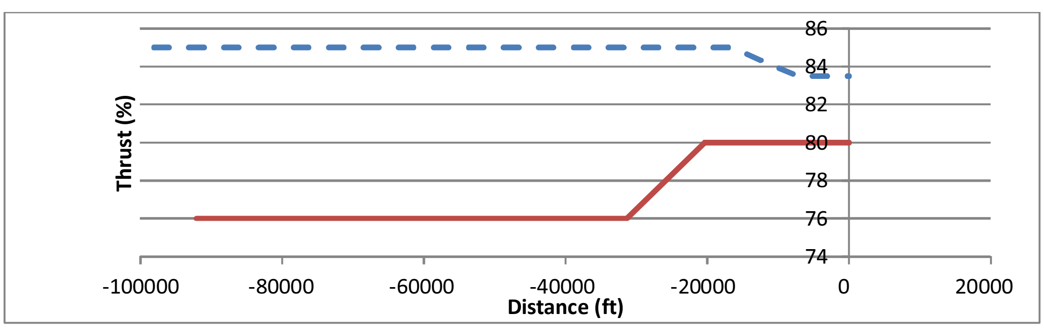
INM Standard NOISEMAP 1				User Defined USAF_A5			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-251200	10000	300	85	-92096	5665	180	76.0
-151200	5000	300	85	-31335	3665	150	76.0
-101200	2700	300	85	-20398	1665	140	80.0
-79200	1500	300	85	-10068	1165	140	80.0
-22625	1500	250	85	-954	50	140	80.0
-16625	1500	200	85	0	0	140	80.0
-7200	300	150	83.5	10	0	140	80.0
-1200	50	140	83.5				
0	0	140	83.5				
10	0	140	83.5				







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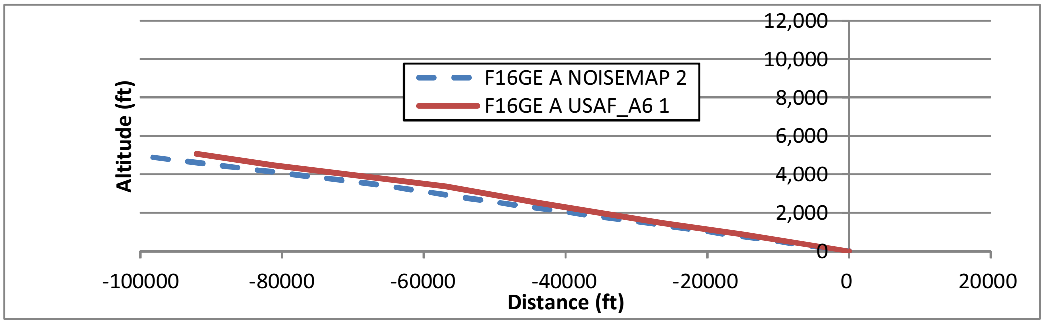
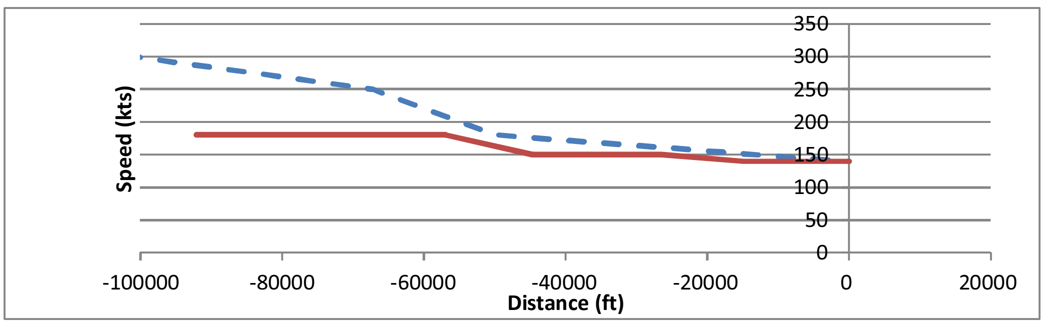
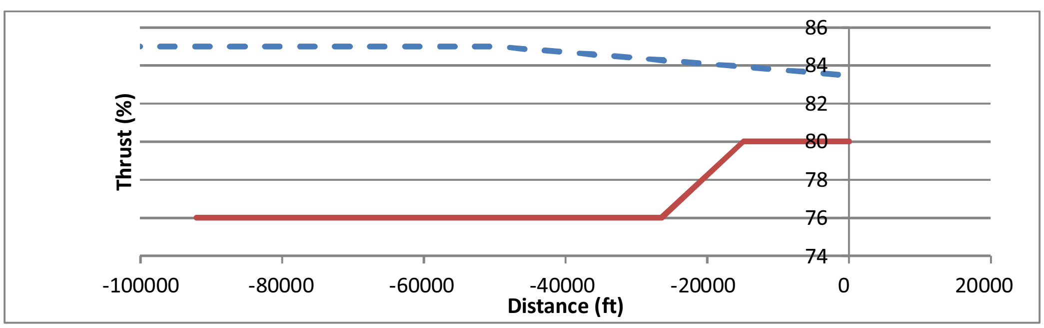
INM Standard NOISEMAP 2				User Defined USAF_A6			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-200977	10000	300	85	-92096	5065	180	76
-100977	5000	300	85	-81159	4465	180	76
-67277	3500	250	85	-56854	3365	180	76
-49827	2550	180	85	-44702	2565	150	76
-977	50	140	83.5	-26474	1465	150	76
0	0	140	83.5	-14929	865	140	80
10	0	140	83.5	-954	50	140	80
				0	0	140	80
				10	0	140	80







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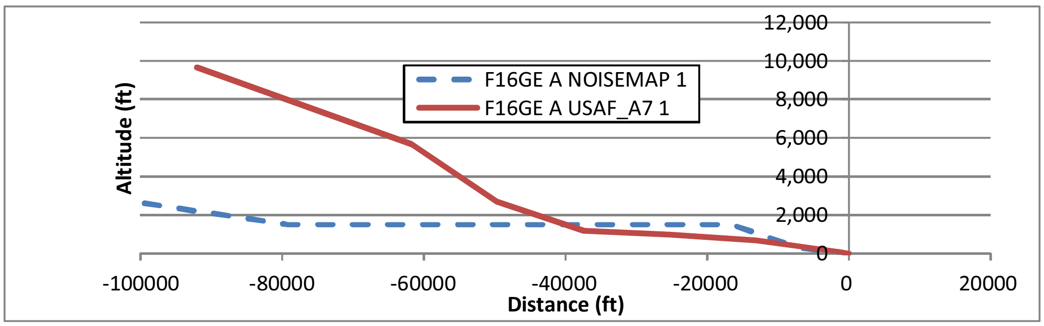
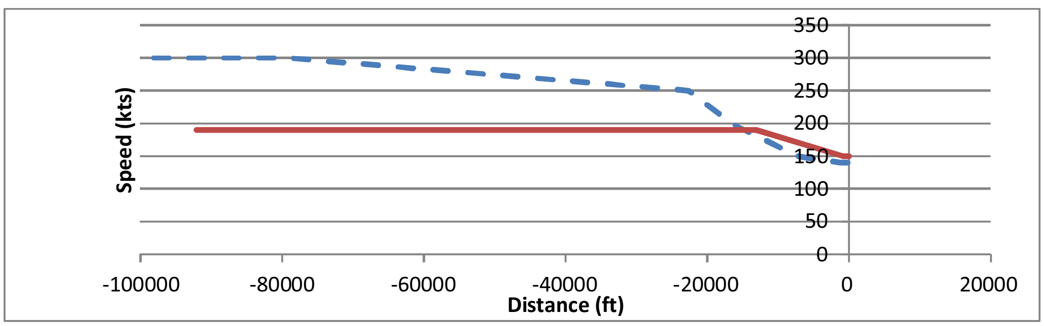
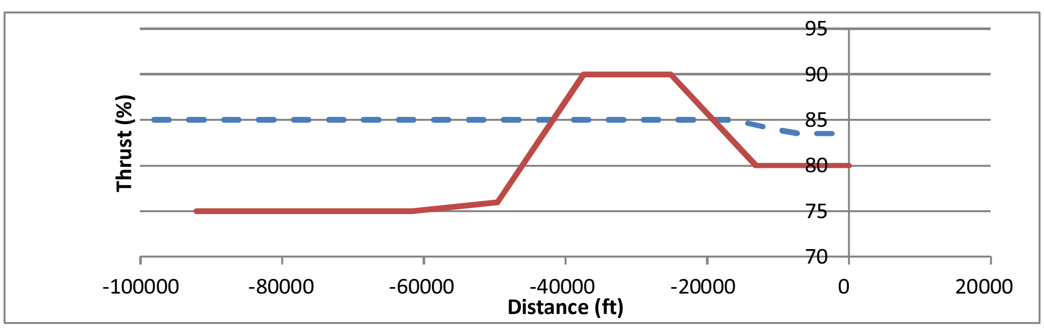
INM Standard NOISEMAP 1				User Defined USAF_A7			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
-251200	10000	300	85	-92096	9665	190	75
-151200	5000	300	85	-61715	5665	190	75
-101200	2700	300	85	-49563	2665	190	76
-79200	1500	300	85	-37411	1165	190	90
-22625	1500	250	85	-25258	965	190	90
-16625	1500	200	85	-13106	665	190	80
-7200	300	150	83.5	-954	50	150	80
-1200	50	140	83.5	0	0	150	80
0	0	140	83.5	10	0	150	80
10	0	140	83.5				







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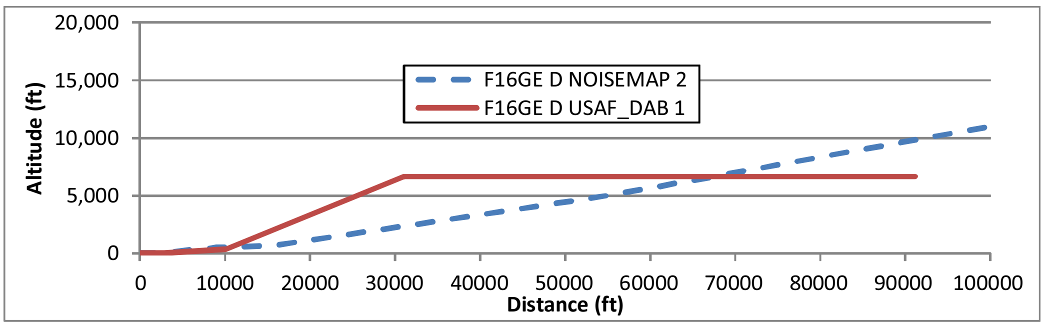
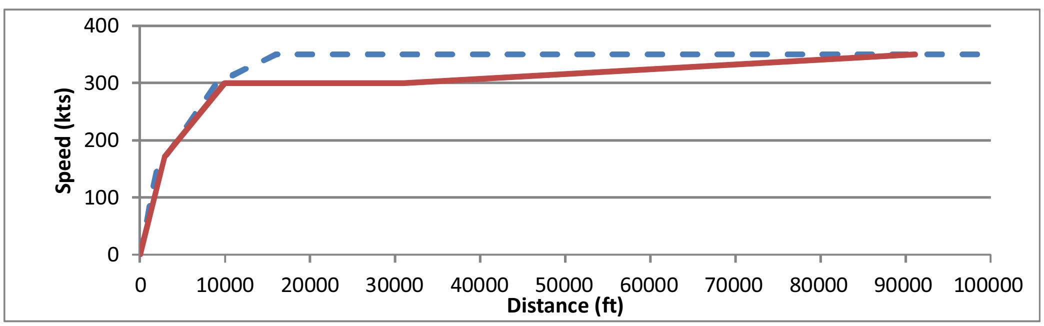
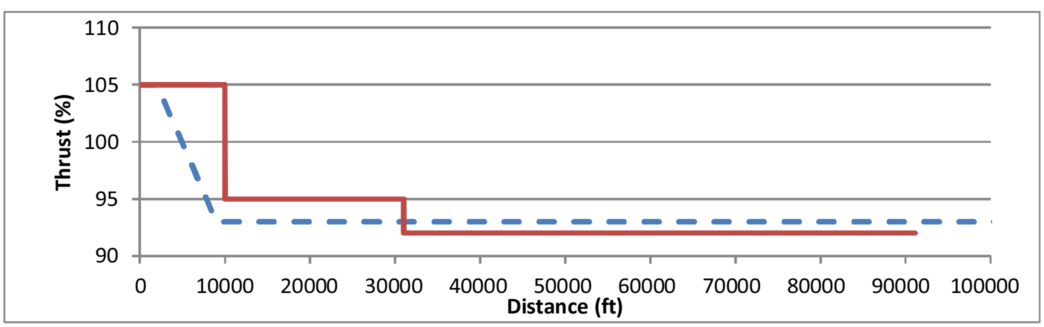
6.2 Departure Profiles – Afterburner

INM Standard NOISEMAP 2				User Defined USAF_DAB			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
0	0	0	105	0	0	0	105
2000	0	150	105	2900	0	171	105
9000	500	300	93	9990	365	300	105
16000	700	350	93	10000	365	300	95
55000	5000	350	93	30990	6665	300	95
100000	11000	350	93	31000	6665	300	92
200000	15000	350	93	91132	6665	350	92
				91142	6665	350	92







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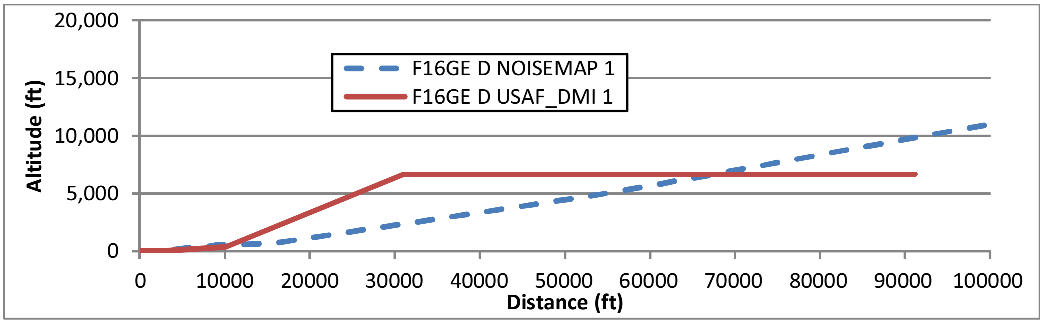
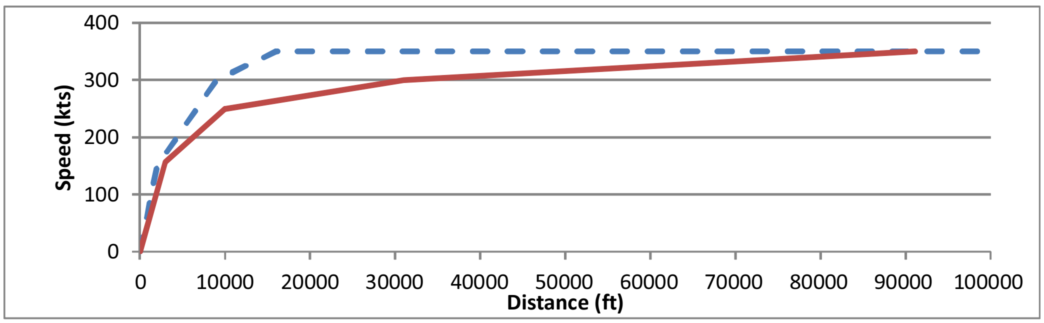
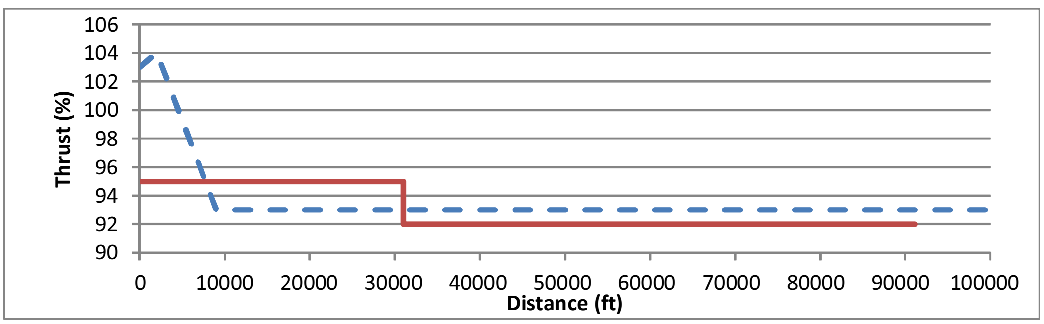
6.3 Departure Profiles – Military Power (i.e. No Afterburner)

INM Standard NOISEMAP 1				User Defined USAF_DMI			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
0	0	0	103	0	0	0	95
2000	0	150	104	3000	0	157	95
9000	500	300	93	9990	365	250	95
16000	700	350	93	10000	365	250	95
55000	5000	350	93	30990	6665	300	95
100000	11000	350	93	31000	6665	300	92
200000	15000	350	93	91132	6665	350	92
				91142	6665	350	92







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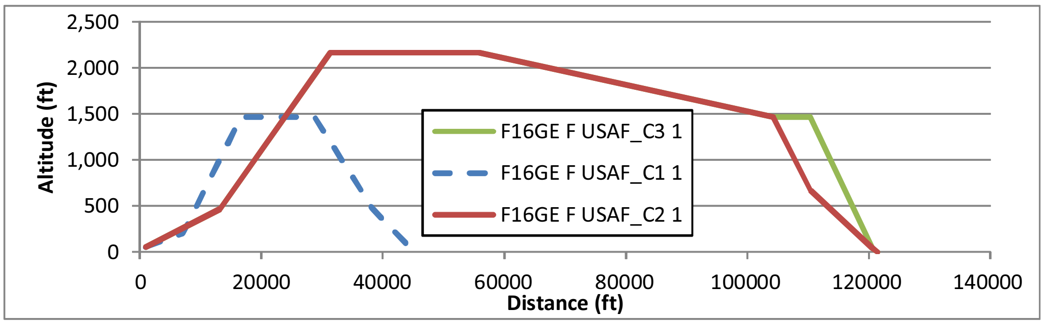
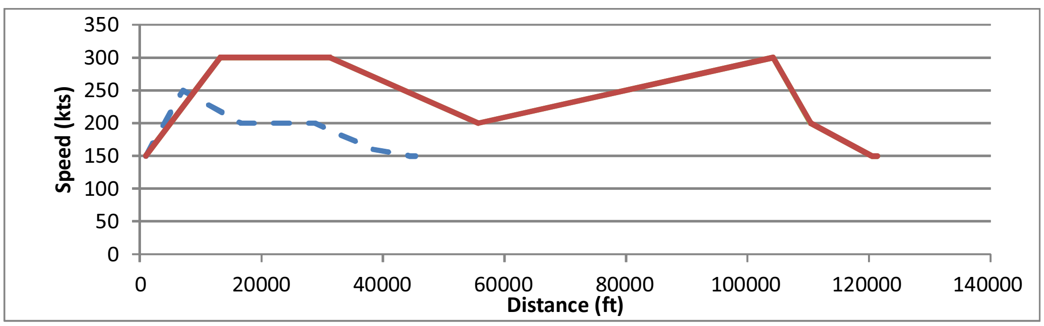
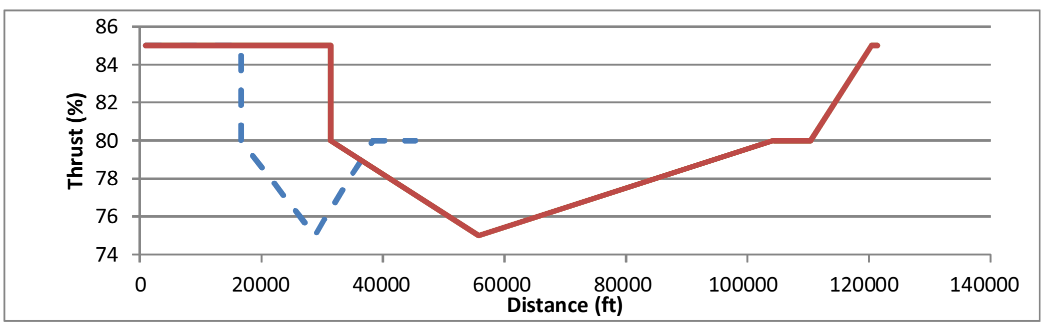
6.4 Touch and Go Profiles

User Defined USAF_C1				User Defined USAF_C2				User Defined USAF_C3			
Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)	Distance (ft)	Altitude (ft)	Speed (kts)	Thrust (%)
1000	50	150	85	1000	50	150	85	1000	50	150	85
7066	200	250	85	13142	465	300	85	13142	465	300	85
7076	200	250	85	13152	465	300	85	13152	465	300	85
16610	1465	200	85	31371	2165	300	85	31371	2165	300	85
16620	1465	200	80	31381	2165	300	80	31381	2165	300	80
28772	1465	200	75	55685	2165	200	75	55685	2165	200	75
38316	465	160	80	104294	1465	300	80	104294	1465	300	80
44392	50	150	80	110440	665	200	80	110370	1465	200	80
45346	0	150	80	120440	50	150	85	120437	50	150	85
45356	0	150	80	121394	0	150	85	121391	0	150	85
				121404	0	150	85	121401	0	150	85







ATTACHMENT D

INM STUDY FOR PROFILES

The attached INM study “BTV_2014_NEM_INM_V70d_STUDY_20140911” includes the following information:

- All taxi profiles used in the modeling presented in this memorandum
- A scenario modeling taxiway DNL for the base year NEM
    - Scenario S_Existing_noground
        - Flight operations only; Attachment C Figure 3-4
    - Scenario S_Taxi_Only
        - Tax; Attachment C Figure 3-5
    - Scenario S_Existing
        - Flight operations only; Attachment C Figure 3-6
- F16GE user-defined profiles
    - Scenario S_NS_CK_F16_Profiles_A_D
        - Presents the grid point values
    - Scenario S_NS_CK_F16_Profiles_TGO_USAF_C1
    - Scenario S_NS_CK_F16_Profiles_TGO_USAF_C2
    - Scenario S_NS_CK_F16_Profiles_TGO_USAF_C3

APPENDIX C EXISTING FORECAST AIRPORT LAYOUT AND OPERATION ASSUMPTIONS

HMMH memorandum "BTV Part 150 Noise Exposure Map Update – Base Year and Forecast Year Assumptions" dated September 17, 2014

This memorandum describes the runway layout assumptions and aircraft operations assumptions for the baseline noise contours for calendar year 2015, and the future noise contours for calendar year 2020.

The Federal Aviation Administration completed its review of this memorandum on September 17, 2004.

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TECHNICAL MEMORANDUM

To:	Mr. Robert McEwing, Burlington International Airport
From:	David A. Crandall
Date:	September 17, 2014
Subject:	BTV Part 150 Noise Exposure Map Update Base Year and Forecast Year Assumptions
Reference:	HMMH Project No.: 305660

1. INTRODUCTION

The City of Burlington, Vermont (the City) has retained Harris Miller Miller & Hanson (HMMH) to prepare an update to its Noise Exposure Map (NEM) and associated documentation for Burlington International Airport (BTV) in accordance with regulations promulgated by the Federal Aviation Administration and published at Title 14 of the Code of Federal Regulations (CFR) Part 150. This effort is referred to as the "BTV NEM Update". This memorandum presents the base year and forecast operational assumptions for review and comment.

The City plans to submit the BTV NEM Update to Federal Aviation Administration (FAA) in calendar year 2014. Therefore the base year of the NEM will be 2014 and the forecast year for the NEM will be 2019.

This memorandum has two attachments, listed below:

1. Attachment A provides a description of the airport layout
2. Attachment B is the FAA Terminal Area Forecast (TAF) issued February 2014 for BTV.
3. Attachment C is the Campbell & Paris (C&P) and Parrish and Partners, LLC report "REVISED BASE YEAR 2014 OPERATIONAL DATA."
4. Attachment D presents the detailed 2014 operations

2. AIRPORT LAYOUT

The airport layout is expected to change between 2014 and 2019. Taxiway G, northwest of Runway 1/19, will shift 100 feet closer to Runway 15/33 and Taxiway G will be extended across Runway 1/19 to the existing Taxiway K. The taxiway modeling will be adjusted accordingly for the 2019 NEM. No other airfield changes that would affect noise calculations are expected between 2014 and 2019.

Attachment A provides additional information regarding the airport layout for inclusion into the NEM documentation.

3. FORECAST ASSUMPTIONS

In its June 2008 document entitled "Review and Approval of Aviation Forecasts",[1] the FAA describes its guidelines for comparing locally-prepared forecasts to the FAA's TAF. For all classes of airports, forecasts for total enplanements, based aircraft, and total operations are considered consistent with the TAF if they meet the following criterion:

[1] http://www.faa.gov/airports/planning_capacity/media/approval_local_forecasts_2008.pdf

Forecasts differ by less than 10 percent in the 5-year forecast period and 15 percent in the 10-year period.

For the BTV NEM Update, HMMH proposes to use the February 2014 issue of the FAA's Terminal Area Forecast (Attachment B of this memorandum) as the basis for aircraft operational activity levels, with adjustments reflecting recent operational changes, night time tower closures, and FAA's practice of counting military aircraft flying in formation as a single operation. The total proposed modeled operations are presented below.

For the 2014 NEM, 79,983 annual operations would be modeled. The modeled operations correspond to 76,563 tower counts while the TAF forecasts 76,083 tower counts. Additional details are presented in Section 3.1.

For the 2019 NEM, we propose to model 82,024 annual operations. The modeled operations would correspond to 78,522 tower counts, which is identical to the TAF. Additional details are presented in Section 3.2.

The TAF reports aircraft operational activity levels in one of four categories listed below.[2]

- Air Carrier – Operations by aircraft capable of holding 60 seats or more and are flying using a three letter company designator.
- Air Taxi - Operations by aircraft less than 60 seats and are flying using a three letter company designator or the prefix "Tango".
- Military – all classes of military operations. .
- General Aviation – Civil (non-military) aircraft operations not otherwise classified under air carrier or air taxi

3.1 2014 Baseline Operations

Table 1 presents a summary of the 2014 baseline operations. Table 1 also presents, for reference, the 2013 actual airport operations, as reported by FAA's Air Traffic Activity Data System (ATADS).[3]

Civilian baseline operations were developed from a mix of flight plan data[4], FAA tower counts (as reported by ATADS), FAA forecast (TAF), and BTV airport staff. Flight plan data for calendar year 2013 were adjusted to represent annual 2014 conditions by considering recent activity, historical growth at the airport, and recent changes in commercial operations. The civilian operations were adjusted to account for recent airline service not yet included in the ATADS or TAF data. Operations were also adjusted for the FAA Air Traffic Control Tower (ATCT) being closed midnight through 5:30 AM daily. It is assumed that no local (touch and go) General Aviation operations occur during tower closure periods. The baseline civilian operational data report is included as Attachment B.

Military operations were developed by HMMH from multiple sources. The based military operations were developed from the modeling data used in the United States Air Force F-35A Operational Basing Final Environmental Impact Statement (EIS).[5] The EIS modeling data used 228 annual operating

[2] 1 Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). Latest version available at http://www.faa.gov/documentLibrary/media/Order/FAC.pdf Also available as FAA Notice N JO 7210.695 "Facility Statistical Data, Reports, and Forms" July 1, 2008 and available at https://aspm.faa.gov/opsnet/JO_7210.695_%20Facility_Statistical_Data_Reports_and_Forms.pdf

[3] FAA's Operations Network (OPSNET), https://aspm.faa.gov/opsnet/sys/main.asp

[4] Flight plan data, purchased from a third party-vendor, would be used to provide the destination airports for departing aircraft, which is then used in an FAA approved methodology to estimate aircraft weight.

[5] 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

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days. These operations were scaled to represent 365 annual operating days to be used in the NEM according to 14 CFR Part 150s definition of average annual day. The transient military operations were developed from FAA Traffic Flow Management System Counts (TFMSC) operational data for calendar year 2013.[6]

Attachment D provides the detailed proposed 2014 model operations for the NEM.

Table 1 – Summary of FAA Terminal Area Forecast (TAF) Operations Activity Levels at BTV and Proposed Modeled Operations for the 2014 Noise Exposure Map

FAA Category [1]		2014 Part 150 Operations			Reported FAA Data and Forecasts	
		Modeled Operations Annual [3]	Modeled Operations AAD [3]	Expected Tower Counts [4]	Tower 2013 Counts [5]	2014 Forecast – Issued February 2014 [6]
Itinerant	Air Carrier	14,553	39.9	14,000	12,941	14,300
	Air Taxi and Commuter	13,132	36.0	12,860	13,873	12,630
	GA	19,230	52.7	19,200	18,747	18,573
	Military [2]	6,776	18.6	4,243	4,242	4,243
Local	GA	23,440	64.2	23,440	21,666	23,517
	Military [2]	2,820	7.7	2,820	2,730	2,820
Total [7]		79,951	219.0	76,563	74,199	76,083

Notes:

1 Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). Latest version available at http://www.faa.gov/documentLibrary/media/Order/FAC.pdf Also available as FAA Notice N JO 7210.695 "Facility Statistical Data, Reports, and Forms" July 1, 2008 and available at https://aspm.faa.gov/opsnet/JO_7210.695_%20Facility_Statistical_Data_Reports_and_Forms.pdf

2 Military operations were developed using the TFMSC and EIS.

3 Total operations modeled for the 2014 NEM.

4 Expected 2014 tower counts associated with the operations modeled for the 2014 NEM. These counts are comparable to ATADS and the TAF and include adjustments to reflect that the tower is closed between midnight and 5:30 AM daily and that the tower may consider multiple military aircraft flying in formation as a single count. The practice is documented in 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. Expected tower counts for 2014 differ from the TAF because of airline/operational changes that have occurred recently.

5 As reported by FAA's Air Traffic Activity Systems or ATADS (https://aspm.faa.gov/opsnet/sys/main.asp)

6 FAA's Terminal Area Forecast (TAF) http://aspm.faa.gov/apowtaf/Home/ as available April 2014).

7 Some Totals and Subtotals may not match exactly due to rounding

Sources: FAA, 2014; HMMH, 2014; USAF EIS (2013); FlightView® Data (2014); Campbell & Parish, 2014; Parrish & Partners, 2014

3.2 2019 Forecast Operations

The detailed forecast for 2019 relies on several general assumptions concerning changes to the fleet within the BTV NEM Update period. These changes would be made relative to the 2014 fleet. Table 2 presents a summary of the 2019 forecast operations.

We propose that the assumptions for 2019 would be:

- 2014 modeled operations will be scaled to the TAF by operational category to create the 2019 forecast.

6 Available at https://aspm.faa.gov/tfms/sys/main.asp

- Military operations are identical for 2014 and 2019 conditions. The TAF shows no change and the USAF EIS and associated Record of Decision does not indicate any changes through, and including, 2019.
- All civilian aircraft certified to 14 CFR Part 36 Stage 2 will be retired from the fleet by 2015, therefore they will remain in the 2014 fleet but be replaced by Stage 3 or higher versions for the 2019 fleet.[7] Table 3 presents the Stage 2 INM types that will be retired and their associated replacement for 2019.
- The day/night ratio and departure stage length ratio for aircraft will remain the same as the 2014 base-year for each aircraft type combination.

Overall, the model operations are 4% higher than the TAF due to the night time tower closure and military aircraft flying in formation.

Table 2 – Summary of FAA Terminal Area Forecast (TAF) Operations Activity Levels at BTV and Proposed Modeled Operations for the 2019 Noise Exposure Map

FAA Category [1]		2019 Part 150 Operations			Reported FAA Data and Forecasts
		Modeled Operations Annual [3]	Modeled Operations AAD	Expected Tower Counts [4]	2019 Forecast – Issued February 2014 [5]
Itinerant	Air Carrier	16,420	45.0	15,796	15,796
	Air Taxi and Commuter	13,664	37.4	13,381	13,381
	GA	19,008	52.1	18,978	18,978
	Military [2]	6,776	18.6	4,243	4,243
Local	GA	23,304	63.8	23,304	23,304
	Military [2]	2,820	7.7	2,820	2,820
Total [6]		81,992	224.6	78,522	78,522

Notes:
1 Operational Categories used in ATADS and the TAF are those defined in FAA Order 7210.3Y at Chapter 12, Section 12-1-5 (April 3, 2014). Latest version available at http://www.faa.gov/documentLibrary/media/Order/FAC.pdf Also available as FAA Notice N JO 7210.695 "Facility Statistical Data, Reports, and Forms" July 1, 2008 and available at https://aspm.faa.gov/opsnet/JO_7210.695_%20Facility_Statistical_Data_Reports_and_Forms.pdf

2 Military operations were developed using the TFMSC and EIS.

3Total model operations for the 2019 NEM.

4 Expected 2019 tower counts associated with the operations modeled for the 2019 NEM. These counts are comparable to the TAF and include adjustments to reflect that the tower is closed between midnight and 5:30 AM daily and that the tower may consider multiple military aircraft flying in formation as a single count. The practice is documented in 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.

5 This data was available at http://aspm.faa.gov/apowtaf/Home/ in April 2014).

6 Some Totals and Subtotals may not match exactly due to rounding

Sources: FAA, 2014; HMMH, 2014; USAF EIS (2013); FlightView® Data (2014); Campbell & Parish, 2014; Parrish & Partners, 2014

[7] 14 CFR Part 36 describes noise certification of aircraft. Stage 2 aircraft are louder than Stage 3 aircraft of the same weight. 14 CFR Part 36 also defines Stage 4 (quieter than Stage 3) and may in the future define Stage 5. Civilian 14 CFR Stage 2 aircraft will typically not be allowed to operate in continental United States after December 31, 2015 per *the FAA Modernization and Reform Act* of 2012. Currently, civilian aircraft certified to 14 CFR Stage 2 and weighing more than 75,000 lb have generally been prohibited from operating the in the continental United States since 2000. In practice, the 2012 act affects the remaining civilian aircraft weighing less than 75,000 lb. FAA released a final rule, effective September 3, 2013, that adopts into operating rules the prohibitions from the 2012 act.
Federal Register, July 2, 2013, pp. 39576 – 39583
http://www.gpo.gov/fdsys/pkg/FR-2013-07-02/pdf/2013-15843.pdf
Federal Register, September 20, 2013, pg. 57790
http://www.gpo.gov/fdsys/pkg/FR-2013-09-20/pdf/2013-22850.pdf

Table 3 - Stage 2 Replacement INM Aircraft

2014 INM Type	Change to (2019):
FAL20	LEAR35
GII	GIV
GIIB	GIV
LEAR25	LEAR35

1.1 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 8,320 feet long and 150 feet wide. Runway 1/19 is 4,111 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 INM includes an internal airport layout database, including runway locations, orientation, start-of-takeoff roll points, runway end elevations, landing thresholds, approach angles, etc. The INM data was updated with the latest information for this NEM update. Table X provides the runway details, including the runway end coordinates.

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

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

Table X Runway Details

Runway	Latitude[1]	Longitude[1]	Elev. (ft)	Displaced Arrival Threshold (ft)	Arrival Threshold Crossing Height (TCH) (ft)[2]	Displaced Departure Threshold (ft)
1	44.463826 N	73.151004 W	334	225	40	0
15	44.480677 N	73.165882 W	306	0	51	0
19	44.474978 N	73.153352 W	327	500	42	0
33	44.465757 N	73.141764 W	335	500	53	0

Notes:
1 All coordinates are relative to the North American Datum of 1983 (NAD) 83
2 From Form 5010 (available at http://www.faa.gov/airports/airport_safety/airportdata_5010/ July 24, 2014)

Source: FAA Form 5010, 2014

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued February 2014

BTV

REGION:ANE **STATE:**VT **LOCID:**BTV
CITY:BURLINGTON **AIRPORT:**BURLINGTON INTL

	Enplanements			AIRCRAFT OPERATIONS: Itinerant Operations					AIRCRAFT OPERATIONS: Local Operations					
Fiscal Year	**Air Carrier**	**Commuter**	**Total**	**Air Carrier**	**Air Taxi & Commuter**	**GA**	**Military**	**Total**	**Civil**	**Military**	**Total**	**Total Ops**	**Total Tracon Ops**	**Based Aircraft**
1990	306,761	116,637	423,398	11,616	28,379	32,630	7,401	80,026	26,792	4,734	31,526	111,552	149,073	120
1991	281,645	120,689	402,334	14,042	36,305	34,987	7,799	93,133	26,246	5,450	31,696	124,829	133,049	127
1992	279,230	131,272	410,502	12,614	36,203	32,670	7,936	89,423	25,895	5,811	31,706	121,129	127,192	118
1993	234,071	171,157	405,228	9,369	38,192	31,220	7,863	86,644	26,321	5,320	31,641	118,285	123,195	118
1994	215,239	209,313	424,552	7,909	39,505	28,553	6,474	82,441	21,215	4,613	25,828	108,269	114,699	124
1995	225,200	198,584	423,784	7,972	42,531	31,504	6,681	88,688	22,062	4,577	26,639	115,327	114,245	117
1996	219,850	194,886	414,736	7,591	44,849	26,385	7,582	86,407	17,152	7,087	24,239	110,646	110,172	133
1997	220,332	194,730	415,062	6,995	44,078	28,565	5,491	85,129	21,081	5,099	26,180	111,309	114,090	112
1998	219,543	208,816	428,359	6,991	42,954	29,228	6,219	85,392	22,733	7,023	29,756	115,148	115,945	112
1999	209,338	222,747	432,085	6,921	39,865	32,464	5,602	84,852	28,262	6,396	34,658	119,510	117,036	129
2000	204,765	222,391	427,156	6,769	37,796	30,738	5,383	80,686	31,323	5,821	37,144	117,830	105,918	129
2001	291,183	232,208	523,391	8,416	41,211	27,844	5,820	83,291	30,928	5,227	36,155	119,446	103,884	126
2002	295,364	219,778	515,142	7,806	31,123	28,694	6,616	74,239	30,985	5,551	36,536	110,775	89,994	115
2003	193,799	340,819	534,618	5,300	32,205	26,573	6,007	70,085	25,325	5,692	31,017	101,102	85,474	115
2004	206,811	396,629	603,440	5,400	35,418	26,982	6,000	73,800	27,306	5,342	32,648	106,448	89,120	91
2005	219,339	466,939	686,278	7,064	37,062	25,812	7,215	77,153	26,620	6,051	32,671	109,824	107,238	84
2006	231,406	447,332	678,738	9,819	31,523	23,609	5,002	69,953	20,862	4,297	25,159	95,112	101,611	84
2007	259,294	438,136	697,430	9,524	30,404	24,280	4,824	69,032	23,241	4,704	27,945	96,977	101,163	84
2008	265,994	477,455	743,449	12,397	25,871	22,406	5,435	66,109	24,720	4,381	29,101	95,210	91,272	101

2009	265,620	451,047	716,667	13,107	19,353	17,042	4,436	53,938	17,381	4,526	21,907	75,845	80,068	101
2010	166,286	473,037	639,323	10,771	18,581	18,156	2,854	50,362	16,299	2,638	18,937	69,299	77,801	73
2011	151,429	483,558	634,987	12,337	17,029	18,914	3,563	51,843	22,996	2,172	25,168	77,011	80,114	59
2012	153,851	475,800	629,651	13,586	14,353	19,102	4,231	51,272	23,151	2,552	25,703	76,975	79,141	61
2013*	137,546	457,971	595,517	12,083	14,183	18,204	4,243	48,713	22,317	2,820	25,137	73,850	75,643	62
2014*	116,058	495,392	611,450	14,300	12,630	18,573	4,243	49,746	23,517	2,820	26,337	76,083	76,629	63
2015*	118,444	503,240	621,684	14,568	12,794	18,653	4,243	50,258	23,474	2,820	26,294	76,552	77,391	63
2016*	120,681	510,900	631,581	14,844	12,934	18,734	4,243	50,755	23,431	2,820	26,251	77,006	78,132	65
2017*	123,104	519,202	642,306	15,122	13,106	18,815	4,243	51,286	23,388	2,820	26,208	77,494	78,926	66
2018*	125,632	527,976	653,608	15,444	13,261	18,896	4,243	51,844	23,346	2,820	26,166	78,010	79,750	67
2019*	128,021	536,622	664,643	15,796	13,381	18,978	4,243	52,398	23,304	2,820	26,124	78,522	80,560	69

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued February 2014

BTV

				AIRCRAFT OPERATIONS										
	Enplanements			Itinerant Operations					Local Operations					
Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
2020*	130,321	545,074	675,395	16,162	13,490	19,060	4,243	52,955	23,262	2,820	26,082	79,037	81,366	70
2021*	132,295	551,045	683,340	16,507	13,511	19,142	4,243	53,403	23,220	2,820	26,040	79,443	82,016	71
2022*	134,070	557,630	691,700	16,971	13,457	19,225	4,243	53,896	23,178	2,820	25,998	79,894	82,700	73
2023*	136,200	565,370	701,570	17,643	13,287	19,308	4,243	54,481	23,136	2,820	25,956	80,437	83,465	74
2024*	138,363	573,068	711,431	18,369	13,086	19,392	4,243	55,090	23,094	2,820	25,914	81,004	84,253	76
2025*	140,689	581,849	722,538	19,236	12,818	19,476	4,243	55,773	23,052	2,820	25,872	81,645	85,111	78
2026*	142,796	588,623	731,419	20,126	12,444	19,560	4,243	56,373	23,010	2,820	25,830	82,203	85,851	80
2027*	145,028	595,420	740,448	21,260	11,887	19,645	4,243	57,035	22,968	2,820	25,788	82,823	86,620	82
2028*	147,277	602,319	749,596	22,521	11,232	19,730	4,243	57,726	22,926	2,820	25,746	83,472	87,402	84

2029*	149,734	609,455	759,189	23,584	10,747	19,815	4,243	58,389	22,884	2,820	25,704	84,093	88,195	86
2030*	152,067	617,402	769,469	24,583	10,337	19,901	4,243	59,064	22,842	2,820	25,662	84,726	89,024	88
2031*	154,334	623,548	777,882	25,073	10,268	19,987	4,243	59,571	22,800	2,820	25,620	85,191	89,743	90
2032*	156,648	631,063	787,711	25,389	10,384	20,074	4,243	60,090	22,759	2,820	25,579	85,669	90,516	92
2033*	158,885	638,262	797,147	25,702	10,492	20,161	4,243	60,598	22,718	2,820	25,538	86,136	91,276	94
2034*	161,136	644,905	806,041	25,991	10,599	20,248	4,243	61,081	22,677	2,820	25,497	86,578	92,006	96
2035*	163,469	653,228	816,697	26,333	10,729	20,336	4,243	61,641	22,636	2,820	25,456	87,097	92,831	98
2036*	165,854	660,711	826,565	26,653	10,840	20,424	4,243	62,160	22,595	2,820	25,415	87,575	93,608	100
2037*	168,166	667,690	835,856	26,959	10,946	20,512	4,243	62,660	22,554	2,820	25,374	88,034	94,360	102
2038*	170,448	674,405	844,853	27,252	11,055	20,601	4,243	63,151	22,513	2,820	25,333	88,484	95,097	104
2039*	172,674	680,501	853,175	27,530	11,152	20,690	4,243	63,615	22,472	2,820	25,292	88,907	95,799	106
2040*	175,130	687,575	862,705	27,841	11,268	20,780	4,243	64,132	22,431	2,820	25,251	89,383	96,562	109

REVISED BASE YEAR 2014 OPERATIONAL DATA

Burlington International Airport (BTV)
Burlington, Vermont

Prepared By:
Parrish and Partners, LLC
4401 Belle Oaks Drive, Suite 150
North Charleston, SC 29405

Prepared for:
Campbell & Paris

June 2014

FINAL DRAFT

PARRISH & PARTNERS

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FINAL DRAFT

PARRISH & PARTNERS

Background

This white paper presents the findings and methodology for developing the projections of the base year 2014 operational data at Burlington International Airport (BTV) and disaggregating that data into a specific aircraft fleet mix filtered by day, night, and night closed operations as well as IFR and VFR operations in order to aid with the development of a Part 150 noise study. With the purpose of assessing the most current conditions at BTV, a base year of 2014 was established. The current information available at the time of this study included historical FAA Terminal Area Forecast (TAF) operational data through calendar year 2012 with 2013 being a forecast value and historical Air Traffic Activity Data System (ATADS) operational data through April 2014.

Methodology

Projections

To establish 2014 as the base year, ATADS data was considered the primary data set as it included actuals for the first four months of the 2014 calendar year. Once the projection was established, the average daily operations were developed and as well as the fleet mix and a day/night split of traffic by type formulated from data provided by the airport's noise modeling consultant. Military operations were not included as part of this analysis.

To provide a comprehensive analysis two methods for projections were employed.

<u>Selected Average Annual Growth Rates</u>
Illustrated in **Exhibit 1**, the average annual growth rates (AAGR) for the ATADS data from 2004 through 2013 were evaluated along with a graph of the historical operations for each operational category. The graph shows that Air Carrier operations experienced a linear growth from 2004 through 2013. GA Itinerant operations experienced a decline from 2004 through roughly 2009 then slightly rebounded and experienced relatively flat growth from 2009 through 2013. GA Local operations fluctuated throughout the ten year period but experienced an increase in 2013 when compared to 2009 operations. Finally, Air Taxi operations have experienced a linear decline throughout the period.

Given these different periods of growth, the average annual growth rate for each individual operational category was calculated based on selected periods. Since Air Carrier operations were linear throughout the period the AAGR includes the entire period. The AAGR period for GA Itinerant and GA Local operations is from 2009 through 2013. The last positive AAGR for Air Taxi was chosen.

These selected AAGR's were then used to determine the 2014 projected operations for each category. **Exhibit 2** details the results of the selected AAGR projection by operational category and annualized. Total annual operations following this method are 70,760. This varies from the 2014 TAF forecast by 2.52% (less military operations), which is considered acceptable by the FAA. This equates to 194 operations in an average day.

<u>2009-2013 Average Annual Growth Rates</u>
Understanding that the selected AAGR method may not fully address negative fluctuations within the period of analysis, a separate projection utilizing AAGR's from a consistent period from 2009-2013 was used to project each operational category as detailed in **Exhibit 3**. Total annual operations following this method as detailed in **Exhibit 4** are 68,590. This projection falls 0.62% below the TAF forecast (less military operations) and is also within the acceptable limits of variance and results in 188 operations in an average day.

<u>High/Mid/Low Case Projections</u>
The selected growth and the 2009-2013 AAGR methods both produced different projections that were within approximately 2,170 annual operations of each other, with the selected growth rate method being the higher of the two (assigned as the high case) and the 2009-2013 AAGR method being the lower of the two (assigned as the low case). Given the variance, a median forecast was developed between the two methods and assigned as a mid-case projection. The mid-case projection is a calculation of the median value between the high and the low case so as to

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propose a true mid-level projection without bias or weight to either the high case or the low case. The mid-case annual operations are 69,675 as detailed in **Exhibit 5** along with a summary of the High, Mid, and Low Case projections. The mid-case varies from the 2014 TAF forecast by 0.95% (less military operations) resulting in 191 operations in the average day.

Recommendation

With the high and low case projections varying by approximately 2,170 annual operations, the recommended 2014 base year projection follows that of the low-case projection. By selecting the low-case, slight positive growth is expected within the 2014 base year when compared to 2013. The high case projection was considered slightly excessive given the current trends that indicate growth but not at a rate exceeding five percent from 2013. The mid and low case projections were considered more indicative of the current conditions at BTV. However, while the mid case projection presents a realistic projection, analysis of this projection compared to that of the low case indicated that it also may be high. The low case projection was substantiated by an analysis of the available ATADS data for the first four months of 2014. When annualizing the 2014 ATADS data and comparing it with the low case projection the resulting variance is minimal at 100 annual operations.

Fleet Mix by Day/Night Operational Split

To properly run the Integrated Noise Models (INM) required for the Part 150 study, operations must be split by day and night, by Itinerant vs. Local operations, as well as by category and type (fleet mix). The categories used in the model include Air Carrier, Air Taxi (commuter), and General Aviation operations. The operational categories are further broken down into subcategories which include Air Carrier – Jet (AC_J), Air Carrier – Cargo Jet (AC_CJ), Air Carrier – Turboprop (AC_T), Air Taxi – Jet (AT_J), Air Taxi – Turboprop (AT_T), Air Taxi – Prop (AT_P), General Aviation – Jet (GA_J), General Aviation – Turboprop (GA_T), and General Aviation – Prop (GA_P). Most of this data was compiled previously from flight plan data via FlightAware and includes 12 months of activity from January 2013 through December 2013. It should be noted that military flights were not included in the FlightAware data. **Exhibit 6** presents the day/night operational split by category for the recommended mid-case.

In order to make this correlation however, several adjustments with assumptions were necessary. The FlightAware data includes that which corresponds to IFR itinerant operations only. Local GA operations were derived and split to day and night from the ATADS local GA Base Year forecast assuming that 95 percent of these operations occur during the day and 5 percent occur at night. This ratio was chosen because a few operations in the local pattern at night are possible due to the flight schools based at BTV. Further complicating the matter, there is a period at night when the FAA ATCT is closed. To make the correlation, ratios were developed that relate to the FlightAware dataset. When accounting for those flights at night while the tower is closed, an additional 855 operations are added to the base year itinerant forecast. The analysis assumes that there are no local GA operations while the tower is closed.

Fleet Mix by Specific Aircraft Type

Expanding upon the Day/Night Operational Split data, the INM tables were also used to determine the operational split by specific aircraft type. The information presented in **Exhibit 7** is filtered by aircraft subcategory. Also, **Exhibit 7** distributes the operations between Instrument Flight Rule (IFR) and Visual Flight Rule (VFR) flights. This distribution is achieved by calculating a ratio to the ATADS data which separates data between IFR and VFR. Local GA operations were assumed to be 100% VFR as consistent with flight training in the local traffic pattern. The possibility exists for IFR flights in the local pattern, constituting a local GA IFR operation. However, these are assumed to be minimal (<1%). The vast majority of IFR flights at night are itinerant. Parrish and Partners analyzed the on-airport flight schools at BTV to determine the breakout of local GA operations by specific aircraft type. The analysis determined that the typical aircraft utilized during these operations correspond to the CNA172, GASEPF, and GASEPV INM codes. Finally, through consultation with Campbell and Paris as well as HMMH, **Exhibit 7** was adjusted to account for additional airline service not included in the ATADS or TAF data. This includes the addition of a daily Delta Air Lines route from Atlanta Hartfield-Jackson International Airport (ATL) to BTV and the addition of a twice weekly Allegiant Air flight from Orlando-Sanford International Airport (SFB) to BTV.

Summary

This white paper presents the findings and methodology for developing the projections of the base year 2014 operational data at Burlington International Airport (BTV) and disaggregating that data into a specific aircraft fleet mix filtered by day, night, and night closed operations as well as IFR and VFR operations in order to aid with the development of a Part 150 noise study. Following the aforementioned methodologies, the forecasted total annual operations at BTV are 70,355. This includes adjustments for operations while the FAA ATCT is closed and for additional flight operations as a result of an expansion of service from Delta Air Lines and Allegiant Air.

Exhibits

BTV Part 150 Noise Exposure Map Update - Base Year and Forecast Year Assumptions, Attachment C
September 17, 2014

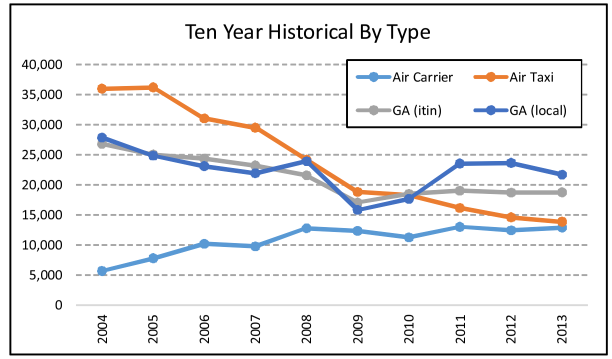
BURLINGTON INTERNATIONAL AIRPORT (BTV)
Revised Base Year 2014 Operational Data

EXHIBIT 1: Base Year Ops Projection Summary Utilizing Selected Growth Rates

	ATADS	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Itinerant	Air Carrier	5,681	7,774	10,198	9,748	12,790	12,347	11,257	13,036	12,454	12,941
	Air Taxi/Comm	36,028	36,213	31,007	29,480	24,181	18,806	18,281	16,130	14,613	13,873
	Gen. Aviation	26,805	25,060	24,356	23,214	21,577	17,052	18,464	19,014	18,708	18,747
	~~Military~~										
Local	Gen. Aviation	27,884	24,828	23,120	21,933	23,938	15,820	17,642	23,548	23,644	21,666
	~~Military~~										
	TOTAL	96,398	93,875	88,681	84,375	82,486	64,025	65,644	71,728	69,419	67,227

	Ave. Gr. from Prev.	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Itinerant	Air Carrier		36.8%	31.2%	-4.4%	31.2%	-3.5%	-8.8%	15.8%	-4.5%	3.9%
	Air Taxi/Comm		0.5%	-14.4%	-4.9%	-18.0%	-22.2%	-2.8%	-11.8%	-9.4%	-5.1%
	Gen. Aviation		-6.5%	-2.8%	-4.7%	-7.1%	-21.0%	8.3%	3.0%	-1.6%	0.2%
	~~Military~~										
Local	Gen. Aviation		-11.0%	-6.9%	-5.1%	9.1%	-33.9%	11.5%	33.5%	0.4%	-8.4%
	~~Military~~										
	TOTAL		-2.6%	-5.5%	-4.9%	-2.2%	-22.4%	2.5%	9.3%	-3.2%	-3.2%

	Ave. Gr. from Prev.	Selected Period	Rate	2013 ATADS	2014 Projected
Itinerant	Air Carrier	2004 - 2014	9.6%	12,941	14,180
	Air Taxi/Comm	2005	0.5%	13,873	13,940
	Gen. Aviation	2009 - 2013	2.4%	18,747	19,200
	~~Military~~	2010 - 2013			
Local	Gen. Aviation	2009 - 2013	8.2%	21,666	23,440
	~~Military~~	2010 - 2013			
	TOTAL	---	---	67,227	70,760



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BTV Part 150 Noise Exposure Map Update - Base Year and Forecast Year Assumptions, Attachment C
September 17, 2014

BURLINGTON INTERNATIONAL AIRPORT (BTV)

Revised Base Year 2014 Operational Data

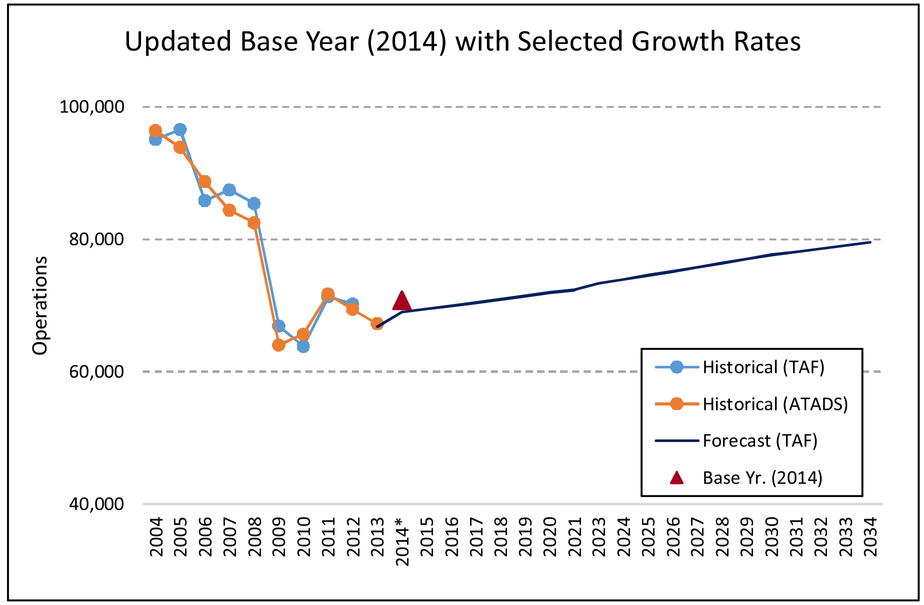
Operational Data		
Categories	Historical 2013	Base Yr[1 2] 2014
Itinerant Total	**45,561**	**47,320**
AirCarrier	12,941	14,180
Commuter/Taxi	13,873	13,940
General Aviation	18,747	19,200
~~Military~~		
Local Total	**21,666**	**23,440**
General Aviation	21,666	23,440
~~Military~~		
Total Annual Operations	**67,227**	**70,760**
TAF Forecast	66,787	69,020
Variance from TAF Forecast	0.66%	2.52%
Planning Factors		
Average Day [3]	184	194

[1] Base year projected from selected growth rates for each operational category

[2] Rounded to the nearest ten

[3] Annual operations / 365

EXHIBIT 2: Base Year Ops Projection Summary Utilizing Selected Growth Rates



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BURLINGTON INTERNATIONAL AIRPORT (BTV)

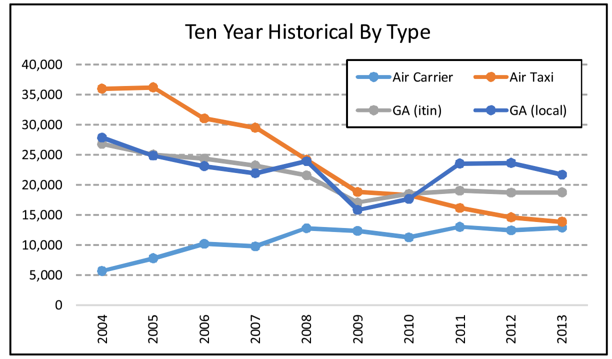
Revised Base Year 2014 Operational Data

EXHIBIT 3: Base Year Ops Projection Summary Utilizing 2009-2013 Growth Rates

	ATADS	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Itinerant	Air Carrier	5,681	7,774	10,198	9,748	12,790	12,347	11,257	13,036	12,454	12,941
	Air Taxi/Comm	36,028	36,213	31,007	29,480	24,181	18,806	18,281	16,130	14,613	13,873
	Gen. Aviation	26,805	25,060	24,356	23,214	21,577	17,052	18,464	19,014	18,708	18,747
	~~Military~~										
Local	Gen. Aviation	27,884	24,828	23,120	21,933	23,938	15,820	17,642	23,548	23,644	21,666
	~~Military~~										
	TOTAL	96,398	93,875	88,681	84,375	82,486	64,025	65,644	71,728	69,419	67,227

	Ave. Gr. from Prev.	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Itinerant	Air Carrier		36.8%	31.2%	-4.4%	31.2%	-3.5%	-8.8%	15.8%	-4.5%	3.9%
	Air Taxi/Comm		0.5%	-14.4%	-4.9%	-18.0%	-22.2%	-2.8%	-11.8%	-9.4%	-5.1%
	Gen. Aviation		-6.5%	-2.8%	-4.7%	-7.1%	-21.0%	8.3%	3.0%	-1.6%	0.2%
	~~Military~~										
Local	Gen. Aviation		-11.0%	-6.9%	-5.1%	9.1%	-33.9%	11.5%	33.5%	0.4%	-8.4%
	~~Military~~										
	TOTAL		-2.6%	-5.5%	-4.9%	-2.2%	-22.4%	2.5%	9.3%	-3.2%	-3.2%

	Ave. Gr. from Prev.	Selected Period	Rate	2013 ATADS	2014 Projected
Itinerant	Air Carrier	2009 - 2013	1.2%	12,941	13,090
	Air Taxi/Comm	2009 - 2013	-7.3%	13,873	12,860
	Gen. Aviation	2009 - 2013	2.4%	18,747	19,200
	~~Military~~	2009 - 2013			
Local	Gen. Aviation	2009 - 2013	8.2%	21,666	23,440
	~~Military~~	2009 - 2013			
	TOTAL	---	---	67,227	68,590



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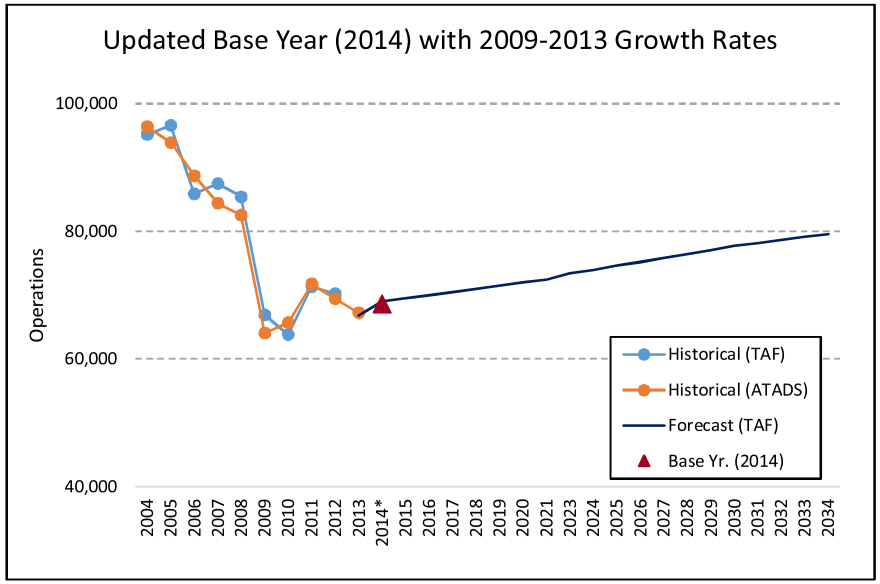
BURLINGTON INTERNATIONAL AIRPORT (BTV)

Revised Base Year 2014 Operational Data

Operational Data		
Categories	Historical 2013	Base Yr[1 2] 2014
Itinerant Total	**45,561**	**45,150**
AirCarrier	12,941	13,090
Commuter/Taxi	13,873	12,860
General Aviation	18,747	19,200
~~Military~~		
Local Total	**21,666**	**23,440**
General Aviation	21,666	23,440
~~Military~~		
Total Annual Operations	**67,227**	**68,590**
TAF Forecast	66,787	69,020
Variance from TAF Forecast	0.66%	-0.62%
Planning Factors		
Average Day [3]	184	188

EXHIBIT 4: Base Year Ops Projection Summary Utilizing 2009-2013 Growth Rates



[1] Base year projected from 2009-2013 growth rates for each operational category

[2] Rounded to the nearest ten

[3] Annual operations / 365

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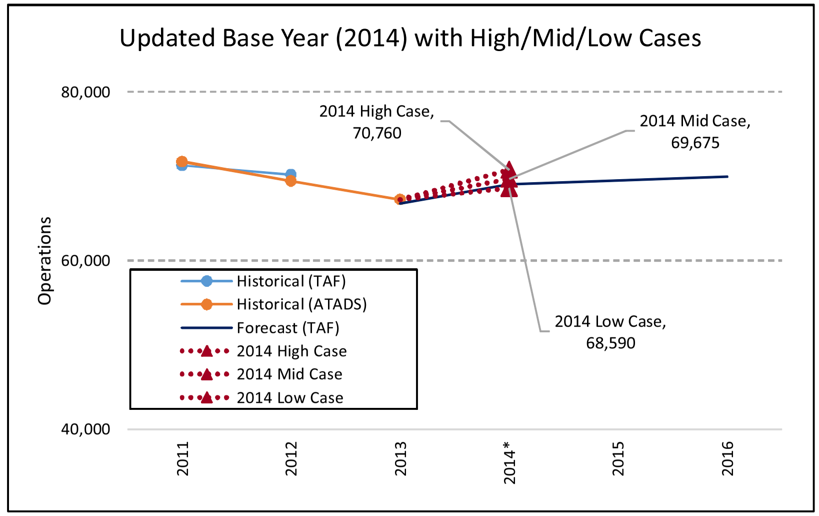
BURLINGTON INTERNATIONAL AIRPORT (BTV)
Revised Base Year 2014 Operational Data

EXHIBIT 5: Summary of High/Mid/Low Case Base Year Projections

Operational Data	Operations			
	ATADS 2013	High Case[1] 2014	Mid Case[2] 2014	**Low Case[3] 2014**
Itinerant Total	**45,561**	**47,320**	**46,235**	**45,150**
AirCarrier	12,941	14,180	13,635	13,090
Commuter/Taxi	13,873	13,940	13,400	12,860
General Aviation	18,747	19,200	19,200	19,200
~~Military~~				
Local Total	**21,666**	**23,440**	**23,440**	**23,440**
General Aviation	21,666	23,440	23,440	23,440
~~Military~~				
Total Annual Operations	**67,227**	**70,760**	**69,675**	**68,590**
TAF Forecast	66,787	69,020	69,020	69,020
Variance from TAF	0.66%	2.52%	0.95%	-0.62%
Planning Factors				
Average Day[4]	184	194	191	188



[1] Based on the Selected Growth Rate Projection
[2] Based on a median calculation between the High Case and the Low Case
[3] Based on the 2009-2013 Growth Rate Projection
[4] Annual operations / 365

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BURLINGTON INTERNATIONAL AIRPORT (BTV)

Revised Base Year 2014 Operational Data

EXHIBIT 6: Fleet Mix and Day/Night Operational Split - Low Case (Recommended)

	Subcategory	Day		Total
		Arrivals	Departures	
Itinerant	Air Carrier - Jet	4,141	4,452	8,593
	Air Carrier - Cargo Jet	263	260	523
	Air Carrier - Turbo	531	506	1,037
	Air Taxi - Jet	4,878	4,969	9,847
	Air Taxi - Turbo	843	849	1,692
	Air Taxi - Prop	38	40	78
	Gen. Aviation - Jet	3,180	3,032	6,212
	Gen. Aviation - Turbo	1,273	1,242	2,515
	Gen. Aviation - Prop	4,925	4,907	9,831
	TOTAL	20,073	20,256	40,329

	Subcategory	Day[1]		Total
		Arrivals	Departures	
Local	Gen. Aviation - Prop	11,134	11,134	22,268

	Subcategory	Night Open		Total
		Arrivals	Departures	
Itinerant	Air Carrier - Jet	1,323	1,379	2,703
	Air Carrier - Cargo Jet	1	4	5
	Air Carrier - Turbo	84	145	229
	Air Taxi - Jet	560	628	1,188
	Air Taxi - Turbo	30	15	45
	Air Taxi - Prop	4	4	8
	Gen. Aviation - Jet	102	253	355
	Gen. Aviation - Turbo	40	67	107
	Gen. Aviation - Prop	74	106	180
	TOTAL	2,219	2,601	4,821

	Subcategory	Night Open[2]		Total
		Arrivals	Departures	
Local	Gen. Aviation - Prop	586	586	1,172

	Subcategory	Total		Total All
		Arrivals	Departures	
Itinerant	Air Carrier - Jet	5,465	5,831	11,296
	Air Carrier - Cargo Jet	264	264	528
	Air Carrier - Turbo	615	651	1,266
	Air Taxi - Jet	5,439	5,597	11,036
	Air Taxi - Turbo	874	864	1,738
	Air Taxi - Prop	43	44	87
	Gen. Aviation - Jet	3,282	3,285	6,567
	Gen. Aviation - Turbo	1,313	1,309	2,622
	Gen. Aviation - Prop	4,999	5,012	10,011
	TOTAL	22,292	22,858	**45,150**

	Subcategory	Total		Total
		Arrivals	Departures	
Local	Gen. Aviation - Prop	11,720	11,720	**23,440**

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BURLINGTON INTERNATIONAL AIRPORT (BTV)

Revised Base Year 2014 Operational Data

EXHIBIT 6: Fleet Mix and Day/Night Operational Split - Low Case (Recommended)

	Subcategory	Night Closed[3]		Total
		Arrivals	Departures	
Itinerant	Air Carrier - Jet	488	12	500
	Air Carrier - Cargo Jet	1	1	3
	Air Carrier - Turbo	48	1	50
	Air Taxi - Jet	235	11	246
	Air Taxi - Turbo	5	20	25
	Air Taxi - Prop	1	-	1
	Gen. Aviation - Jet	8	7	15
	Gen. Aviation - Turbo	-	1	1
	Gen. Aviation - Prop	9	4	13
TOTAL		797	58	**855**

	Subcategory	Night Closed[4]		Total
		Arrivals	Departures	
Local	Gen. Aviation - Prop	N/A		

	Subcategory	Adjusted Total		Total All
		Arrivals	Departures	
Itinerant	Air Carrier - Jet	5,953	5,843	11,796
	Air Carrier - Cargo Jet	265	265	531
	Air Carrier - Turbo	663	653	1,316
	Air Taxi - Jet	5,673	5,608	11,282
	Air Taxi - Turbo	879	883	1,763
	Air Taxi - Prop	44	44	88
	Gen. Aviation - Jet	3,290	3,292	6,582
	Gen. Aviation - Turbo	1,313	1,311	2,624
	Gen. Aviation - Prop	5,008	5,016	10,024
TOTAL		23,090	22,916	**46,005**

[1] Assumed to be 95% of the total GA Local operations

[2] Assumed to be 5% of the total GA Local operations to account for night flight training in the local pattern

[3] Not included in the ATADS or TAF dataset. Figures are derived from a ratio to the FlightAware dataset.

[4] Assumed that there are no Local GA operations while the tower is closed

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BURLINGTON INTERNATIONAL AIRPORT (BTV)
Revised Base Year 2014 Operational Data

EXHIBIT 7: Fleet Mix by Specific Aircraft Type - Low Case (Recommended)

INSTRUMENT FLIGHT RULES (IFR) ITINERANT OPERATIONS[1]													
Category	Subcategory	Specific Aircraft Type	Day		Night Open		*Total Tower Open*	Night Closed		*Total Tower Closed*	Total All		Total All
			Arrivals	Departures	Arrivals	Departures		Arrivals	Departures		Arrivals	Departures	
Air Carrier	Air Carrier - Jet	767300	2.07	-	-	2.07	4.14	-	-	-	2.07	2.07	4.14
Air Carrier	Air Carrier - Jet	727EM2	-	1.04	1.04	-	2.07	2.69	2.69	5.38	3.72	3.72	7.45
Air Carrier	Air Carrier - Jet	A319-131	54.87	2.07	8.28	61.08	126.30	-	-	-	63.15	63.15	126.30
Air Carrier	Air Carrier - Jet	A320-232	97.32	95.25	28.99	41.41	262.96	13.44	-	13.44	139.75	136.66	276.40
Air Carrier	Air Carrier - Jet	CRJ701	1,569.48	1,618.77	394.44	492.14	4,074.83	197.59	6.74	204.33	2,161.51	2,117.65	4,279.17
Air Carrier	Air Carrier - Jet	CRJ9-ER[2]	*167.32*	2.05	4.78	*170.40*	344.56	0.44	-	0.44	172.55	172.45	345.00
Air Carrier	Air Carrier - Jet	EMB170	273.11	326.11	122.78	83.03	805.03	17.74	0.54	18.28	413.63	409.68	823.31
Air Carrier	Air Carrier - Jet	EMB175	1,127.16	1,342.70	509.86	348.57	3,328.28	72.59	2.16	74.75	1,709.61	1,693.42	3,403.03
Air Carrier	Air Carrier - Jet	EMB190	952.03	973.16	219.09	334.39	2,478.68	177.13	-	177.13	1,348.26	1,307.55	2,655.81
Air Carrier	Air Carrier - Jet	MD83[3]	*90.00*	*90.00*	-	-	180.00	-	-	-	90.00	90.00	180.00
Air Carrier	Air Carrier - Jet	MD88[2]	*262.76*	91.10	34.16	*211.00*	599.03	6.72	-	6.72	303.65	302.10	605.75
Air Carrier	**Air Carrier - Jet**	**Total**	**4,596.12**	**4,542.24**	**1,323.43**	**1,744.10**	**12,205.89**	**488.36**	**12.12**	**500.48**	**6,407.91**	**6,298.46**	**12,706.37**
Air Carrier	Air Carrier - Cargo Jet	757PW	47.33	46.76	0.19	0.76	95.03	0.24	0.25	0.49	47.76	47.76	95.52
Air Carrier	Air Carrier - Cargo Jet	757RR	215.63	213.00	0.85	3.46	432.94	1.10	1.12	2.23	217.58	217.58	435.16
Air Carrier	**Air Carrier - Cargo Jet**	**Total**	**262.96**	**259.75**	**1.04**	**4.22**	**527.97**	**1.34**	**1.37**	**2.72**	**265.34**	**265.35**	**530.69**
Air Carrier	Air Carrier - Turbo	CNV640	-	-	-	-	-	1.34	1.34	2.69	1.34	1.34	2.69
Air Carrier	Air Carrier - Turbo	DHC830	531.10	505.74	83.86	145.45	1,266.14	47.05	-	47.05	662.00	651.19	1,313.19
Air Carrier	**Air Carrier - Turbo**	**Total**	**531.10**	**505.74**	**83.86**	**145.45**	**1,266.14**	**48.39**	**1.34**	**49.73**	**663.34**	**652.53**	**1,315.88**
Air Taxi	Air Taxi - Jet	BD100	109.81	107.94	-	1.86	219.61	1.31	1.31	2.63	111.12	111.12	222.24
Air Taxi	Air Taxi - Jet	BD700	38.15	38.15	-	-	76.31	-	-	-	38.15	38.15	76.31
Air Taxi	Air Taxi - Jet	BEC400	102.27	99.21	2.88	6.87	211.24	1.31	-	1.31	106.47	106.08	212.55
Air Taxi	Air Taxi - Jet	CL600	20.47	20.47	-	-	40.94	-	-	-	20.47	20.47	40.94
Air Taxi	Air Taxi - Jet	CL601	7.44	5.58	0.93	1.86	15.82	-	1.31	1.31	8.38	8.76	17.13
Air Taxi	Air Taxi - Jet	CLREGJ	2,420.78	2,401.77	314.07	381.53	5,518.14	72.36	3.94	76.30	2,807.20	2,787.24	5,594.44
Air Taxi	Air Taxi - Jet	CNA510	2.79	2.79	-	-	5.58	-	-	-	2.79	2.79	5.58
Air Taxi	Air Taxi - Jet	CNA525C	39.86	40.94	1.09	-	81.89	-	-	-	40.94	40.94	81.89
Air Taxi	Air Taxi - Jet	CNA550	4.65	4.65	-	-	9.31	-	-	-	4.65	4.65	9.31
Air Taxi	Air Taxi - Jet	CNA560E	71.34	74.37	2.02	-	147.73	1.43	-	1.43	74.79	74.37	149.16
Air Taxi	Air Taxi - Jet	CNA560U	1.81	1.94	0.08	-	3.83	0.06	-	0.06	1.95	1.94	3.89
Air Taxi	Air Taxi - Jet	CNA560XL	234.00	246.43	17.97	8.54	506.94	4.25	-	4.25	256.21	254.97	511.18
Air Taxi	Air Taxi - Jet	CNA650	7.44	7.44	-	-	14.89	-	-	-	7.44	7.44	14.89
Air Taxi	Air Taxi - Jet	CNA680	62.27	64.21	4.73	2.79	134.00	-	-	-	67.00	67.00	134.00
Air Taxi	Air Taxi - Jet	CNA750	84.22	84.68	5.03	5.58	179.52	1.42	-	1.42	90.68	90.26	180.94
Air Taxi	Air Taxi - Jet	D328J	2.79	2.79	-	-	5.58	-	-	-	2.79	2.79	5.58
Air Taxi	Air Taxi - Jet	ECLIPSE500	6.51	6.51	-	-	13.03	-	-	-	6.51	6.51	13.03
Air Taxi	Air Taxi - Jet	EMB135	936.14	945.66	118.18	151.41	2,151.39	63.07	2.71	65.77	1,117.39	1,099.78	2,217.17
Air Taxi	Air Taxi - Jet	EMB145	22.15	28.93	5.22	1.91	58.20	5.14	0.24	5.38	32.51	31.08	63.58
Air Taxi	Air Taxi - Jet	EMB14L	345.08	425.60	71.41	38.97	881.06	69.09	1.19	70.28	485.58	465.77	951.34
Air Taxi	Air Taxi - Jet	FAL10	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Jet	FAL20A	22.33	23.26	0.93	-	46.53	-	-	-	23.26	23.26	46.53
Air Taxi	Air Taxi - Jet	FAL50	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Jet	FAL900	24.16	23.26	0.97	1.86	50.25	-	-	-	25.13	25.13	50.25
Air Taxi	Air Taxi - Jet	G200	44.69	45.60	1.23	2.79	94.31	3.48	-	3.48	49.40	48.39	97.79
Air Taxi	Air Taxi - Jet	GIV	13.96	13.96	-	-	27.92	-	-	-	13.96	13.96	27.92
Air Taxi	Air Taxi - Jet	HS1258	64.39	61.41	-	4.85	130.65	2.63	-	2.63	67.02	66.26	133.28
Air Taxi	Air Taxi - Jet	LEAR25	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Jet	LEAR35	10.24	9.86	0.93	2.23	23.26	1.31	-	1.31	12.48	12.10	24.58
Air Taxi	Air Taxi - Jet	LEAR45	53.97	54.90	-	0.93	109.81	2.63	-	2.63	56.60	55.83	112.43
Air Taxi	Air Taxi - Jet	LEAR55	1.86	1.86	-	-	3.72	-	-	-	1.86	1.86	3.72
Air Taxi	Air Taxi - Jet	LEAR60	8.38	8.38	-	-	16.75	-	-	-	8.38	8.38	16.75
Air Taxi	Air Taxi - Jet	R390	1.86	1.86	-	-	3.72	-	-	-	1.86	1.86	3.72
Air Taxi	**Air Taxi - Jet**	**Total**	**4,768.61**	**4,857.23**	**547.68**	**613.99**	**10,787.52**	**229.48**	**10.71**	**240.20**	**5,545.77**	**5,481.94**	**11,027.72**

FINAL DRAFT

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BTV Part 150 Noise Exposure Map Update - Base Year and Forecast Year Assumptions, Attachment C
September 17, 2014

BURLINGTON INTERNATIONAL AIRPORT (BTV)
Revised Base Year 2014 Operational Data

EXHIBIT 7: Fleet Mix by Specific Aircraft Type - Low Case (Recommended)

Category	Subcategory	Specific Aircraft Type	Day		Night Open		*Total Tower*	Night Closed		*Total Tower*	Total All		Total All
			Arrivals	Departures	Arrivals	Departures	*Open*	Arrivals	Departures	*Closed*	Arrivals	Departures	
Air Taxi	Air Taxi - Turbo	BEC100	3.72	3.72	-	-	7.44	-	-	-	3.72	3.72	7.44
Air Taxi	Air Taxi - Turbo	BEC200	9.31	9.31	0.93	0.93	20.47	-	-	-	10.24	10.24	20.47
Air Taxi	Air Taxi - Turbo	BEC300	2.79	2.79	-	-	5.58	-	-	-	2.79	2.79	5.58
Air Taxi	Air Taxi - Turbo	BEC90	13.96	13.96	-	-	27.92	-	-	-	13.96	13.96	27.92
Air Taxi	Air Taxi - Turbo	BEC99	295.92	281.56	-	3.45	580.92	-	15.41	15.41	295.92	300.41	596.33
Air Taxi	Air Taxi - Turbo	CNA208	13.03	12.10	-	0.93	26.06	1.31	1.31	2.63	14.34	14.34	28.68
Air Taxi	Air Taxi - Turbo	CNA441	3.72	3.72	-	-	7.44	-	-	-	3.72	3.72	7.44
Air Taxi	Air Taxi - Turbo	DHC6	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Turbo	DHC8	3.72	3.72	-	-	7.44	-	-	-	3.72	3.72	7.44
Air Taxi	Air Taxi - Turbo	DHC830	13.03	13.03	-	-	26.06	-	-	-	13.03	13.03	26.06
Air Taxi	Air Taxi - Turbo	EMB110	204.72	204.72	-	-	409.45	-	-	-	204.72	204.72	409.45
Air Taxi	Air Taxi - Turbo	P180	29.78	28.85	0.93	1.86	61.42	-	-	-	30.71	30.71	61.42
Air Taxi	Air Taxi - Turbo	PC12	227.89	250.32	27.95	7.44	513.60	2.72	-	2.72	258.56	257.76	516.32
Air Taxi	Air Taxi - Turbo	SAMER4	1.86	0.93	-	-	2.79	-	1.31	1.31	1.86	2.24	4.11
Air Taxi	Air Taxi - Turbo	SD360	-	-	-	-	-	1.31	1.31	2.63	1.31	1.31	2.63
Air Taxi	**Air Taxi - Turbo**	**Total**	**824.38**	**829.66**	**29.81**	**14.61**	**1,698.46**	**5.35**	**19.35**	**24.70**	**859.53**	**863.62**	**1,723.15**
Air Taxi	Air Taxi - Prop	BEC58P	2.79	1.86	1.86	2.79	9.31	-	-	-	4.65	4.65	9.31
Air Taxi	Air Taxi - Prop	CNA172	3.72	3.72	-	-	7.44	-	-	-	3.72	3.72	7.44
Air Taxi	Air Taxi - Prop	CNA206	1.86	1.86	-	-	3.72	-	-	-	1.86	1.86	3.72
Air Taxi	Air Taxi - Prop	CNA401	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Prop	CNA402	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Prop	GASEPV	26.45	27.92	2.39	0.93	57.69	-	-	-	28.85	28.85	57.69
Air Taxi	Air Taxi - Prop	PA31	0.93	0.93	-	-	1.86	-	-	-	0.93	0.93	1.86
Air Taxi	Air Taxi - Prop	PA31CH	-	0.93	-	-	0.93	1.31	-	1.31	1.31	0.93	2.24
Air Taxi	**Air Taxi - Prop**	**Total**	**37.62**	**39.08**	**4.25**	**3.72**	**84.68**	**1.31**	**-**	**1.31**	**43.19**	**42.81**	**85.99**
Gen. Aviation	Gen. Aviation - Jet	CIT3	13.12	13.12	-	-	26.25	-	-	-	13.12	13.12	26.25
Gen. Aviation	Gen. Aviation - Jet	CL600	35.24	40.68	3.94	-	79.86	0.58	-	0.58	39.76	40.68	80.44
Gen. Aviation	Gen. Aviation - Jet	CL601	17.06	17.06	-	-	34.12	-	-	-	17.06	17.06	34.12
Gen. Aviation	Gen. Aviation - Jet	CNA500	207.34	163.43	3.94	47.85	422.55	-	-	-	211.27	211.27	422.55
Gen. Aviation	Gen. Aviation - Jet	CNA510	45.93	48.55	1.31	-	95.80	0.51	-	0.51	47.75	48.55	96.30
Gen. Aviation	Gen. Aviation - Jet	CNA525C	191.59	175.69	2.62	18.53	388.43	-	-	-	194.21	194.21	388.43
Gen. Aviation	Gen. Aviation - Jet	CNA550	2.62	2.62	-	-	5.25	-	-	-	2.62	2.62	5.25
Gen. Aviation	Gen. Aviation - Jet	CNA55B	142.71	141.72	8.15	9.19	301.77	0.53	0.51	1.03	151.39	151.42	302.81
Gen. Aviation	Gen. Aviation - Jet	CNA560E	61.68	61.68	-	-	123.35	-	-	-	61.68	61.68	123.35
Gen. Aviation	Gen. Aviation - Jet	CNA560XL	65.61	62.99	-	2.62	131.23	-	-	-	65.61	65.61	131.23
Gen. Aviation	Gen. Aviation - Jet	CNA680	72.17	76.11	2.62	-	150.91	0.51	-	0.51	75.31	76.11	151.42
Gen. Aviation	Gen. Aviation - Jet	CNA750	26.25	24.70	-	1.54	52.49	-	-	-	26.25	26.25	52.49
Gen. Aviation	Gen. Aviation - Jet	ECLIPSE500	13.12	13.12	-	-	26.25	-	-	-	13.12	13.12	26.25
Gen. Aviation	Gen. Aviation - Jet	EMB145	1.31	1.31	-	-	2.62	-	-	-	1.31	1.31	2.62
Gen. Aviation	Gen. Aviation - Jet	F10062	10.50	10.50	-	-	21.00	-	-	-	10.50	10.50	21.00
Gen. Aviation	Gen. Aviation - Jet	GII	1.31	1.31	-	-	2.62	-	-	-	1.31	1.31	2.62
Gen. Aviation	Gen. Aviation - Jet	GIIB	10.50	11.81	1.31	-	23.62	-	-	-	11.81	11.81	23.62
Gen. Aviation	Gen. Aviation - Jet	GIV	34.12	34.12	1.31	1.31	70.86	-	-	-	35.43	35.43	70.86
Gen. Aviation	Gen. Aviation - Jet	GV	48.55	52.17	5.25	-	105.98	-	0.63	0.63	53.80	52.80	106.61
Gen. Aviation	Gen. Aviation - Jet	IA1125	13.12	13.12	-	-	26.25	-	-	-	13.12	13.12	26.25
Gen. Aviation	Gen. Aviation - Jet	LEAR25	5.25	6.56	1.31	-	13.12	-	-	-	6.56	6.56	13.12
Gen. Aviation	Gen. Aviation - Jet	LEAR35	128.50	125.77	3.99	5.39	263.65	1.04	1.55	2.59	133.52	132.71	266.23
Gen. Aviation	Gen. Aviation - Jet	MU3001	53.80	47.24	2.62	9.19	112.85	-	-	-	56.43	56.43	112.85
Gen. Aviation	**Gen. Aviation - Jet**	**Total**	**1,201.42**	**1,145.40**	**38.39**	**95.62**	**2,480.82**	**3.16**	**2.69**	**5.85**	**1,242.96**	**1,243.70**	**2,486.66**

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BTV Part 150 Noise Exposure Map Update - Base Year and Forecast Year Assumptions, Attachment C
September 17, 2014

BURLINGTON INTERNATIONAL AIRPORT (BTV)
Revised Base Year 2014 Operational Data

EXHIBIT 7: Fleet Mix by Specific Aircraft Type - Low Case (Recommended)

Category	Subcategory	Specific Aircraft Type	Day		Night Open		*Total Tower*	Night Closed		*Total Tower*	Total All		Total All
			Arrivals	Departures	Arrivals	Departures	*Open*	Arrivals	Departures	*Closed*	Arrivals	Departures	
Gen. Aviation	Gen. Aviation - Turbo	BEC300	1.31	1.31	-	-	2.62	-	-	-	1.31	1.31	2.62
Gen. Aviation	Gen. Aviation - Turbo	CNA208	117.88	109.79	2.84	10.94	241.46	-	-	-	120.73	120.73	241.46
Gen. Aviation	Gen. Aviation - Turbo	CNA441	300.04	295.26	10.97	14.43	620.70	-	0.51	0.51	311.01	310.20	621.21
Gen. Aviation	Gen. Aviation - Turbo	DHC6	1.31	1.31	-	-	2.62	-	-	-	1.31	1.31	2.62
Gen. Aviation	Gen. Aviation - Turbo	DHC8	6.56	6.56	-	-	13.12	-	-	-	6.56	6.56	13.12
Gen. Aviation	Gen. Aviation - Turbo	DHC830	2.62	2.62	-	-	5.25	-	-	-	2.62	2.62	5.25
Gen. Aviation	Gen. Aviation - Turbo	DO228	41.99	43.30	1.31	-	86.61	-	-	-	43.30	43.30	86.61
Gen. Aviation	Gen. Aviation - Turbo	PA42	1.31	1.31	-	-	2.62	-	-	-	1.31	1.31	2.62
Gen. Aviation	Gen. Aviation - Turbo	SD330	7.87	7.87	-	-	15.75	-	-	-	7.87	7.87	15.75
Gen. Aviation	**Gen. Aviation - Turbo**	**Total**	**480.91**	**469.35**	**15.13**	**25.37**	**990.76**	**-**	**0.51**	**0.51**	**496.04**	**495.23**	**991.27**
Gen. Aviation	Gen. Aviation - Prop	BEC58P	314.58	311.01	10.71	13.12	649.42	0.56	1.02	1.58	325.86	325.14	651.00
Gen. Aviation	Gen. Aviation - Prop	CNA172	421.09	425.17	7.10	5.25	858.61	1.37	0.51	1.88	429.56	430.93	860.49
Gen. Aviation	Gen. Aviation - Prop	CNA182	99.73	99.73	-	-	199.46	-	-	-	99.73	99.73	199.46
Gen. Aviation	Gen. Aviation - Prop	CNA206	177.16	174.53	-	2.62	354.31	-	-	-	177.16	177.16	354.31
Gen. Aviation	Gen. Aviation - Prop	CNA20T	2.62	2.62	-	-	5.25	-	-	-	2.62	2.62	5.25
Gen. Aviation	Gen. Aviation - Prop	DC3	1.31	1.31	-	-	2.62	-	-	-	1.31	1.31	2.62
Gen. Aviation	Gen. Aviation - Prop	GASEPF	30.18	30.18	-	-	60.36	-	-	-	30.18	30.18	60.36
Gen. Aviation	Gen. Aviation - Prop	GASEPV	667.66	662.19	8.07	17.56	1,355.49	1.55	-	1.55	677.29	679.75	1,357.04
Gen. Aviation	Gen. Aviation - Prop	PA28	95.04	95.80	2.07	1.31	194.21	-	-	-	97.11	97.11	194.21
Gen. Aviation	Gen. Aviation - Prop	PA30	10.50	10.50	-	-	21.00	-	-	-	10.50	10.50	21.00
Gen. Aviation	Gen. Aviation - Prop	PA31	40.68	40.68	-	-	81.36	-	-	-	40.68	40.68	81.36
Gen. Aviation	**Gen. Aviation - Prop**	**Total**	**1,860.56**	**1,853.72**	**27.95**	**39.87**	**3,782.10**	**3.49**	**1.52**	**5.02**	**1,892.00**	**1,895.12**	**3,787.12**
		TOTAL ITINERANT IFR	**14,564**	**14,502**	**2,072**	**2,687**	**33,824**	**781**	**50**	**831**	**17,416**	**17,239**	**34,655**

INSTRUMENT FLIGHT RULES (IFR) LOCAL OPERATIONS[4]

Category	Subcategory	Specific Aircraft Type[5]	Day		Night Open		*Total Tower*	Night Closed		*Total Tower*	Total All		Total All
			Arrivals	Departures	Arrivals	Departures	*Open*	Arrivals	Departures	*Closed*	Arrivals	Departures	
Gen. Aviation	Gen. Aviation - Prop	CNA172	-	-	-	-	-	-	-	-	-	-	-
Gen. Aviation	Gen. Aviation - Prop	GASEPF	-	-	-	-	-	-	-	-	-	-	-
Gen. Aviation	Gen. Aviation - Prop	GASEPV	-	-	-	-	-	-	-	-	-	-	-
Gen. Aviation	**Gen. Aviation - Prop**	**Total**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		TOTAL LOCAL IFR	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		TOTAL IFR	**14,564**	**14,502**	**2,072**	**2,687**	**33,824**	**781**	**50**	**831**	**17,416**	**17,239**	**34,655**

[1] IFR/VFR distributed by ratio from the ATADS data
[2] Parrish and Partners analysis of Delta Flight Schedules
[3] Allegiant service operating twice weekly between SFB and BTV started 2/19/14
[4] Local GA operations assumed to be 100% VFR
[5] Parrish and Partners analysis of local area operators, such as flight schools

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BURLINGTON INTERNATIONAL AIRPORT (BTV)
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EXHIBIT 7: Fleet Mix by Specific Aircraft Type - Low Case (Recommended)

VISUAL FLIGHT RULES (VFR) ITINERANT OPERATIONS[1]													
Category	Subcategory	Specific Aircraft Type	Day		Night Open		*Total Tower*	Night Closed		*Total Tower*	Total All		Total All
			Arrivals	Departures	Arrivals	Departures	*Open*	Arrivals	Departures	*Closed*	Arrivals	Departures	
Air Carrier	Air Carrier - Jet	767300	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	727EM2	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	A319-131	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	A320-232	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	CRJ701	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	CRJ9-ER[2]	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	EMB170	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	EMB175	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	EMB190	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	MD83[3]	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Jet	MD88[2]	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	**Air Carrier - Jet**	**Total**	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Cargo Jet	757PW	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Cargo Jet	757RR	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	**Air Carrier - Cargo Jet**	**Total**	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Turbo	CNV640	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	Air Carrier - Turbo	DHC830	-	-	-	-	-	-	-	-	-	-	-
Air Carrier	**Air Carrier - Turbo**	**Total**	-	-	-	-	-	-	-	-	-	-	-
Air Taxi	Air Taxi - Jet	BD100	2.53	2.48	-	0.04	5.05	0.03	0.03	0.06	2.56	2.56	5.12
Air Taxi	Air Taxi - Jet	BD700	0.88	0.88	-	-	1.76	-	-	-	0.88	0.88	1.76
Air Taxi	Air Taxi - Jet	BEC400	2.35	2.28	0.07	0.16	4.86	0.03	-	0.03	2.45	2.44	4.89
Air Taxi	Air Taxi - Jet	CL600	0.47	0.47	-	-	0.94	-	-	-	0.47	0.47	0.94
Air Taxi	Air Taxi - Jet	CL601	0.17	0.13	0.02	0.04	0.36	-	0.03	0.03	0.19	0.20	0.39
Air Taxi	Air Taxi - Jet	CLREGJ	55.72	55.28	7.23	8.78	127.01	1.67	0.09	1.76	64.61	64.15	128.77
Air Taxi	Air Taxi - Jet	CNA510	0.06	0.06	-	-	0.13	-	-	-	0.06	0.06	0.13
Air Taxi	Air Taxi - Jet	CNA525C	0.92	0.94	0.02	-	1.88	-	-	-	0.94	0.94	1.88
Air Taxi	Air Taxi - Jet	CNA550	0.11	0.11	-	-	0.21	-	-	-	0.11	0.11	0.21
Air Taxi	Air Taxi - Jet	CNA560E	1.64	1.71	0.05	-	3.40	0.03	-	0.03	1.72	1.71	3.43
Air Taxi	Air Taxi - Jet	CNA560U	0.04	0.04	0.00	-	0.09	0.00	-	0.00	0.04	0.04	0.09
Air Taxi	Air Taxi - Jet	CNA560XL	5.39	5.67	0.41	0.20	11.67	0.10	-	0.10	5.90	5.87	11.77
Air Taxi	Air Taxi - Jet	CNA650	0.17	0.17	-	-	0.34	-	-	-	0.17	0.17	0.34
Air Taxi	Air Taxi - Jet	CNA680	1.43	1.48	0.11	0.06	3.08	-	-	-	1.54	1.54	3.08
Air Taxi	Air Taxi - Jet	CNA750	1.94	1.95	0.12	0.13	4.13	0.03	-	0.03	2.09	2.08	4.16
Air Taxi	Air Taxi - Jet	D328J	0.06	0.06	-	-	0.13	-	-	-	0.06	0.06	0.13
Air Taxi	Air Taxi - Jet	ECLIPSE500	0.15	0.15	-	-	0.30	-	-	-	0.15	0.15	0.30
Air Taxi	Air Taxi - Jet	EMB135	21.55	21.77	2.72	3.49	49.52	1.45	0.06	1.51	25.72	25.31	51.03
Air Taxi	Air Taxi - Jet	EMB145	0.51	0.67	0.12	0.04	1.34	0.12	0.01	0.12	0.75	0.72	1.46
Air Taxi	Air Taxi - Jet	EMB14L	7.94	9.80	1.64	0.90	20.28	1.59	0.03	1.62	11.18	10.72	21.90
Air Taxi	Air Taxi - Jet	FAL10	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Jet	FAL20A	0.51	0.54	0.02	-	1.07	-	-	-	0.54	0.54	1.07
Air Taxi	Air Taxi - Jet	FAL50	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Jet	FAL900	0.56	0.54	0.02	0.04	1.16	-	-	-	0.58	0.58	1.16
Air Taxi	Air Taxi - Jet	G200	1.03	1.05	0.03	0.06	2.17	0.08	-	0.08	1.14	1.11	2.25
Air Taxi	Air Taxi - Jet	GIV	0.32	0.32	-	-	0.64	-	-	-	0.32	0.32	0.64
Air Taxi	Air Taxi - Jet	HS1258	1.48	1.41	-	0.11	3.01	0.06	-	0.06	1.54	1.53	3.07
Air Taxi	Air Taxi - Jet	LEAR25	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Jet	LEAR35	0.24	0.23	0.02	0.05	0.54	0.03	-	0.03	0.29	0.28	0.57
Air Taxi	Air Taxi - Jet	LEAR45	1.24	1.26	-	0.02	2.53	0.06	-	0.06	1.30	1.29	2.59
Air Taxi	Air Taxi - Jet	LEAR55	0.04	0.04	-	-	0.09	-	-	-	0.04	0.04	0.09
Air Taxi	Air Taxi - Jet	LEAR60	0.19	0.19	-	-	0.39	-	-	-	0.19	0.19	0.39
Air Taxi	Air Taxi - Jet	R390	0.04	0.04	-	-	0.09	-	-	-	0.04	0.04	0.09
Air Taxi	**Air Taxi - Jet**	**Total**	**109.76**	**111.80**	**12.61**	**14.13**	**248.30**	**5.28**	**0.25**	**5.53**	**127.65**	**126.18**	**253.83**

FINAL DRAFT

Prepared by: **Parrish and Partners, LLC**

BTV Part 150 Noise Exposure Map Update - Base Year and Forecast Year Assumptions, Attachment C
September 17, 2014

BURLINGTON INTERNATIONAL AIRPORT (BTV)
Revised Base Year 2014 Operational Data

EXHIBIT 7: Fleet Mix by Specific Aircraft Type - Low Case (Recommended)

Category	Subcategory	Specific Aircraft Type	Day		Night Open		*Total Tower*	Night Closed		*Total Tower*	Total All		Total All
			Arrivals	Departures	Arrivals	Departures	*Open*	Arrivals	Departures	*Closed*	Arrivals	Departures	
Air Taxi	Air Taxi - Turbo	BEC100	0.09	0.09	-	-	0.17	-	-	-	0.09	0.09	0.17
Air Taxi	Air Taxi - Turbo	BEC200	0.21	0.21	0.02	0.02	0.47	-	-	-	0.24	0.24	0.47
Air Taxi	Air Taxi - Turbo	BEC300	0.06	0.06	-	-	0.13	-	-	-	0.06	0.06	0.13
Air Taxi	Air Taxi - Turbo	BEC90	0.32	0.32	-	-	0.64	-	-	-	0.32	0.32	0.64
Air Taxi	Air Taxi - Turbo	BEC99	6.81	6.48	-	0.08	13.37	-	0.35	0.35	6.81	6.91	13.73
Air Taxi	Air Taxi - Turbo	CNA208	0.30	0.28	-	0.02	0.60	0.03	0.03	0.06	0.33	0.33	0.66
Air Taxi	Air Taxi - Turbo	CNA441	0.09	0.09	-	-	0.17	-	-	-	0.09	0.09	0.17
Air Taxi	Air Taxi - Turbo	DHC6	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Turbo	DHC8	0.09	0.09	-	-	0.17	-	-	-	0.09	0.09	0.17
Air Taxi	Air Taxi - Turbo	DHC830	0.30	0.30	-	-	0.60	-	-	-	0.30	0.30	0.60
Air Taxi	Air Taxi - Turbo	EMB110	4.71	4.71	-	-	9.42	-	-	-	4.71	4.71	9.42
Air Taxi	Air Taxi - Turbo	P180	0.69	0.66	0.02	0.04	1.41	-	-	-	0.71	0.71	1.41
Air Taxi	Air Taxi - Turbo	PC12	5.25	5.76	0.64	0.17	11.82	0.06	-	0.06	5.95	5.93	11.88
Air Taxi	Air Taxi - Turbo	SAMER4	0.04	0.02	-	-	0.06	-	0.03	0.03	0.04	0.05	0.09
Air Taxi	Air Taxi - Turbo	SD360	-	-	-	-	-	0.03	0.03	0.06	0.03	0.03	0.06
Air Taxi	**Air Taxi - Turbo**	**Total**	**18.97**	**19.10**	**0.69**	**0.34**	**39.09**	**0.12**	**0.45**	**0.57**	**19.78**	**19.88**	**39.66**
Air Taxi	Air Taxi - Prop	BEC58P	0.06	0.04	0.04	0.06	0.21	-	-	-	0.11	0.11	0.21
Air Taxi	Air Taxi - Prop	CNA172	0.09	0.09	-	-	0.17	-	-	-	0.09	0.09	0.17
Air Taxi	Air Taxi - Prop	CNA206	0.04	0.04	-	-	0.09	-	-	-	0.04	0.04	0.09
Air Taxi	Air Taxi - Prop	CNA401	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Prop	CNA402	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Prop	GASEPV	0.61	0.64	0.06	0.02	1.33	-	-	-	0.66	0.66	1.33
Air Taxi	Air Taxi - Prop	PA31	0.02	0.02	-	-	0.04	-	-	-	0.02	0.02	0.04
Air Taxi	Air Taxi - Prop	PA31CH	-	0.02	-	-	0.02	0.03	-	0.03	0.03	0.02	0.05
Air Taxi	**Air Taxi - Prop**	**Total**	**0.87**	**0.90**	**0.10**	**0.09**	**1.95**	**0.03**	**-**	**0.03**	**0.99**	**0.99**	**1.98**
Gen. Aviation	Gen. Aviation - Jet	CIT3	21.61	21.61	-	-	43.22	-	-	-	21.61	21.61	43.22
Gen. Aviation	Gen. Aviation - Jet	CL600	58.04	67.00	6.48	-	131.52	0.96	-	0.96	65.48	67.00	132.48
Gen. Aviation	Gen. Aviation - Jet	CL601	28.10	28.10	-	-	56.19	-	-	-	28.10	28.10	56.19
Gen. Aviation	Gen. Aviation - Jet	CNA500	341.47	269.15	6.48	78.80	695.91	-	-	-	347.95	347.95	695.91
Gen. Aviation	Gen. Aviation - Jet	CNA510	75.64	79.96	2.16	-	157.77	0.84	-	0.84	78.64	79.96	158.60
Gen. Aviation	Gen. Aviation - Jet	CNA525C	315.54	289.34	4.32	30.52	639.72	-	-	-	319.86	319.86	639.72
Gen. Aviation	Gen. Aviation - Jet	CNA550	4.32	4.32	-	-	8.64	-	-	-	4.32	4.32	8.64
Gen. Aviation	Gen. Aviation - Jet	CNA55B	235.03	233.41	13.43	15.13	497.00	0.87	0.84	1.70	249.33	249.38	498.70
Gen. Aviation	Gen. Aviation - Jet	CNA560E	101.58	101.58	-	-	203.15	-	-	-	101.58	101.58	203.15
Gen. Aviation	Gen. Aviation - Jet	CNA560XL	108.06	103.74	-	4.32	216.12	-	-	-	108.06	108.06	216.12
Gen. Aviation	Gen. Aviation - Jet	CNA680	118.87	125.35	4.32	-	248.54	0.84	-	0.84	124.03	125.35	249.38
Gen. Aviation	Gen. Aviation - Jet	CNA750	43.22	40.68	-	2.54	86.45	-	-	-	43.22	43.22	86.45
Gen. Aviation	Gen. Aviation - Jet	ECLIPSE500	21.61	21.61	-	-	43.22	-	-	-	21.61	21.61	43.22
Gen. Aviation	Gen. Aviation - Jet	EMB145	2.16	2.16	-	-	4.32	-	-	-	2.16	2.16	4.32
Gen. Aviation	Gen. Aviation - Jet	F10062	17.29	17.29	-	-	34.58	-	-	-	17.29	17.29	34.58
Gen. Aviation	Gen. Aviation - Jet	GII	2.16	2.16	-	-	4.32	-	-	-	2.16	2.16	4.32
Gen. Aviation	Gen. Aviation - Jet	GIIB	17.29	19.45	2.16	-	38.90	-	-	-	19.45	19.45	38.90
Gen. Aviation	Gen. Aviation - Jet	GIV	56.19	56.19	2.16	2.16	116.71	-	-	-	58.35	58.35	116.71
Gen. Aviation	Gen. Aviation - Jet	GV	79.96	85.93	8.64	-	174.54	-	1.04	1.04	88.61	86.96	175.57
Gen. Aviation	Gen. Aviation - Jet	IA1125	21.61	21.61	-	-	43.22	-	-	-	21.61	21.61	43.22
Gen. Aviation	Gen. Aviation - Jet	LEAR25	8.64	10.81	2.16	-	21.61	-	-	-	10.81	10.81	21.61
Gen. Aviation	Gen. Aviation - Jet	LEAR35	211.63	207.13	6.57	8.87	434.21	1.70	2.55	4.26	219.90	218.56	438.46
Gen. Aviation	Gen. Aviation - Jet	MU3001	88.61	77.80	4.32	15.13	185.86	-	-	-	92.93	92.93	185.86
Gen. Aviation	**Gen. Aviation - Jet**	**Total**	**1,978.65**	**1,886.40**	**63.22**	**157.47**	**4,085.74**	**5.20**	**4.43**	**9.63**	**2,047.07**	**2,048.30**	**4,095.37**

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Prepared by: **Parrish and Partners, LLC**

BTV Part 150 Noise Exposure Map Update - Base Year and Forecast Year Assumptions, Attachment C
September 17, 2014

BURLINGTON INTERNATIONAL AIRPORT (BTV)

Revised Base Year 2014 Operational Data

EXHIBIT 7: Fleet Mix by Specific Aircraft Type - Low Case (Recommended)

Category	Subcategory	Specific Aircraft Type	Day Arrivals	Day Departures	Night Open Arrivals	Night Open Departures	*Total Tower Open*	Night Closed Arrivals	Night Closed Departures	*Total Tower Closed*	Total All Arrivals	Total All Departures	Total All
Gen. Aviation	Gen. Aviation - Turbo	BEC300	2.16	2.16	-	-	4.32	-	-	-	2.16	2.16	4.32
Gen. Aviation	Gen. Aviation - Turbo	CNA208	194.15	180.82	4.68	18.01	397.66	-	-	-	198.83	198.83	397.66
Gen. Aviation	Gen. Aviation - Turbo	CNA441	494.14	486.27	18.07	23.77	1,022.25	-	0.84	0.84	512.21	510.88	1,023.09
Gen. Aviation	Gen. Aviation - Turbo	DHC6	2.16	2.16	-	-	4.32	-	-	-	2.16	2.16	4.32
Gen. Aviation	Gen. Aviation - Turbo	DHC8	10.81	10.81	-	-	21.61	-	-	-	10.81	10.81	21.61
Gen. Aviation	Gen. Aviation - Turbo	DHC830	4.32	4.32	-	-	8.64	-	-	-	4.32	4.32	8.64
Gen. Aviation	Gen. Aviation - Turbo	DO228	69.16	71.32	2.16	-	142.64	-	-	-	71.32	71.32	142.64
Gen. Aviation	Gen. Aviation - Turbo	PA42	2.16	2.16	-	-	4.32	-	-	-	2.16	2.16	4.32
Gen. Aviation	Gen. Aviation - Turbo	SD330	12.97	12.97	-	-	25.93	-	-	-	12.97	12.97	25.93
Gen. Aviation	**Gen. Aviation - Turbo**	**Total**	**792.03**	**772.99**	**24.91**	**41.78**	**1,631.71**	**-**	**0.84**	**0.84**	**816.94**	**815.61**	**1,632.55**
Gen. Aviation	Gen. Aviation - Prop	BEC58P	518.09	512.21	17.65	21.61	1,069.56	0.93	1.67	2.60	536.67	535.49	1,072.16
Gen. Aviation	Gen. Aviation - Prop	CNA172	693.50	700.23	11.69	8.64	1,414.07	2.26	0.84	3.10	707.45	709.71	1,417.17
Gen. Aviation	Gen. Aviation - Prop	CNA182	164.25	164.25	-	-	328.50	-	-	-	164.25	164.25	328.50
Gen. Aviation	Gen. Aviation - Prop	CNA206	291.76	287.44	-	4.32	583.53	-	-	-	291.76	291.76	583.53
Gen. Aviation	Gen. Aviation - Prop	CNA20T	4.32	4.32	-	-	8.64	-	-	-	4.32	4.32	8.64
Gen. Aviation	Gen. Aviation - Prop	DC3	2.16	2.16	-	-	4.32	-	-	-	2.16	2.16	4.32
Gen. Aviation	Gen. Aviation - Prop	GASEPF	49.71	49.71	-	-	99.42	-	-	-	49.71	49.71	99.42
Gen. Aviation	Gen. Aviation - Prop	GASEPV	1,099.60	1,090.58	13.29	28.93	2,232.40	2.56	-	2.56	1,115.45	1,119.51	2,234.96
Gen. Aviation	Gen. Aviation - Prop	PA28	156.52	157.77	3.41	2.16	319.86	-	-	-	159.93	159.93	319.86
Gen. Aviation	Gen. Aviation - Prop	PA30	17.29	17.29	-	-	34.58	-	-	-	17.29	17.29	34.58
Gen. Aviation	Gen. Aviation - Prop	PA31	67.00	67.00	-	-	133.99	-	-	-	67.00	67.00	133.99
Gen. Aviation	**Gen. Aviation - Prop**	**Total**	**3,064.21**	**3,052.96**	**46.03**	**65.67**	**6,228.87**	**5.75**	**2.51**	**8.26**	**3,116.00**	**3,121.13**	**6,237.13**
		TOTAL ITINERANT VFR	**5,964**	**5,844**	**148**	**279**	**12,236**	**16**	**8**	**25**	**6,128**	**6,132**	**12,261**

VISUAL FLIGHT RULES (VFR) LOCAL OPERATIONS[4]

Category	Subcategory	Specific Aircraft Type[5]	Day Arrivals	Day Departures	Night Open Arrivals	Night Open Departures	*Total Tower Open*	Night Closed Arrivals	Night Closed Departures	*Total Tower Closed*	Total All Arrivals	Total All Departures	Total All
Gen. Aviation	Gen. Aviation - Prop	CNA172	5,567.00	5,567.00	293.00	293.00	11,720.00	-	-	-	5,860.00	5,860.00	11,720.00
Gen. Aviation	Gen. Aviation - Prop	GASEPF	2,087.63	2,087.63	109.88	109.88	4,395.00	-	-	-	2,197.50	2,197.50	4,395.00
Gen. Aviation	Gen. Aviation - Prop	GASEPV	3,479.38	3,479.38	183.13	183.13	7,325.00	-	-	-	3,662.50	3,662.50	7,325.00
Gen. Aviation	**Gen. Aviation - Prop**	**Total**	**11,134.00**	**11,134.00**	**586.00**	**586.00**	**23,440.00**	**-**	**-**	**-**	**11,720.00**	**11,720.00**	**23,440.00**
		TOTAL LOCAL VFR	**11,134**	**11,134**	**586**	**586**	**23,440**	**-**	**-**	**-**	**11,720**	**11,720**	**23,440**
		TOTAL VFR	**17,098**	**16,978**	**734**	**865**	**35,676**	**16**	**8**	**25**	**17,848**	**17,852**	**35,701**
		TOTAL ALL OPS	**31,662**	**31,480**	**2,805**	**3,552**	**69,500**	**797**	**58**	**855**	**35,265**	**35,091**	**70,355**

[1] IFR/VFR distributed by ratio from the ATADS data
[2] Parrish and Partners analysis of Delta Flight Schedules
[3] Allegiant service operating twice weekly between SFB and BTV started 2/19/14
[4] Local GA operations assumed to be 100% VFR
[5] Parrish and Partners analysis of local area operators, such as flight schools

FINAL DRAFT

Prepared by: **Parrish and Partners, LLC**

Table X presents the detailed aircraft modeling fleet mixes for the 2014 Existing Conditions NEM. 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 am – 10 pm and 10 pm – 7 am, respectively), and INM 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). Departures are further subdivided by stage length, the distance to the first destination. The INM 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 X 2014 Modeled Average Daily Aircraft Operations

Aircraft Category	INM Aircraft Type	Departure Stage Length[3]	Itinerant Operations				Local Operations (Touch and Go)		Total[4]
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
Air Carrier Jets	727EM2	1	-	<0.1	-	<0.1	-	-	<0.1
	727EM2	2	<0.1	-	-	-	-	-	<0.1
	767300	1	-	-	<0.1	-	-	-	<0.1
	767300	3	-	<0.1	-	-	-	-	<0.1
	A319-131	1	<0.1	-	0.2	<0.1	-	-	0.2
	A319-131	2	<0.1	0.2	-	-	-	-	0.2
	A320-232	1	0.3	0.1	0.3	0.1	-	-	0.8
	A320-232	4	-	<0.1	-	-	-	-	<0.1
	CRJ701	1	2.7	0.5	4.3	1.6	-	-	9.1
	CRJ701	2	1.7	0.9	-	-	-	-	2.6
	CRJ701	3	<0.1	-	-	-	-	-	<0.1
	CRJ9-ER	1	<0.1	<0.1	0.5	<0.1	-	-	0.5
	CRJ9-ER	2	<0.1	0.4	-	-	-	-	0.4
	EMB170	1	0.9	0.2	0.7	0.4	-	-	2.3
	EMB170	2	<0.1	-	-	-	-	-	<0.1
	EMB170	3	<0.1	-	-	-	-	-	<0.1
	EMB175	1	3.7	1.0	3.1	1.6	-	-	9.3
	EMB175	2	<0.1	-	-	-	-	-	<0.1
	EMB175	3	<0.1	-	-	-	-	-	<0.1
	EMB190	1	2.7	0.9	2.6	1.1	-	-	7.3
	MD83	1	-	-	0.2	-	-	-	0.2
	MD83	3	0.2	-	-	-	-	-	0.2
	MD88	1	<0.1	0.3	0.7	0.1	-	-	1.1
	MD88	2	0.2	0.3	-	-	-	-	0.5
	Subtotal[4]		*12.6*	*4.8*	*12.5*	*4.9*	-	-	*34.8*
Air Carrier Cargo Jets	757PW	1	0.1	-	0.1	<0.1	-	-	0.3
	757PW	2	<0.1	<0.1	-	-	-	-	<0.1
	757RR	1	0.6	-	0.6	<0.1	-	-	1.2
	757RR	2	<0.1	<0.1	-	-	-	-	<0.1
	Subtotal		*0.7*	*<0.1*	*0.7*	*<0.1*	-	-	*1.5*
Air Carrier Turbo Prop	CNV640	1	-	<0.1	-	<0.1	-	-	<0.1
	DHC830	1	1.4	0.4	1.4	0.4	-	-	3.6
	Subtotal		*1.4*	*0.4*	*1.4*	*0.4*	-	-	*3.6*
AIR CARRIER SUBTOTAL[4]			**14.7**	**5.3**	**14.6**	**5.3**	**-**	**-**	**39.9**
Air Taxi Jet	BD100	1	0.3	<0.1	0.3	<0.1	-	-	0.6
	BD700	1	0.1	-	0.1	-	-	-	0.2
	BEC400	1	0.3	<0.1	0.3	<0.1	-	-	0.6
	CL600	1	0.1	-	0.1	-	-	-	0.1

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Aircraft Category	INM Aircraft Type	Departure Stage Length[3]	Itinerant Operations				Local Operations (Touch and Go)		Total[4]
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	CL601	1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
	CLREGJ	1	6.8	1.1	6.8	1.1	-	-	15.7
	CNA510	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA525C	1	0.1	-	0.1	<0.1	-	-	0.2
	CNA550	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA560E	1	0.2	-	0.2	<0.1	-	-	0.3
	CNA560U	1	<0.1	-	<0.1	<0.1	-	-	<0.1
	CNA560XL	1	0.7	<0.1	0.7	0.1	-	-	1.4
	CNA650	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA680	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	CNA750	1	0.2	<0.1	0.2	<0.1	-	-	0.5
	D328J	1	<0.1	-	<0.1	-	-	-	<0.1
	E50P*	1	<0.1	-	<0.1	-	-	-	<0.1
	E55P*	1	<0.1	-	<0.1	-	-	-	0.1
	ECLIPSE500	1	<0.1	-	<0.1	-	-	-	<0.1
	EMB135	1	2.3	0.4	2.6	0.5	-	-	5.9
	EMB135	2	0.3	<0.1	-	-	-	-	0.4
	EMB145	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	EMB145	2	<0.1	<0.1	-	-	-	-	<0.1
	EMB14L	1	0.6	<0.1	0.9	0.4	-	-	2.0
	EMB14L	2	0.6	0.1	-	-	-	-	0.7
	FAL10	1	<0.1	-	<0.1	-	-	-	<0.1
	FAL20A	1	0.1	-	0.1	<0.1	-	-	0.1
	FAL50	1	<0.1	-	<0.1	-	-	-	<0.1
	FAL900	1	0.1	<0.1	0.1	<0.1	-	-	0.1
	G200	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	GIV	1	<0.1	-	<0.1	-	-	-	0.1
	HS1258	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	LEAR25	1	<0.1	-	<0.1	-	-	-	<0.1
	LEAR35	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	LEAR45	1	<0.1	-	<0.1	-	-	-	0.1
	LEAR55	1	<0.1	-	<0.1	-	-	-	<0.1
	LEAR60	1	<0.1	-	<0.1	-	-	-	<0.1
	LJ40*	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	R390	1	<0.1	-	<0.1	-	-	-	<0.1
	Subtotal		*13.7*	*1.8*	*13.3*	*2.2*	-	-	*30.9*
Air Taxi Prop	BE36*	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC58P	1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
	CNA172	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA206	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA401	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA402	1	<0.1	-	<0.1	-	-	-	<0.1
	GASEPV	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	PA31	1	<0.1	-	<0.1	-	-	-	<0.1
	PA31CH	1	<0.1	-	-	<0.1	-	-	<0.1
	Subtotal		*0.1*	*<0.1*	*0.1*	*<0.1*	-	-	*0.2*
Air Taxi Turbo Prop	B350*	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC100	1	<0.1	-	<0.1	-	-	-	<0.1
	BEC200	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	BEC90	1	<0.1	-	<0.1	-	-	-	0.1
	BEC99	1	0.8	0.1	0.8	-	-	-	1.7
	CNA208	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	CNA441	1	<0.1	-	<0.1	-	-	-	<0.1

Aircraft Category	INM Aircraft Type	Departure Stage Length[3]	Itinerant Operations				Local Operations (Touch and Go)		Total[4]
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	DHC6	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC8	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC830	1	<0.1	-	<0.1	-	-	-	0.1
	EMB110	1	0.6	-	0.6	-	-	-	1.1
	P180	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	PC12	1	0.7	<0.1	0.6	0.1	-	-	1.4
	SAMER4	1	<0.1	<0.1	<0.1	-	-	-	<0.1
	SD360	1	-	<0.1	-	<0.1	-	-	<0.1
	TBM8*	1	<0.1	-	<0.1	-	-	-	<0.1
	Subtotal		*2.3*	*0.1*	*2.3*	*0.1*	-	-	*4.8*
AIR TAXI SUBTOTAL			**16.1**	**1.9**	**15.7**	**2.3**	**-**	**-**	**36**
General Aviation Jet	CIT3	1	0.1	-	0.1	-	-	-	0.2
	CL600	1	0.3	-	0.3	<0.1	-	-	0.6
	CL601	1	0.1	-	0.1	-	-	-	0.2
	CNA500	1	1.2	0.3	1.5	<0.1	-	-	3.1
	CNA510	1	0.2	-	0.2	-	-	-	0.3
	CNA525C	1	1.3	0.1	1.4	<0.1	-	-	2.8
	CNA550	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA55B	1	1.0	0.1	1.0	0.1	-	-	2.2
	CNA560E	1	0.3	-	0.3	-	-	-	0.6
	CNA560XL	1	0.5	<0.1	0.5	-	-	-	1.0
	CNA680	1	0.5	-	0.5	<0.1	-	-	1.1
	CNA750	1	0.2	<0.1	0.2	-	-	-	0.4
	E50P*	1	0.2	-	0.2	<0.1	-	-	0.4
	E55P*	1	0.2	-	0.2	-	-	-	0.3
	ECLIPSE500	1	<0.1	-	0.1	-	-	-	0.1
	ECLIPSE500	2	<0.1	-	-	-	-	-	<0.1
	ECLIPSE500	3	<0.1	-	-	-	-	-	<0.1
	EMB145	1	-	-	<0.1	-	-	-	<0.1
	EMB145	2	<0.1	-	-	-	-	-	<0.1
	F10062	1	0.1	-	0.1	-	-	-	0.1
	F10062	3	<0.1	-	-	-	-	-	<0.1
	GII	1	<0.1	-	<0.1	-	-	-	<0.1
	GIIB	1	0.1	-	0.1	<0.1	-	-	0.2
	GIV	1	0.2	<0.1	0.2	<0.1	-	-	0.5
	GV	1	0.4	<0.1	0.3	<0.1	-	-	0.8
	H25C*	1	0.2	-	0.2	-	-	-	0.3
	IA1125	1	0.1	-	0.1	-	-	-	0.2
	LEAR25	1	<0.1	-	<0.1	<0.1	-	-	0.1
	LEAR35	1	0.7	0.1	0.8	<0.1	-	-	1.6
	LJ40*	1	<0.1	-	<0.1	-	-	-	<0.1
	MU3001	1	0.3	0.1	0.4	<0.1	-	-	0.8
	Subtotal		*8.3*	*0.7*	*8.7*	*0.3*	-	-	*18.0*
General Aviation Prop	BE36*	1	0.7	<0.1	0.7	-	-	-	1.4
	BEC58P	1	2.3	0.1	2.3	0.1	-	-	4.7
	CNA172	1	3.1	<0.1	3.1	0.1	30.5	1.6	38.3
	CNA182	1	0.7	-	0.7	-	-	-	1.4
	CNA206	1	0.6	-	0.6	-	-	-	1.2
	CNA20T	1	<0.1	-	<0.1	-	-	-	<0.1
	COL4*	1	0.2	-	0.2	-	0.7	-	1.1
	DA40*	1	0.1	<0.1	0.1	-	0.5	0.1	0.8
	DC3	1	<0.1	-	<0.1	-	-	-	<0.1

Aircraft Category	INM Aircraft Type	Departure Stage Length[3]	Itinerant Operations				Local Operations (Touch and Go)		Total[4]
			Departures		Arrivals				
			Day	Night	Day	Night	Day	Night	
	GASEPF	1	0.2	-	0.2	-	11.4	0.6	12.5
	GASEPV	1	4.4	0.1	4.5	0.1	17.6	0.9	27.6
	NAVI*	1	0.1	-	0.1	-	0.3	-	0.4
	PA28	1	0.7	<0.1	0.7	<0.1	-	-	1.4
	PA30	1	0.1	-	0.1	-	-	-	0.2
	PA31	1	0.3	-	0.3	-	-	-	0.6
	Subtotal		*13.4*	*0.3*	*13.5*	*0.2*	*61.0*	*3.2*	*91.7*
General Aviation Turbo Prop	B350*	1	0.1	-	0.1	-	-	-	0.3
	BEC300	1	<0.1	-	<0.1	-	-	-	<0.1
	CNA208	1	0.4	<0.1	0.5	<0.1	-	-	0.9
	CNA441	1	2.1	0.1	2.2	0.1	-	-	4.5
	DHC6	1	<0.1	-	<0.1	-	-	-	<0.1
	DHC8	1	<0.1	-	<0.1	-	-	-	0.1
	DHC830	1	<0.1	-	<0.1	-	-	-	<0.1
	DO228	1	0.2	-	0.2	<0.1	-	-	0.3
	P46T*	1	0.2	<0.1	0.2	-	-	-	0.4
	PA42	1	<0.1	-	<0.1	-	-	-	<0.1
	SD330	1	0.1	-	0.1	-	-	-	0.1
	TBM8*	1	0.2	<0.1	0.2	<0.1	-	-	0.4
	Subtotal		*3.4*	*0.2*	*3.5*	*0.1*	*-*	*-*	*7.2*
GENERAL AVIATION SUBTOTAL			**25.1**	**1.2**	**25.7**	**0.6**	**61.0**	**3.2**	**116.9**
Military (Fixed wing) – Based F-16s[1]	F16GE	No-AB	0.4	-	7.5	-	7.2	-	15.0
	F16GE	AB	7.1	-	-	-	-	-	7.1
	Subtotal		*7.5*	*-*	*7.5*	*-*	*7.2*	*-*	*22.2*
Military Helicopter[2]	B206L	1	0.3	<0.1	0.3	<0.1	-	-	0.5
	S70	1	0.3	<0.1	0.3	<0.1	-	-	0.7
	Subtotal		*0.6*	*<0.1*	*0.6*	*<0.1*	*-*	*-*	*1.3*
Military (Fixed Wing) - Transient	BEC200	1	0.5	<0.1	0.5	<0.1	-	-	1.1
	C130	1	0.1	<0.1	0.1	<0.1	0.5	-	0.7
	C17	1	0.1	<0.1	0.1	<0.1	-	-	0.1
	CAN235	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	CNA560	1	0.1	<0.1	0.1	<0.1	-	-	0.3
	F-18	1	0.1	<0.1	0.1	<0.1	-	-	0.2
	KC-135	1	<0.1	<0.1	<0.1	<0.1	-	-	0.1
	Subtotal		*1.1*	*<0.1*	*1.1*	*<0.1*	*0.5*	*-*	*2.8*
MILITARY SUBTOTAL			**9.2**	**0.1**	**9.2**	**0.1**	**7.7**	**-**	**26.3**
TOTAL[4]			**65.2**	**8.4**	**65.3**	**8.3**	**68.7**	**3.2**	**219.0**

Notes:
* User defined aircraft. See Section XX.
1 Based Vermont Air National Guard Aircraft
2 Based Vermont Army National Guard Helicopter.
3 Departure Stage Length of 1 is for departures to a destination between 1 and 500 nautical miles. Stage Length 2 is for departures to a destination between 500 and 1000 nautical miles. Stage Length 3 is for departures to a destination between 1000 and 1500 nautical miles. For F16GE, "No-AB" are operations without the use of afterburner and "AB" refers to departures that use afterburner.
4 Some Totals and Subtotals may not match exactly due to rounding

Sources: FAA 2014; HMMH, 2014; FlightView® Data (2014); Campbell & Parish, 2014; Parrish & Partners, 2014; USAF 2013

David A. Crandall

From: richard.doucette@faa.gov
Sent: Wednesday, September 17, 2014 14:29
To: David A. Crandall
Cc: hkendrew@btv.aero; Ted Baldwin; Justin E. Divens; kchase@campbell-paris.com; MFloyd@parrishandpartners.com; hdcampbell@campbell-paris.com
Subject: RE: BTV NEM - transmittal of forecast assumptions memorandum

Categories: BTV NEM

The forecasts described in the memorandum dated September 17, 2014 are approved.

Richard Doucette
Environmental Program Manager
Airports Division, FAA New England Region
781-238-7613

From: David A. Crandall [mailto:dcrandall@hmmh.com]
Sent: Wednesday, September 17, 2014 12:32 PM
To: Doucette, Richard (FAA)
Cc: Heather Kendrew (hkendrew@btv.aero); Ted Baldwin; Justin E. Divens; Kerr Chase; Mike Floyd; HD Campbell
Subject: BTV NEM - transmittal of forecast assumptions memorandum

Richard-
With City of Burlington, Vermont's permission, we are sending you the forecast assumptions for the Burlington International Airport (BTV) Noise Exposure Map (NEM) for your review and concurrence.

The assumptions are documented in the attached memorandum, file 20140917_BTV_NEM_Update_Forecast_Memo_wattachments.pdf.
The memorandum discusses existing operations, forecast operations and airport layout assumptions.

As always, please let us know if you have any questions.

Thanks, Dave

David A. Crandall
Principal Consultant

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dcrandall@hmmh.com

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APPENDIX D MATERIAL RELATED TO PUBLIC NOTICE AND PARTICIPATION

D.1 Notices

NOTICE OF PUBLIC WORKSHOP

WHAT: FAA Recommended Noise Mitigation and Mapping Session

This meeting will be an opportunity to discuss the sound around your airport.

WHEN: November 9th, 2015 6pm—8pm

WHERE: Chamberlin School in South Burlington

BURLINGTON
INTERNATIONAL AIRPORT

[redacted]

SPORTS

[redacted]

NOTICE OF PUBLIC WORKSHOP

WHAT: **FAA Recommended Noise Mitigation and Mapping Session**

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WHEN: **November 9th, 2015 6pm—8pm**

WHERE: **Chamberlin School in South Burlington**

BURLINGTON
INTERNATIONAL AIRPORT

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BURLINGTON
INTERNATIONAL AIRPORT

[redacted]

[redacted]

[redacted]

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BURLINGTON
INTERNATIONAL AIRPORT

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[redacted]

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BURLINGTON INTERNATIONAL AIRPORT

[redacted]

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WHERE: **Chamberlin School in South Burlington**

BURLINGTON INTERNATIONAL AIRPORT

THE OTHER PAPER Thursday, October 29, 2015 15

[redacted]

NOTICE OF PUBLIC WORKSHOP

WHAT: FAA Recommended Noise Mitigation and Mapping Session

This meeting will be an opportunity to discuss the sound around your airport.

WHEN: November 9th, 2015 6pm—8pm

WHERE: Chamberlin School in South Burlington

BURLINGTON
INTERNATIONAL AIRPORT

[redacted]

NOTICE OF PUBLIC WORKSHOP

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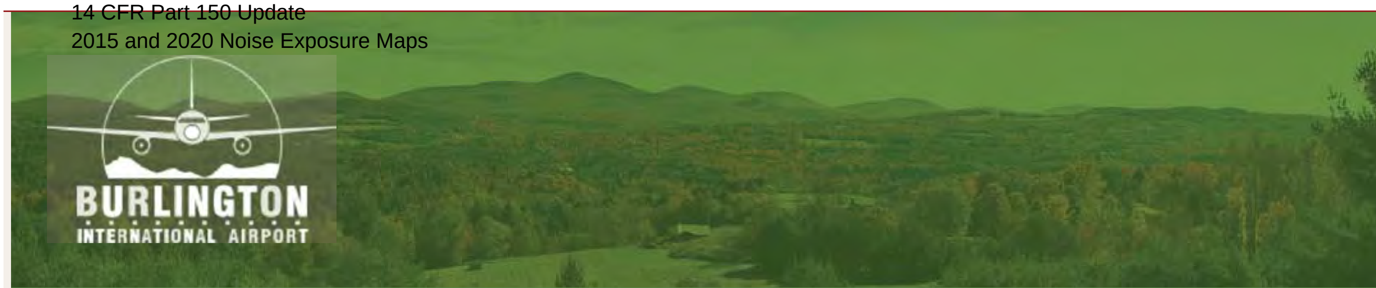
WHERE: Chamberlin School in South Burlington

BURLINGTON
INTERNATIONAL AIRPORT

[redacted]

D.2 Website Content



NAVIGATION

- ARRIVALS & DEPARTURES
- AIRPORT NEWS
- EVENTS
- COMMUNITY CONNECTION
- AIRPORT COMMISSION
- EMPLOYMENT OPPORTUNITIES
- AIRPORT OPERATIONS
- DOING BUSINESS WITH BTV
- GREEN MOUNTAIN BOYS
- NEIGHBORHOOD CONNECTION

SOUND MITIGATION AND MAPPING

Public Comment Requested - Burlington International Airport FAA Part 150

Thank you for your interest in the Burlington International Airport's Noise Exposure Map Update. We request your review of the document and maps and your comments are appreciated and may be incorporated into our final document submittal to FAA. **Comments received before 4:00pm Thursday, December 10, 2015 at the airport offices may be incorporated into the final submission to the FAA**

Noise Exposure Map Update Document Excluding Figures

Noise Exposure Map Figures 12-15 Only

Noise Exposure Map Figures 16-25 Only

Comment Card PDF

Please print and mail, fax, or email the comment card for us to review.

Please always feel free to call our offices if you have any questions.

Phone: 802-863-2874

Email: btv@btv.aero

Fax: 802-863-7947

Mail: Burlington International Airport

1200 Airport Drive, #1

S. Burlington, VT 05403

BTV has hosted an FAA Recommended Noise Mitigation and Mapping Session on November 9th, 2015 6pm-8pm at the Chamberlain School in South Burlington. This meeting was an opportunity to discuss the sound around your airport - Please see the video from Channel 17 to view the meeting.

Please click here for the presentation from the November 9, 2015 Public Workshop

See video below

<iframe src="https://www.cctv.org/stream-player-build?nid=160290" width="322" height="365" frameborder="0" marginheight="0" marginwidth="0" scrolling="no"></iframe>

Please click here for the November 9, 2015 Sound Mitigation and Mapping Workshop

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Burlington International Airport will begin the Chamberlin Neighborhood noise mitigation and site restoration program this spring. Over the past 10 years, the Airport has received federal funding for the purchase and removal of homes within the 65 decibel sound areas around the Airport. The 90+ homes that have been sold voluntarily to the Airport will be removed beginning in mid-April and ending in approximately mid-October 2015.

Project updates will be available here and also at sburl.com

PROJECT UPDATES

- 10/09/15: There will be no work on site today. SD Ireland plans to work tomorrow (Saturday 10/10) using a roller to level out wheel ruts throughout the project.
- 10/07/15: SD Ireland will continue with curb work on White Street and general site cleanup throughout the project area.
- 10/06/15: SD Ireland will be doing general site cleanup throughout the project area and installing curb on White Street.
- 10/05/15: SD Ireland will be placing curb on White Street and doing general site cleanup and seeding.
- 10/02/15: SD Ireland will continue with general site cleanup and with curb work on White and Maryland Streets.
- 10/01/15: SD Ireland will continue with general site cleanup and curb preparation on Maryland and White Streets.
- 09/30/15: SD Ireland will be preparing curb installation on Maryland and White Streets and doing general site cleanup.
- 09/28/15: SD Ireland will be doing general site cleanup.topsoil, and hydroseeding as well as curb work on White Street and Maryland Street.
- 09/24/15: SD Ireland will continue general site cleanup, topsoil, and hydroseeding.
- 09/23/15: SD Ireland will be doing topsoil and seeding on Maryland street and general site cleanup throughout the project.
- 09/21/15: SD Ireland will be removing the house at 17 Maryland and will be doing general site cleanup, grading, topsoil, and seeding on the properties adjacent to Maryland Street.
- 09/18/15: SD Ireland will be doing general site cleanup on Maryland.
- 09/17/15: SD Ireland will be removing the house at 23 Maryland and continuing curb work on White Street and Airport Drive.
- 09/16/15: SD Ireland will be removing the house at 7 Maryland and will continue curb work on Airport Drive and White Street.
- 09/14/15: SD Ireland will be removing the house at 1 Maryland and installing curb on Airport Drive and White Street.
- 09/11/15: SD Ireland will be doing site cleanup, grading, topsoiling, and brush removal on Delaware and Maryland Streets and curb installation on Airport Drive. The Franklin County sheriffs (about 14 people) will be conducting training in the remaining houses on Maryland. They will not be in uniform and no weapons will be on site.
- 09/10/15: SD Ireland will be removing the house at 1 Maryland and will be doing curb preparation/installation on Airport Drive between Elizabeth and White Street.
- 09/09/15: SD Ireland will be removing the house located at 5 Delaware.
- 09/08/15: SD Ireland will be removing the house at 3 Delaware.
- 09/04/15: SD Ireland will be doing general site cleanup, brush removal, and grading on Delaware and Maryland Streets.

- 09/03/15: SD Ireland will be removing the house at 4 Delaware.
- 09/02/15: SD Ireland will be removing the house at 2 Delaware. Parker will be doing site cleanup and hydroseeding on Airport Drive.
- 08/31/15: SD Ireland will be removing the house located at 441 White Street. Parker will be installing curb on Airport Drive and hydroseeding, doing final cleanup throughout the project along Airport Drive.
- 08/29/15: SD Ireland will be working to deconstruct the garage located at 449 White Street and Parker will be finishing curb work and hydroseeding along Airport Drive during designated Saturday work hours.
- 08/28/15: SD Ireland will finish removal and backfilling of 448 White Street and will spend the remainder of the day doing site cleanup and grading. Parker will complete installation of curbing on Airport Drive and will be doing final cleanup and hydroseeding.
- 08/27/15: SD Ireland will finish removal of 420 White Street and will begin removal of 448 White Street. Parker will continue with curb installation and final site work on Airport Drive.
- 08/26/15: SD Ireland will be removing the house at 420 White Street. Parker will continue with curb installation along Airport Drive.
- 08/25/15: SD Ireland will be removing the house located at 400 White Street. Parker will continue to install curb on Airport Drive.
- 08/24/15: SD Ireland will be removing the floor deck and backfilling 397 White Street. SD Ireland will also begin removal of 400 White Street. SD Ireland will be grading and topsoiling the area of 1383 and 1387 Airport Drive and 451 White Street. Parker will continue curb installation along Airport Drive.
- 08/21/15: SD Ireland will be doing general site cleanup and tree/brush removal in on properties along White Street. Parker will continue with curb installation along Airport Drive between Patrick and Airport Road.
- 08/20/15: SD Ireland will be removing the house located at 451 White Street. Parker will continue with curb installation on Airport Drive between Patrick and Airport Road. EHM will continue with asbestos abatement at 400 White Street. Dirt Tech will be installing curb on White Street.
- 08/19/15: SD Ireland will be completing the removal of the house located at 1387 Airport drive and will be removing the house located at 451 White Street. Parker will continue with curb installation on Airport Drive between Patrick and Airport Road. EHM will continue with asbestos abatement at 400 White Street.
- 08/18/15: SD Ireland will be removing the houses at 1383 and 1387 Airport Drive. Parker will be excavating and preparing for curb replacement along Airport Drive between Patrick and Airport Road. EHM will be abating asbestos at 400 White Street. A+ roofing will be removing asphalt shingles on White and Maryland Streets.
- 08/17/15: SD Ireland will be removing the house at 1375 Airport Drive. Time permitting they will also remove the house at 1379 Airport Drive. Parker will be cleaning up and grading the area of 1079/1081 Airport Drive in preparation for topsoil and seeding. Parker will also be excavating for the replacement of curb along Airport Drive between Airport Road and Patrick Street. EHM will be abating asbestos at 400 White Street.
- 08/14/15: SD Ireland will be removing the house at 1371 Airport Drive and topsoiling/hydroseeding the area of 1247/1253 Airport Drive and 2 Ledoux. Parker will be doing grading, topsoil, and hydroseeding in the area of 1079/1081/1085/1089/1103 Airport Drive.
- 08/13/15: SD Ireland will be removing the house located at 2 Ledoux and grading topsoiling 1247/1253 Airport Drive. Parker will be removing the house at 1079/1081 Airport Drive and seeding 1085/1089/1103 Airport Drive. EHM will be abating asbestos at 449 and 400 White Street. Catamount will be abating asbestos at 1371 Airport Drive. A+ roofing will be removing asphalt shingles on houses along Airport Drive.
- 08/12/15: SD Ireland will be removing the house located at 1253 Airport Drive. Parker will be do a final raking and hydroseeding 1085/1089/1103 Airport Drive later this morning when the topsoil dries out. EHM will be abating asbestos at houses along White Street. Catamount will be abating asbestos at 1371 Airport Drive and 2 Ledoux. A+ Roofing will be removing asphalt shingles on houses along Airport Drive north of Ledoux.
- 08/10/15: SD Ireland will be removing the house located at 1265 Airport Drive and will be hydroseeding the area of 1257/1261 Airport Drive. Parker will be topsoiling and hydroseeding the area of 1085/1089/1103 Airport Drive and may begin removing asphalt shingles from 1081 Airport Drive. EHM will be abating asbestos at 1387 Airport Drive, 451, and 449 White Street. Catamount will be abating asbestos at 1247 and 1253 Airport Drive.
- 08/08/15: Parker and SD Ireland will be working Saturday August 8 during designated work hours (8:30-2:00). Parker will be placing topsoil and seeding in the area of 1085/1089/1103 Airport Drive and SD Ireland will be doing the same in the area of 1257/1261 Airport Drive.
- 08/07/15: SD Ireland will be cleaning up, grading, and topsoiling the area at 1257/1261 Airport Drive. Parker will be cleaning up, grading, and topsoiling the area of 1085/1089/1103 Airport Drive. Catamount will be abating asbestos at 1247 Airport Drive, 3 and 4 Delaware.
- 08/06/15: SD Ireland will be breaking up and backfilling the foundation for 1261 Airport Drive and will be removing 1265 Airport Drive down to the first floor deck. Parker will be breaking up and backfilling the foundations for 1089 and 1103 Airport Drive. They will then spend the remainder of this week cleaning up grading, topsoiling, and seeding the disturbed area of 1085, 1089, and 1103 Airport Drive. EHM will be abating asbestos at 1385 and 1387

Airport Drive and 5 Delaware. Catamount will be abating asbestos at 3 and 4 Delaware.

- 08/05/15: SD Ireland will be backfilling the foundation at 1257 Airport drive and removing the house and backfilling at 1261 Airport Drive. Parker will be removing the house at 1103 Airport Drive and backfilling the foundations at 1085 and 1089 Airport Drive. ReSource will be conducting salvage at 1261 and 1265 Airport Drive and 1 Maryland. EHM will be abating asbestos at 1383 and 1387 Airport Drive and catamount will be abating asbestos at 3 and 4 Delaware.
- 08/04/15: SD Ireland will be removing the house at 1257 Airport Drive. Parker will be removing the houses at 1103 and 1089 Airport Drive. EHM will be abating 23 Maryland. Catamount will be abating 3 and 4 Delaware.
- 08/03/15: SD Ireland will be clearing, grading, and topsoiling the area of 1227, 1233, and 1237 Airport Drive. Parker will be removing asphalt shingles on 1103 and 1085 Airport drive and will be removing 1103 Airport Drive. EHM will be abating asbestos at 23 Maryland. ReSource will be salvaging material at 1 Maryland, 1261, and 1265 Airport Drive.
- 08/01/15: Parker will be removing asphalt shingles from 1085, 1089, 1103 Airport Drive during normal Saturday work hours (8:30 to 2:00).
- 07/31/15: SD Ireland will be doing general site grading, cleanup, and topsoil in the area of 1227, 1233, and 1237 Airport Drive. Parker will not be on site today.
- 07/30/15: SD Ireland will be removing the house located at 1237 Airport Drive. EHM will be continuing asbestos abatement at 23 Maryland. ReSource will continue deconstructing 397 Whiate Street. Parker will not be on site today.
- 07/29/15: SD Ireland will be removing the house at 1227 Airport Drive and will be removing sheds and garages on this site and adjacent sites. EHM will be conducting asabestos abatement at 23 Maryland. Resource will continue deconstruction of 397 White Street. Parker will not be on site today.
- 07/28/15: Parker will continue topsoil and seeding of 1107, 1111, and 1131 Airport Drive. SD Ireland will remove the house located at 1233 Airport Drive. EHM will be abating asbestos at 23 Maryland. ReSource will be continuing deconstruction of 397 White Street.
- 07/27/15: Parker will continue to grade and topsoil the area of 1107, 1111, and 1131 Airport Drive in preparation for seeding. SD Ireland will break up the foundation and backfill 6 Ledoux and will grade, topsoil, and seed the area of 6/8 Ledoux. Time permitting SD Ireland will then move to 1233 Airport Drive and begin removal of the garage. EHM will be abating asbestos at 17 and 23 Maryland. ReSource will continue deconstruction of 397 White Street.
- 07/25/14: SD Ireland will be working within the designated work hours (8:30 - 2:00) to rake and hydroseed the disturbed area on the South side of Ledoux.
- 07/24/15: Parker will be doing general site grading and cleanup in the area of 1107, 1111, and 1131 Airport Drive. SD Ireland will be removing the first floor deck, breaking up the foundation, and backfilling the basement of 6 Ledoux and will be doing general site grading and cleanup on Ledoux where houses have been removed. EHM will be abating asbestos at 7 Maryland.
- 07/23/15: Parker will be removing the house at 1111 Airport Drive. SD Ireland will be removing the house at 6 Ledoux. EHM will be abating asbestos at 1375 Airport Drive and 17 Maryland. ReSource will be continuing deconstruction of 397 White Street.
- 07/22/15: Dirt Tech will be seeding the area behind the newly placed curb on Airport Parkway and then demobilizing from the site. Dirt Tech's project is now completed. Parker will be removing the house at 1111 Airport drive, and time permitting, the house at 1131 Airport Drive. SD Ireland will be removing the house at 8 Ledoux. EHM will be abating asbestos at 1375 Airport Drive and 17 Maryland. ReSource will continue deconstruction of the house at 397 White Street.
- 07/21/15: Dirt Tech will be placing topsoil and seeding behind the newly installed curbing on Airport Parkway. Parker will be removing the house at 1107 Airport Drive. SD Ireland will be completing removal of 5 Ledoux Terrace. EMH will be abating asbestos at 1375 Airport Drive. A+ Roofing will be removing asphalt shingles from houses on Airport Drive. ReSource will continue deconstructing 397 White Street.
- 07/20/15: Dirt Tech will be paving newly installed curb on Airport Parkway and Picard. Parker will be removing asphalt shingles from 1107, 1111, and 1131 Airport Drive. SD Ireland will be completing removal of the foundation and backfilling 11 Ledoux and completing backfill of 15-17 Ledoux. A+ Roofing will be removing asphalt shingles on Ledoux and Airport Drive. EHM will be abating asbestos at 1265 and 1371 Airport Drive. ReSource will continue with deconstruction of 397 White Street.
- 07/17/15: Dirt Tech will continue with installation of curbing on Picard Circle and Airport Parkway. SD Ireland will be removing the foundation at 15-17 Ledoux, backfilling, and doing general site work. Parker will be removing asphalt shingles from 1131, 1111, and 1107 Airport Drive.
- 07/16/15: Dirt Tech will continue with curb preparation/installation on Airport Parkway, Picard Circle, and White Street. SD Ireland will be removing the house at 11 Ledoux and, time permitting, the garage at 1253 Airport Drive. Parker will be continuing with topsoil and seeding south of Patrick and, time permitting, begin asphalt shingle removal at 1131 Airport Drive. EHM will be conducting asbestos abatement at 1265 Airport Drive. A+ Roofing will continue asphalt shingle removal on Ledoux, and ReSource will continue house deconstruction at 397 White Street.
- 07/15/15: Dirt Tech will continue with curb preparation on Airport Drive, Picard, and White Street. Parker will be doing grading, topsoiling, and seeding south of Patrick where 1171, 1165, and 1159 Airport Drive were removed. SD Ireland will be removing the house located at 15-17 Ledoux. A+ Roofing

will continue asphalt shingle removal on on the houses on Ledoux. EHM will be conducting asbestos abatement at 1261, 1265, and 1371 Airport Drive. ReSource will continue with deconstruction of 397 White Street.

- 07/14/15: Dirt Tech is continuing with preparation of curbing on Picard, Airport Parkway, and White Street. Parker is finishing house removal and backfill at 1159 Airport Drive and will then work on grading and topsoiling the area south of Patrick disturbed by removal of 1171, 1165, 1159 Airport Drive. SD Ireland will continue with fence, shed, and brush removal south of Ledoux. A+ Roofing will continue with asphalt shingle removal for the houses on Ledoux. ReSource will continue salvage at 397 White Street.

- 07/13/15: Dirt Tech will be working on curb replacement at the removed driveway locations on Picard Circle, Airport Parkway, and White Street. Parker will be removing houses at 1165 and 1171 Airport Drive. SD Ireland will have A+ Roofing removing asphalt shingles on Ledoux. EHM will be abating asbestos at 1261 and 1265 Airport Drive. ReSource will continue salvage at 397 White Street.

- 07/10/15: Dirt Tech will be placing topsoil at 392 White Street and seeding the lots at 49 S. Henry, 87 Pump Land, 392, 396 White Street, and 110 Airport Parkway. Parker will be removing shingles from the roofs of 1171 and 1165 Airport Drive and removing the house at 1165 Airport Drive. SD Ireland will be removing fence and clearing in preparation for house removal next week on the south side of Ledoux and south behind the houses on Airport Drive.

- 07/09/15: Dirt Tech will be removing tires and stabilizing a slope at 110 Airport Parkway. Parker will continue with topsoil and seeding in the Patrick/Elizabeth area. Later in the day, time permitting, Parker will begin removal of the house located at 1165 Airport Drive. EHM will be conducting asbestos abatement at 1081 and 1257 Airport Drive and 2 Ledoux. ReSource will be conducting salvage at 5 and 11 Ledoux and 397 White Street.

- 07/08/15: Dirt Tech will be seeding the lots at 49 S. Henry, 87 Pump Land, and 392, 396 White Street. Parker will continue to be grading, top soiling, and seeding all disturbance in the Elizabeth/Patrick area. EHM will be doing asbestos abatement at 1081 and 1257 Airport Drive. ReSource will be conducting salvage at 397 White Street.

- 07/07/15: Dirt Tech will be finishing removal and backfill of 392 White Street. They will then seed the lots at 49 S. Henry, 87 Pump Land, and 392, 396 White Street. Parker will be grading, top soiling, and seeding all disturbance in the Elizabeth/Patrick area. We'll pass a milestone today with half the houses removed (37 for Dirt Tech, 10 for Parker) and all 47 sites will be seeded and stabilized by the end of the week.

- 07/06/15: Dirt Tech will be removing the house at 392 White Street. Parker will be completing the removal of the house at 3 Patrick. Parker and Dirt Tech will then spend the remainder of today and tomorrow doing grading, topsoil, and hydroseeding of disturbed areas. EHM will be conducting abatement at 1081 Airport Drive and 5 Ledoux. ReSource will be conducing salvage at 1111 Airport Drive and 397 White Street.

- 07/02/15: Dirt Tech and Parker will both be doing site cleanup, grading, topsoil, and seeding on the sites they removed houses on this week. There will be no house removal. EHM will continue abatement at 1081 Airport Drive and 5 Ledoux. ReSource will continue work at 397 White Street. We will not be working tomorrow or Saturday.

- 07/01/15: Dirt Tech will be grading and topsoiling 49 S. Henry, 87 Pump Lane, and 396 White Street in preparation for seeding tomorrow. Parker will be removing the house at 6 Elizabeth and grading and topsoiling the area between Patrick and Elizabeth in preparation for seeding tomorrow. EHM will be conducting abatement at 1081 Airport Drive and 5 Ledoux. ReSource will be conducting salvage at 397 White Street.

- 06/29/15: Dirt Tech will be removing the house at 87 Pump Lane. Parker will be removing the house at 3 Elizabeth. EHM will be conducting abatement at 1081 Airport Drive and 5 LeDoux. ReSource will be working at 397 White Street.

- 06/26/15: Today Parker will be doing general site work, cleanup, and topsoiling in the area between Patrick and Elizabeth streets. Dirt Tech will not be on site today.

- 06/25/15: Today Parker will be removing the house at 1205 Airport drive and the garage at 1 Elizabeth. Dirt Tech will not be on site today. EHM will be conducting asbestos abatement at 1081, 1237, 1247 Airport Drive.

- 06/24/15: Dirt Tech will be removing the house at 49 S. Henry. Parker will be removing the house at 3 Elizabeth and will be removing concrete slabs from 1181 and 1185 Airport Drive and doing general site grading in the area. EHM will be conducting asbestos abatement at 1 Elizabeth, 1081, 1227, 1233, 1237 Airport Drive.

- 06/23/15: Dirt Tech will be doing site work at 7 Shamrock. Parker will be removing the house at 1181 Airport Drive and, time permitting, the house at 1185 Airport Drive. EHM is conducting asbestos abatement in 1227, 1233, 1081 Airport Drive and 1 Elizabeth.

- 06/22/15: Dirt Tech will be removing the house at 7 Shamrock. Parker will be removing the garage at 2 Patrick, removing shingles and later taking down the houses at 1 and 3 Elizabeth. EHM will be conducting abatement at 1111, 1181, 1079/1081 Airport Drive, 1 Elizabeth. ReSource will be conducting salvage at 1085 Airport Drive and 3 Elizabeth.

- 06/19/15: Dirt Tech will finish topsoiling the area North of Kirby along Airport Parkway and hydroseed the area. This will complete work in this area. Parker will remove and backfill the foundation at 2 Patrick and do gerneral site cleanup and grading in the area of 2, 4, 6 Patrick. Parker may also remove the garage behind 1181 Airport Drive, time permitting. EHM will continue asbestos abatement at 1111 Airport drive.

- 06/18/15: Dirt Tech will be placing topsoil along Airport Parkway north of Kirby and along Kirby in preparation for hydroseeding tomorrow. Parker will be removing the house at 6 Patrick. EHM will be conducting asbestos abatement at 1111 and 1181 Airport Drive. ReSource will be conducting salvage at 1107, 1165, and 1171 Airport Drive.

- 06/17/15: Dirt Tech will be doing asphalt driveway removal and general site grading and topsoiling in the area north of Kirby Road in preparation for Hydroseeding. Parker Excavation will be removing the house at 4 Patrick and the barn at 2 Patrick and will continue with asphalt shingle removal and disconnection of utility services in the area. EHM will be conducting asbestos abatement at 1111 Airport Drive. ReSource will be conducting salvage at 3 Elizabeth.
- 06/16/15: Dirt Tech will be removing the house at 218 Airport Parkway. Parker will be removing the house at 2 Patrick and will be removing shingles from 4 Patrick. EHM will be conducting asbestos abatement at 1107 and 1111 Airport Drive. ReSource will be conducting salvage at 1179 Airport Drive.
- 06/15/15: Dirt Tech will be removing the house at 214 Airport Parkway and the garage at 238 Kirby. EHM will be conducting asbestos abatement at 1107 and 1111 Airport Drive. ReSource will be conducting salvage at 2, 3, and 4 Patrick and 1379 Airport Drive. Parker Excavation will be mobilizing to the site and will be setting up to work at 2 Patrick. They will also be removing concrete stairs on Patrick.
- 6/12/15: Dirt Tech will be removing the house at 206 Airport Parkway. EHM will be abating asbestos at 3 Elizabeth.
- 06/11/15: Dirt Tech will be removing the house at 200-202 Airport Parkway. EHM will be conducting asbestos abatement at 1165 and 1107 Airport Drive, and 3 Elizabeth. ReSource will be conducting salvage at 1159 Airport drive and 2 Patrick.
- 06/10/15: Dirt tech will be placing topsoil and doing final grading on Dumont and North Henry. EHM will be conducting asbestos abatement at 6 Elizabeth,1171 and 1205 Airport Drive. ReSource will be conducting salvage at 3 Maryland, 1131 and 1159 Airport Drive.
- 06/09/15: Dirt Tech will be filling and grading the areas of 64 and 73 Dumont and placing topsoil. EHM will be finishing up abatement at 6 Patrick and 6 Elizabeth and will be doing abatement at 1171 and 1205 Airport Drive. Resource will be salvaging material from 1379 Airport Drive and 2 Delaware.
- 06/08/15: Dirt Tech will be removing the foundation and backfilling at 64 Dumont. Dirt tech will also be removing asphalt driveways and topsoiling on N. Henry. EHM will be conducting asbestos abatement at 6 Patrick and 6 Elizabeth. Resource will be conducting salvage at 3 and 5 Maryland.
- 06/05/15: Dirt Tech will be demolishing the house at 25 N. Henry. They will also be placing topsoil and hydroseeding in the area of 104/110 Airport Parkway, and along N. Henry in the areas disturbed by house removal. EHM will be conducting asbestos abatement along Airport Drive, Patrick, and Elizabeth Streets.
- 06/04/15: Dirt Tech will be removing the house at 54 N. Henry and will continue to topsoil and grade all disturbed areas in preparation for hydroseeding tomorrow. EHM will be conducting asbestos abatement at 6 Patrick and 6 Elizabeth.
- 06/03/15: Dirt Tech will be removing the foundation at 64 Dumont and hauling concrete from 64 and 73 Dumont off site. They will also be doing general site grading and topsoil on lots with recently demolished houses. EHM will be completing abatement at 25 N. Henry, 6 Patrick, and 6 Elizabeth.
- 06/02/15: Dirt Tech will be removing and backfilling the foundation at 73 Dumont. They will also be removing asphalt driveways on Dumont and N. Henry and doing general site grading. EHM will be finishing abatement at 25 and 54 N, Henry. ReSource will be conducitng salvage at 5 Maryland and 1379 Airport Drive.
- 06/01/15: Dirt Tech will be demolishing the house at 110 Airport Parkway. EHM will be completing asbestos abatement at 25 and 54 N. Henry. ReSource will be salvaging material at 3 and 5 Maryland.
- 5/29/15: Dirt tech will be demolishing the house at 104 Airport Parkway and doing general site cleanup. EHM will be completing asbestos abatement at 54 N. Henry.
- 5/28/15: Dirt tech will be demolishing the house at 53 N. Henry. Time permitting, they will also demolish the house at 104 Airport Parkway and the garage at 25 N. Hnery. EHM will be conducting asbestos abatement at 54 N. Henry. ReSource will be working in the Contract 2 area salvaging material at 3 Maryland Street. A+ Roofing will remove asphalt shingles on Airport Parkway.
- 5/27/15: Dirt Tech will be demolishing 11 S. Henry. EHM will continue asbestos abatement at 54 N. Henry. ReSource will conduct salvage at 392 and 396 White Street. A+ Roofing will continue removing asphalt shingles on Airport Parkway.
- 05/26/15: Dirt Tech will be demolishing the house at 38 N. Henry. EHM will be conducting asbestos abatement at 54 N. Henry. A+ Roofing will continue to remove asphalt shingles along Airport Parkway. ReSource will be conducting salvage at 53 N. Henry, 392 and 396 White Street.
- 05/22/15: Dirt Tech will be removing driveways, placing topsoil, removing fences, and doing general site cleanup in preparation for the weekend. Helen Carr from ANR will be here in the afternoon to conduct a site walk through. We plan to be off site by 3:00. We will not be working Saturday or Monday.
- 05/21/15: Dirt Tech will be completing demolition and backfill at 10 and 24 North Henry. EHM will be conducting asbestos abatement at 54 N. Henry. A+ Roofing will be removing asphalt shingles at 11 S. Henry, 104 and 110 Airport Parkway. ReSource will be conducting salvage operations at 104 Airport Parkway.

- 05/20/15: Dirt Tech will be finishing demolition and backfill at 69 Dumont and will demolish and backfill the house at 10 North Henry. A+ Roofing will be removing asphalt shingles at 39 and 53 North Henry. EHM will be conducting asbestos abatement at 53 and 54 North Henry. ReSource will be conducting salvage operations at 24 N. Henry.
- 05/19/15: Dirt tech will be demolishing and backfilling 69 and 76 Dumont. EHM will be conducting asbestos abatement at 24 and 53 North Henry. A+ roofing will be removing asphalt shingles from 24 and 38 N. Henry. ReSource will be conducting salvage at 15 Ledoux.
- 05/18/15: Dirt Tech will be removing garages and out buildings at 64, 76, and 77 Dumont. The roofers will be removing roofing at 76 Dumont and 10 N. Henry. EHM will be conducting asbestos abatement at 69 Dumont. ReSource will continue salvage at 8 Ledoux.
- 05/15/15: Dirt Tech will be demolishing the house at 77 Dumont, breaking up the basement slab and foundation walls and backfilling the hole. Dirt Tech will also be hydroseeding all previously disturbed areas from house and driveway removal on the south end of Dumont.
- 05/14/15: Dirt Tech will be placing topsoil on Dumont at the locations where houses were demolished last week. They anticipate hydroseeding beginning late today or tomorrow. Dirt tech is also demolishing the house at 68 Dumont. ReSource is conducting salvage operations at 8 Ledoux.
- 05/13/15: Dirt Tech will be placing fill and doing general site grading and topsoiling on the south half of Dumont where houses were removed last week.
- 05/11/15: Dirt Tech will be doing site restoration on the lots where houses were demolished last week along the south half of Dumont. They will be removing driveways, fencing, and sidewalks and placing topsoil. EHM is conducting asbestos abatement at 206 Airport Parkway.
- 05/08/15: Dirt Tech will be demolishing the house at 72 Dumont and backfilling the basement. Dirt Tech will also be hydroseeding Picard Circle. Today is an early finish day and we will be off site by 3:00. There will be no work on site tomorrow.
- 05/07/15: Dirt Tech will be demolishing houses at 64 and 73 Dumont, and possibly 69 Dumont if time permits. EHM will be conducting asbestos abatement at 206 Airport Parkway. ReSource will be conducting salvage at 54 N. Henry. A+ Roofing will be on site part of the day continuing asphalt shingle removal on Dumont.
- 05/06/15: Dirt Tech will be demolishing the house at 61 Dumont. They will also be doing general site work and grading at 13, 31, and 57 Dumont in preparation for topsoil and seeding. Dirt Tech will also be doing final topsoil at Picard Circle in preparation for seeding tomorrow. EHM is conducting asbestos abatement at 39 N. Henry and 206 Airport Parkway. ReSource is doing salvage at 38 N. Henry. A+ Roofing will be removing asphalt roof shingles along Dumont.
- 05/05/15: Dirt Tech will be demolishing the houses and backfilling the basement holes at 31 and 57 Dumont. EHM will be conducting asbestos abatement at 39 N. Henry and 200-202 Airport Parkway. ReSource will be salvaging material at 10 N. Henry. A+ roofing will continue to remove roof shingles at the houses along Dumont.
- 05/04/15: Dirt Tech will be working on site cleanup, topsoil, and seeding to finish the Picard Circle Area. Later this morning Dirt Tech will be demolishing the house at 13 Dumont Ave. A+ Roofing will be working on Dumont to remove asphalt shingles for recycling. EHM will be conducting asbestos abatement at 110 Airport Parkway and 72 Dumont. ReSource will be salvaging material for recycling from 68 and 73 Dumont.
- 05/01/15: Dirt Tech will be breaking up the foundation and backfilling 120 Airport Parkway. They will then do general site cleanup on Picard. Later today Dirt Tech will be moving equipment and staging dumpsters on Dumont in preparation for work next week. EHM and ReSource are both off site today.
- 04/30/15: Dirt Tech will be demolishing the house at 120 Airport Parkway and breaking up the slabs/backfilling the basements at 4-6 Picard. EHM will conduct asbestos abatement at 72 Dumont. ReSource will be salvaging recyclable materials at 68 Dumont.
- 04/29/15: Dirt Tech will be demolishing the houses at 4-6 Picard and breaking up the slabs/backfilling the basements at 8-10 Picard. EHM will continue asbestos abatement at 392 White Street and 73 Dumont. ReSource will be salvaging recyclable materials at 68 and 72 Dumont.
- 04/28/15: Dirt Tech will be demolishing houses at 8 and 10 Picard Circle. EHM will be continuing asbestos abatement at 392 White Street and 73 Dumont. ReSource will be salvaging material at 61 and 64 Dumont.
- 04/27/15: Dirt Tech will begin demolition of houses on Picard Circle. 12 Picard Circle is scheduled for demolition today. EHM will be removing asbestos at 392 White Street and 73 Dumont. ReSource will be salvaging material at 61 and 63 Dumont.
- 04/24/15: The roofers will be finishing Picard Circle. Dirt Tech will be staging dumpsters at Picard Circle for demolition next week. EHM will be doing asbestos abatement at 392 White Street. ReSource will be visiting houses on Delaware and White Streets to identify recyclable materials.
- 04/23/15: Today's work will consist of asphalt roof shingle removal on Picard Circle and asbestos abatement at 72 and 57 Dumont, 38 N. Henry, and 392 White Street.
- 04/20/15: The contractors roofing crew will be removing roofing from Houses on Picard Circle. Three asbestos abatement crews are working. Asbestos is being abated at 61 and 64 Dumont and asbestos roofing material is being removed from 13 Dumont. Dirt Tech will continue to work on mobilization/staging. They will stage dumpsters for the roofers and install silt fence at Picard Circle.

- Week of 4/19 to 4/25: The contractor is proposing to start on Monday with removal of roof and then demo of the h

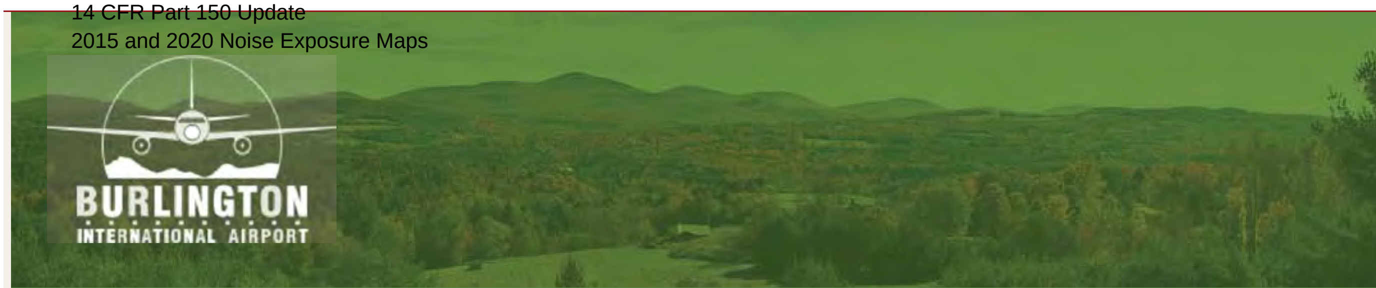
QUICK LINKS

Airport News
Welcome Canadians
Car Rentals
Taxi/Car Service
Lost & Found
Employment Opportunities
Community Connection

CONTACT US

1200 Airport Drive
South Burlington, VT 05403
Hours: 8:00 a.m. – 4:30 p.m.
(802) 863-2874

Email Us



NAVIGATION

- ARRIVALS & DEPARTURES
- AIRPORT NEWS
- EVENTS
- COMMUNITY CONNECTION
- AIRPORT COMMISSION
- EMPLOYMENT OPPORTUNITIES
- AIRPORT OPERATIONS
- DOING BUSINESS WITH BTV
- GREEN MOUNTAIN BOYS
- NEIGHBORHOOD CONNECTION

COMMUNITY CONNECTION

HOW ARE WE DOING?

Burlington International Airport is committed to keeping an open dialogue with travelers and members of the community as we work to make BTV the best small airport in the country. We welcome your comments, questions and praise and appreciate your sincere feedback.

Please click here to contact us

You can also report things that should be fixed by using the See Click Fix App.

BTV CONSTRUCTION PROJECTS UPDATE

You may access more information about BTV's ongoing construction projects here.

NOISE ISSUE INFORMATION

For all military noise complaints, please contact the Vermont National Guard at (802)-338-3000 and select option 3.

Burlington International Airport, as part of its effort to identify the noise levels created by aircraft operations, monitors the aircraft noise impacts on the surrounding communities and we value public input in doing so. BTV operates a hot line that citizens can call to register noise complaints at (802) 863-2874, extension 303. You may also register a complaint via email to kcolling@btv.aero. Citizens should be prepared to provide the following information when lodging a noise complaint:

- Caller's name and address along with City/town
- Describe the noise event by date and time of the event, type of aircraft involved and description or color (e.g. commercial jet or single-engine propeller) and its direction relative to your location
- Include any other descriptive adjectives that may be helpful to have (e.g. low, loud, vibration, or frequent traffic)

- State if you would like a follow-up call or e-mail and if so, remember to leave a phone number or e-mail where you wish to be reached.

Please allow 10 business days for a return response.

AIRPORT DEVELOPMENT

- South Burlington Land Re-use Presentations
- Noise Exposure Map (existing, 2006)
- Noise Exposure Map (Forecast 2011)

MASTER PLAN UPDATE

The Burlington International Airport is an important resource for Chittenden County and the State of Vermont as a whole. Because of that it is important to map out plans for future development that might be needed to ensure community input is received and financial planning can be carried out. An Airport Master Plan is a study used to determine the long-term development plans for an airport, addresses the development needs for a 20-year time period. The Airport Master Plan process provides opportunities for political entities and the public to participate in the development of aviation plans. It provides a framework for individual airport development programs consistent with short, intermediate, and long-range airport system requirements and determines future financial requirements. In 2010 the Airport underwent a master plan update which was titled Vision 2030 to reflect the 20 year period covered by the plan. The documents below show outline the plans and process associated with Vision 2030 for the Burlington International Airport.

- 2011 Presentation
- Jan 2011 Meeting Exhibit
- Vision 2030 Exhibit
- Sheet 2 ALP
- Sheet 3 ALP
- Sheet 4 ALP
- Sheet 5 ALP
- Vision 2030-Airport Master Plan Update - January 25, 2011 VIDEO

AIRPORT IMPROVEMENT PROGRAMS

The Passenger Facility Charge (PFC) Program allows the collection of PFC fees for every boarded passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition.

- Passenger Facility Charge Program - 2012
- PFC Impose and Use Amendment
- Passenger Facility Charge Program-2009
- PFC Quarterly Summary FY 2010
- PFC Quarterly Summary FY 2011

STORMWATER MANAGEMENT

The Burlington International Airport is a member of the Chittenden County Regional Stormwater Education Program (RSEP). The purpose of the RSEP is to educate the public on water quality issues and provide tips on how to keep pollutants out of stormwater. Please visit Smart Waterways to learn more about how you can help improve water quality in Vermont.

In addition, the airport has developed a Stormwater Management Program designed to reduce the discharge of pollutants, protect water quality, and to satisfy the appropriate water quality requirements of the clean water act.

For additional information on stormwater quality in Burlington, please visit the Stormwater Management pages found on the City of Burlington's website.

2006-2012 ANNUAL REPORTS FOR GENERAL PERMIT

2006 MS4 Report	2010 MS4 Report
2007 MS4 Report	2011 MS4 Report
2008 MS4 Report	2012 MS4 Report

2009 MS4 Report | NOI - Notice Of Intent Narrative

LAND AQUISITION PROGRAM

AIP 74

- Asbestos Report #1
- Asbestos Report #2
- Phase I ESA Report
- Phase II ESA Report WM

AIP 78

- Asbestos Report #1
- Asbestos Report #2
- Phase I ESA Report
- Phase II ESA Report WM

AIP 81

- Asbestos Report #1
- Asbestos Report #2
- Phase I ESA Report
- Phase II ESA Report WM

AIP 84

- Asbestos Report #1
- Asbestos Report #2
- Phase I ESA Report
- Phase II ESA Report WM

AIP 87

- Asbestos Report #1
- Asbestos Report #2
- Phase I ESA Report
- Phase II ESA Report WM

AIP 87

Asbestos Report #1

AIP 92

Asbestos Report #1

AIP 94

Asbestos Report #1

AIP-MISC

- Asbestos Report
- Phase I ESA Report

- Phase II ESA Report WM

Minimum Standards

The kick-off meeting for the BTV Minimum Standards project will be held on Wednesday, July 8, 2015 at 1pm in Airport Conference Room 3.

QUICK LINKS

Airport News
Welcome Canadians
Car Rentals
Taxi/Car Service
Lost & Found
Employment Opportunities
Community Connection

CONTACT US

1200 Airport Drive
South Burlington, VT 05403
Hours: 8:00 a.m. – 4:30 p.m.
(802) 863-2874

Email Us

D.3 Public Workshop, November 9, 2015

D.3.1 Sign-in Sheets

BURLINGTON INTERNATIONAL AIRPORT
Noise Exposure Map Public Workshop
DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
SIGN-IN SHEET

#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER EMAIL ADDRESS
1	Joanne Seguin	55 Airport Pkwy	862-7901
2	Steve Marriott	13 Mills Ave	862 2990
3	Barbara Sirvis	24 Arbor Rd	922-6009
4	Carmine Sargent	21 Elizabeth St	Carmine@myfairpoint.net
5	Gabriella Karsch	124 Northshore Dr.	399-2341
6	Keith Marston	113 Elizabeth St	862-1703
7	Lucy Marston	11	11
8	Cindy Pavlik	415 River Cove Williston	cpavlik2@gmail
9	Norma Corron	360 White St So Burlington	NORMASTHEAD.COM
10	Kathleen Mercure	19 Elizabeth St So Burlington	(802)863-6583

Series 001 to 100

20 Entries
20 People

1/10

BURLINGTON INTERNATIONAL AIRPORT Noise Exposure Map Public Workshop DATE: November 9, 2015 LOCATION: Chamberlain Elementary School, South Burlington SIGN-IN SHEET			
#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER EMAIL ADDRESS
11	VANET KANE	203 WEAVER ST WINOOSKI VT	JKstructuraldesigns @gmail.com
12	Roger Bounasse	Colchester	rdbounassa @comcast
13	George Cross	82 DuFresne Dr Winooski	gccrossvt @hotmail
14	Vivian Compana	6 Duval St So Burlington	vilasvegas@ yahoo.com
15	Joe Humes	Saint Michael's College	yankeemarjgh@comcast.net
16	Carolyn Chambers	20 Patrick	860-5049 collie2288@myfairpoint.net
17	WALT LUCHINI	122 PATCHEN RD	658-0899
18	C Simpson	83 Summit Ridge Burlington	
19	IGOR ZBITNOFF	20 MANSION ST WINOOSKI	655-7458
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Series 001 to 100

2/10

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Noise Exposure Map Public Workshop
DATE: November 9, 2015
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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER EMAIL ADDRESS
101	Lucy Boyajian	16 Mills Ave.	862-2157
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105	Anne Morton	39 Duval St.	anmort8@aol.com
106	Eva Diner	19 Duval St.	———
107	LINDA BRAKEL	34 LARCH RD.	860-1019 lfbrakel@comcast.net
108	RICK HUBBARD	12 WOODBINE	999-3905 rick@rickhubbard.org
109	Sheila Quenneville	364 White St	Sheila3640@aol.com
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Series 101 to 200

19 Entries
21 People

1/10

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Noise Exposure Map Public Workshop
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#	NAME	ADDRESS/COMPANY NAME	PHONE NUMBER EMAIL ADDRESS
121	Liz Bossi	171 White St. So Burl	658-8996 eabossi@hotmail.com
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123	Fred Ringer	90 LAPOINTE ST, WINOOSKI, VT	RINGDING@MYFAIRPOINT.NET 654-7217
124	DAVE Robison	11 Mills AV. So. BURL.	Robisonsshop@comcast.net
125	Dave Hatett	27 Brown Ct	233-0456
126	Jan Hughes	75 Pine Tree Terr	jeh8719@gmail.com
127	Karen Johnson	18 Arbor Road	860-7259
128	JOE MARCOTULLIO	184 KIRBY RD	802 673 9413 marcotul@glockhome.com
129	Ann Goering	94 Chase St Burlington VT 05401	802-660-8501 ~~acgs~~ sharanebarlington telecom.net
130			

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131	Rick Brown	BTV	rbrown@btv.aero
132			
133			
134			
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139			
140			

Series 101 to 200 4/10

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Noise Exposure Map Public Workshop
DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
SIGN-IN SHEET

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202	Jason Tucker Raynelle Tucker	191 Kirby Rd. So Burlington	922-0035 jstucker626@Aol.com
203	Michael Mahoney	36 ~~Hood~~ ST. Winooski.	MMMVT1@aol.com
204	Michele Palardy	81 Hood St. Winooski VT	
205	VALERIE WEAVER	22 ELIZABETH ST. So. BURLINGTON	VWEAVER@ MYFAIRPOINT.NET
206	Ray Gonda	31 Berkley St S. BTV	gonda05403@ yahoo.com
207	David Young	SBSchools	dyoung@ sbschools.net
208	Joel Clements	24 Maryland St. So. Burlington VT 05403	802-865-4734 Clemjsc@aol.com
209	BOB WOLBACH	29 BARBER TERR So. BURL, VT	862-9949
210	Cory WOLBACH	"	"

Series 201 to 300

10 Entries 1/10
11 people

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DATE: November 9, 2015
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SIGN-IN SHEET

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304	Tracy Harrington	28 Hayes Ave	598-3168 tharrington@sburl.com
305	Sylvain Witt	Winooski	swaite@myfairpoint.net
306	Eileen Andreoli	Winooski	mmmVT1@aol.com
307	Megan Gayet	62 Airport Pkwy	~~mega~~ megangayet@yahoo.com
308	Cynthia Rorison	14 Cedar St. Winooski Vt.	cynrorison@gmail.com
309	Harold Reindel	444 Charles Rd Williston VT 05495	reindelh@msn.com
310	Lori Willette	14 Berkley St	~~##~~ 399-6052 litwillette@gmail.com

Series 301 to 400

1/10

11

BURLINGTON INTERNATIONAL AIRPORT
Noise Exposure Map Public Workshop
DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
SIGN-IN SHEET

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311	Rich Joy	79½ Pine Tree Ter.	rjoy1217@hotmail.com
312			
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317			
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320			

Series 301 to 400

2/10

BURLINGTON INTERNATIONAL AIRPORT
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DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
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403	Dianne Monroe	30 Davis Pkwy S. Burlington	864-4385
404	Bill Ellis	271 So. Union St. Burlington, VT 05401	863-9531
405	Earl Cauchon	8 Patrick ST	4955111
406	Terry Close	14 Lily Ln	598-0154
407	Horace Shaw	119 Hood St Winooski 05404	
408	James Lees	37 Butler Dr S. Burlington	8641575 Jolly39 @GMAIL.COM
409	Terry Zigmund	111 West St Winooski	
410	Thomas Crittenden	1600 Dorset st So. Burlington, VT 05403	thomas.crittenden@gmail.com

Series 401 to 500

11

1/10

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DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
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413			
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Series 401 to 500 2/10

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Noise Exposure Map Public Workshop
DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
SIGN-IN SHEET

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502	Pat Nowak	City Council 98 Logwood ST	Patn1553@gmail.com
503	Jeff Abrahamovich	9 Peterson Ter.	jeff.abrahamovich@gmail.com
504	Anna K Johnston	27 Mills Ave So. Burlington	863-5772 akj27@comcast.net
505	Monica Ostby	11 Sherwood Dr SB	318-1092 monicaostby@yahoo.com
506	Elizabeth Allen	68 Airport Pkwy S.B	440-596-7167 elizanddale@gmail.com
507	Judith Lance	11 Roland CT Winooski Vt	lance.judith@gmail.com
508	Bernie Paquette	181 Kirby Rd SB	bernie.paquette@yahoo.com
509	Lonnie Edson	18 Patrick St	ledson@rockpoint.org
510	Jack + Mary Slattery	23 Patrick St.	Run4fun57@yahoo.com

Series 501 to 600

10 Entries 1/10
11 people

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Noise Exposure Map Public Workshop
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606	Jim MALONEY	25 Mills AVE So BURL	864.0241 MRJimm69@YAHOO.com
607	Bob McEwing	5 Doubleday Lane Essex Jct VT 05452	mcewing@NEKVT.com
608	Marsha Camp	8 Peterson Terr S. Bur	marshaellencamp@gmail.com
609	GENE RICHARDS	BTV DIRECTOR OF AVIATION	
610	NIC LONGO	BTV DIRECTOR OF PLANNING & DEVELOPMENT	

Series 601 to 700

20 entries
19 people

1/10

BURLINGTON INTERNATIONAL AIRPORT
Noise Exposure Map Public Workshop
DATE: November 9, 2015
LOCATION: Chamberlain Elementary School, South Burlington
SIGN-IN SHEET

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612	AMANDA HANAWAY	BTV DIRECTOR OF ENGINEERING AND ENVIRONMENTAL COMPLIANCE	
613	MARIE FRIEDMAN	BTV CHIEF FINANCIAL OFFICER	
614	KELLY COLLING	BTV DIRECTOR OF OPERATIONS	
615	RICK BROWNS	BTV DIRECTOR OF MAINTENANCE	
616	KEVIN DORN	CITY MANAGER SOUTH BURLINGTON	
617	CHARLIE BAKER	EXECUTIVE DIRECTOR CCRPC	
618	PAUL CONNOR	DIRECTOR OF PLANNING + ZONING SOUTH BURLINGTON	
619	David Crandall	HMMH	
620	Chris Waite	HMMH	

Series 601 to 700

2/10

D.3.2 Presentations

Burlington International Airport
14 CFR Part 150 Update
2015 and 2020 Noise Exposure Map

Public Workshop

November 9, 2015

Agenda

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- What is 14 CFR Part 150?
- 2015 and 2020 Noise Exposure Map (NEM) Purpose
- Sound Terminology
- Burlington International Airport Part 150 History
- Proposed 2015 NEM and 2020 NEM
- Schedule
- Locations to Review the NEM document and how to comment
- Questions
  - Please write comments down and ask at workshop

2

What is "14 C.F.R Part 150" or "Part 150"? "Airport Noise Compatibility Planning"

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- 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 to minimize noise-related land use incompatibilities.
  - Provides airports with technical and procedural guidance
  - One component of determining eligibility for federal noise abatement funds
- The FAA oversees the Part 150 process on behalf of the federal government.

3

What is "14 C.F.R Part 150" or "Part 150"? "Airport Noise Compatibility Planning"

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- Voluntary FAA-defined process for airport noise studies
- Two major components
  - Noise Exposure Map (NEM) – FAA "accepts"
    - Detailed description of airport layout, operations, noise exposure, land uses, and noise/land use compatibility for at least two years
  - Noise Compatibility Program – FAA "approves" individual measures
    - Noise abatement measures to reduce noise exposure
    - Land use mitigation measures to address existing non-compatible uses
    - Land use control measures to prevent new non-compatible uses
  - *This study is a Noise Exposure Map update only*
- Public involvement is a critical consideration
  - Consultation is required with users and land use control jurisdictions
  - Input is sought from all interested parties

4

Burlington International Airport (BTV) 2015/2020 Noise Exposure Map (NEM) Purpose

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- One of the principal reasons for preparation of this update is the City of Burlington's (as the airport operator) interest in continuing implementation of the federally supported noise mitigation strategies.
- The City/Airport would like to update the NEM to reflect existing operations, an updated forecast, and current land uses.
- In addition, the FAA requested that the City/Airport update the NEM to continue federally supported noise mitigation.

5

Burlington International Airport (BTV) 2015/2020 Noise Exposure Map (NEM) Purpose

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- This update noise exposure map will lead to changes regarding FAA recognized aircraft noise exposure and allow BTV to continue to have access to federal dollars for noise mitigation projects around the airport.
- The airport expects to update the NEM when there are significant changes to airport operations, consistent with federal guidelines.

6

Sound Terminology

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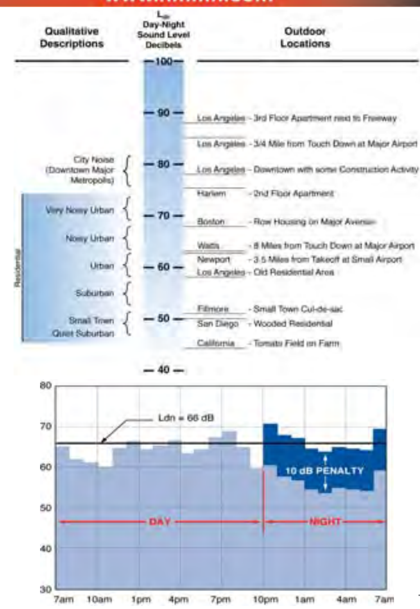
- A-weighted decibel (dBA)
  - Reflects the manner humans hear different pitches of sound
  - All federal agencies have adopted dBA for environmental studies
- dBA can be used for different units of measure, like maximum and average
- Day–Night Average Sound Level (DNL or Ldn)
  - Cumulative sound measure
  - 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



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Burlington International Airport (BTV) Part 150 History

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- FAA accepted NEM for 1989 and 1993 conditions in March 1990
- FAA approved NCP in July 1990
- FAA accepted NEM update (for 1997 and 2002) in June 1997
- FAA accepted NEM update (for 2006 and 2011) in November 2006
  - Currently the “official” NEM on file with FAA
- FAA approved NCP revision in June 2008
  - This has been one of the BTV documents and FAA approvals that has allowed the airport to continue acquisitions
- Tonight’s meeting presents the draft 2015/2020 NEMs, and starts the public comment period, before submittal to the FAA

8

BTV Part 150 History
NEM contours for 1997, 2002 and 2006 (from 2006)

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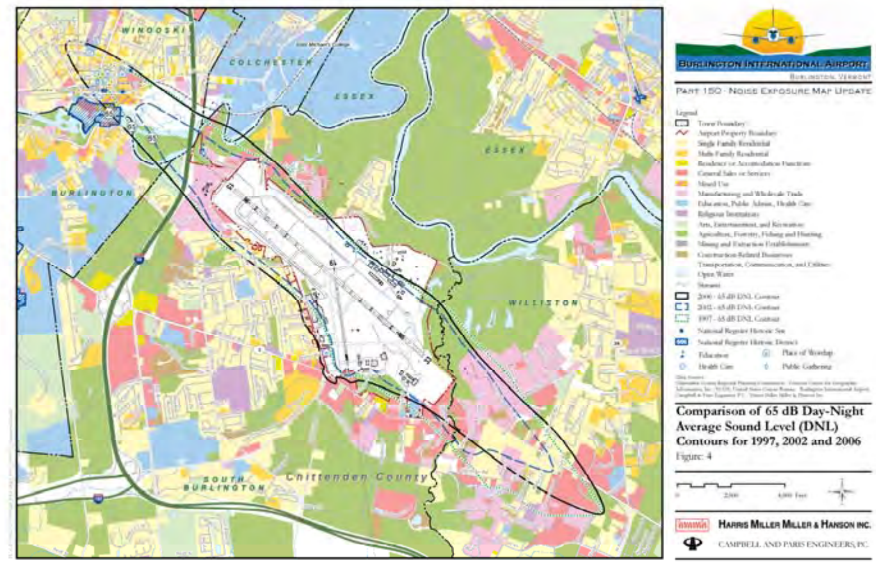

9

BTV Part 150 History
NEM contours for 2006 and 2011 (current official)

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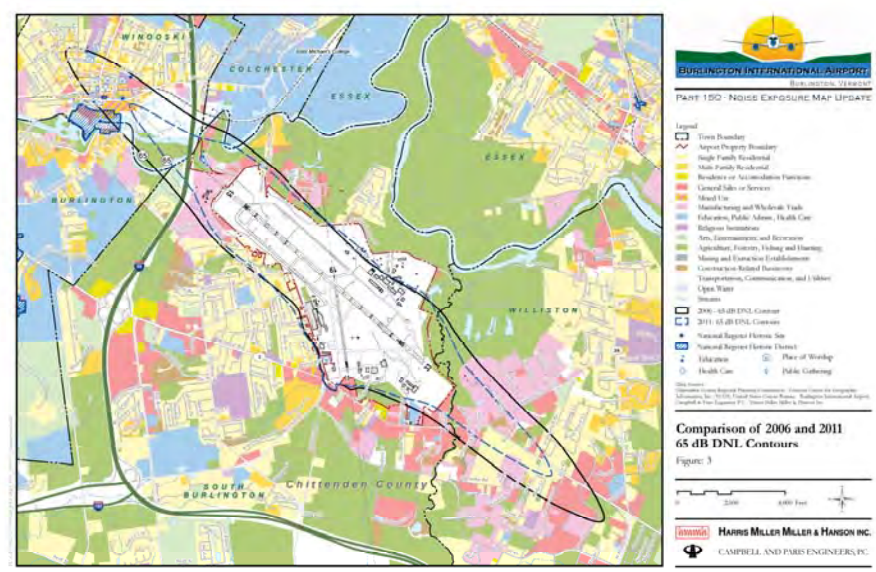

10

Proposed 2015 NEM and 2020 NEM Assumptions and Data

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- **Existing conditions are the year of submittal 2015 (per regulation)**
  - Based on data collected from 2012 through 2014
  - Data are still relevant based on FAA guidance
  - F-16 operations modeled with data provided by the USAF using an FAA approved method
    - Adjusted for Part 150 regulatory requirements
      - USAF data for BTV use 228 operational days
      - NEM assumes 365 operational days (per FAA regulations)
      - Both the NEM and the USAF data reflect same number of F-16 annual operations (8,099);
      - "typical year" of operations, as opposed to the VTANG summer 2015 deployment

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Proposed 2015 NEM and 2020 NEM Assumptions and Data

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- **Forecast conditions are 2020**
  - Regulations require a forecast representing 5 or more years
  - Includes expected Taxiway G (southeast side of airfield)
  - Continued F-16 operations at constant levels
- **Note related to 2020 NEM forecast**
  - The airport expects to update the NEM when there are significant changes to airport operations, consistent with federal guidelines

12

Proposed 2015 NEM and 2020 NEM Assumptions and Data

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- **Land use data**
  - Provided by Chittenden County Regional Planning Commission
    - – Updated based on aerial photography, airport staff data and various internet searches
  - Maps display land use, color coded by the categories noted in the FAA regulation
  - Dwelling inventories were prepared to the parcel/dwelling level.
  - Population per dwelling estimated by U.S. Census data.

13

Proposed 2015 NEM

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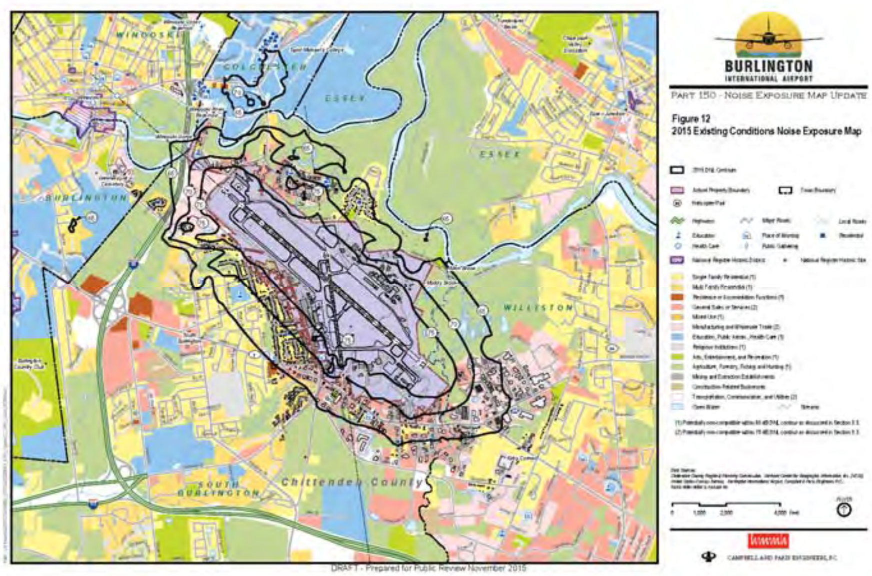

14

Proposed 2015 NEM
Land Use Analysis Summary

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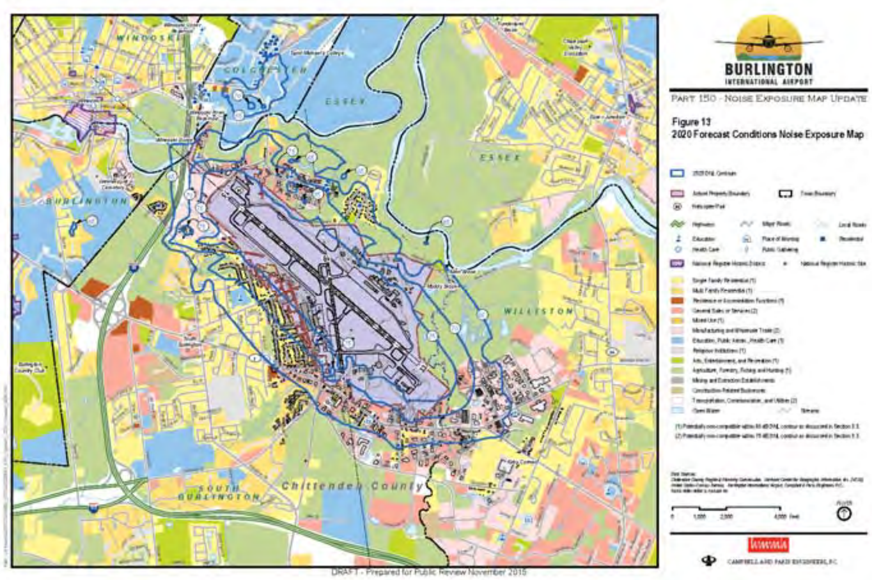
- Residential dwellings and population within the 2015 65 dB DNL noise contours
  - 609 Single family houses
  - 352 Multi-family (individual apartments/condominium units)
  - 2,232 estimated population
  - In addition: St. Michael's College: 3 dormitories; approx. 264 student residents
- List of non-residential noise sensitive locations
  - 5 education facilities
    - – Only public is Chamberlain Elementary School
  - 8 places of worship (3 churches, 5 cemeteries)
  - 1 Public gathering place

15

Proposed 2020 NEM

www.hmmh.com



16

Proposed 2020 NEM
Land Use Analysis Summary

BURLINGTON INTERNATIONAL AIRPORT

www.hmmh.com

- Residential dwellings and population within the 2020 65 dB DNL noise contours
  - 605 Single family houses
  - 352 Multi-family (individual apartments/condominium units)
    - Same as 2015 NEM
  - 2,222 estimated population
  - In addition: St. Michael's College: 2 dormitories; approx. 136 student residents
- List of non-residential noise sensitive locations
  - Same as 2015 NEM

17

Proposed 2015 NEM and 2020 NEM
Enlargements around the Workshop

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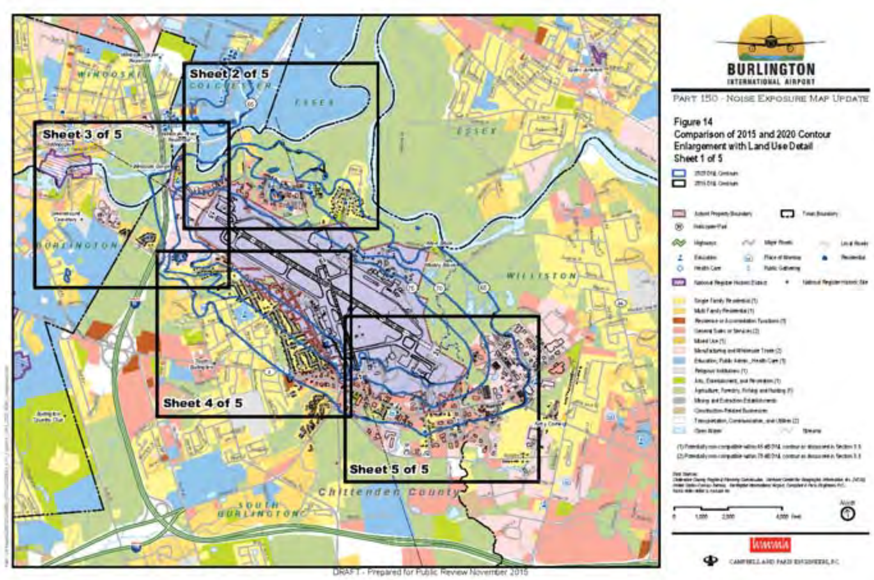

18

Proposed 2015 NEM
Comparison to various contours 2006-2015

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- **Proposed NEM compared to prior 2006/2011 NEM contours**
  - Wider contours perpendicular to the runway
    - – Includes some residential areas in Colchester for the first time
  - Shorter contours parallel to the runway compared to the 2006 and 2011 Noise Exposure Map
    - – Less overlap in Winooski and Williston
- **Proposed NEM compared to USAF's most recent noise contours that represent existing F-16 operations**
  - Both existing F-16 operations
  - NEM not as wide EIS existing/baseline conditions
  - Primary difference is the use of USAF 228 days versus FAA's 365 days

19

Proposed 2015 NEM
Comparison to various contours 2006-2015

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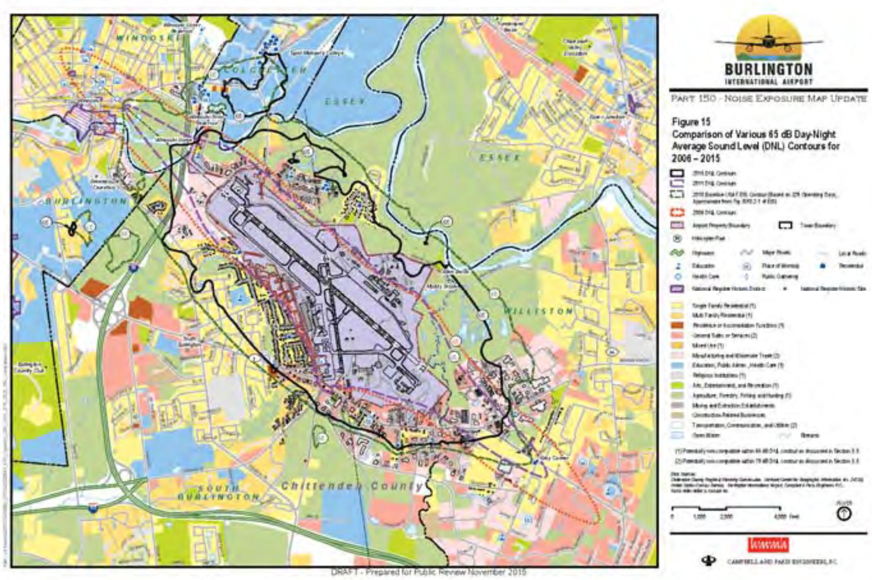

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Schedule

BURLINGTON INTERNATIONAL AIRPORT

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Anticipated Schedule	Event
November 9, 2015	Public Workshop and Start of Comment Period
December 10, 2015	End of Comment Period
December 2015	City of Burlington submits the document to the FAA

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Public Input and Comment Opportunities

BURLINGTON INTERNATIONAL AIRPORT

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- Tonight's workshop
  - Comments will be accepted in any written format (sheets available)
  - Please sign in
- Written comments may be submitted by mail or in person until December 10, 2015
- Submit comments to
  - Please include "NEM Comment" in the subject line
  - btv@btv.aero
  - Fax: 802.863.7947
  - Mail:
    - Burlington International Airport
      Attn: Part 150 Update
      Airport 1200 Airport Drive
      South Burlington, VT 05403

22

Locations to Review the NEM document

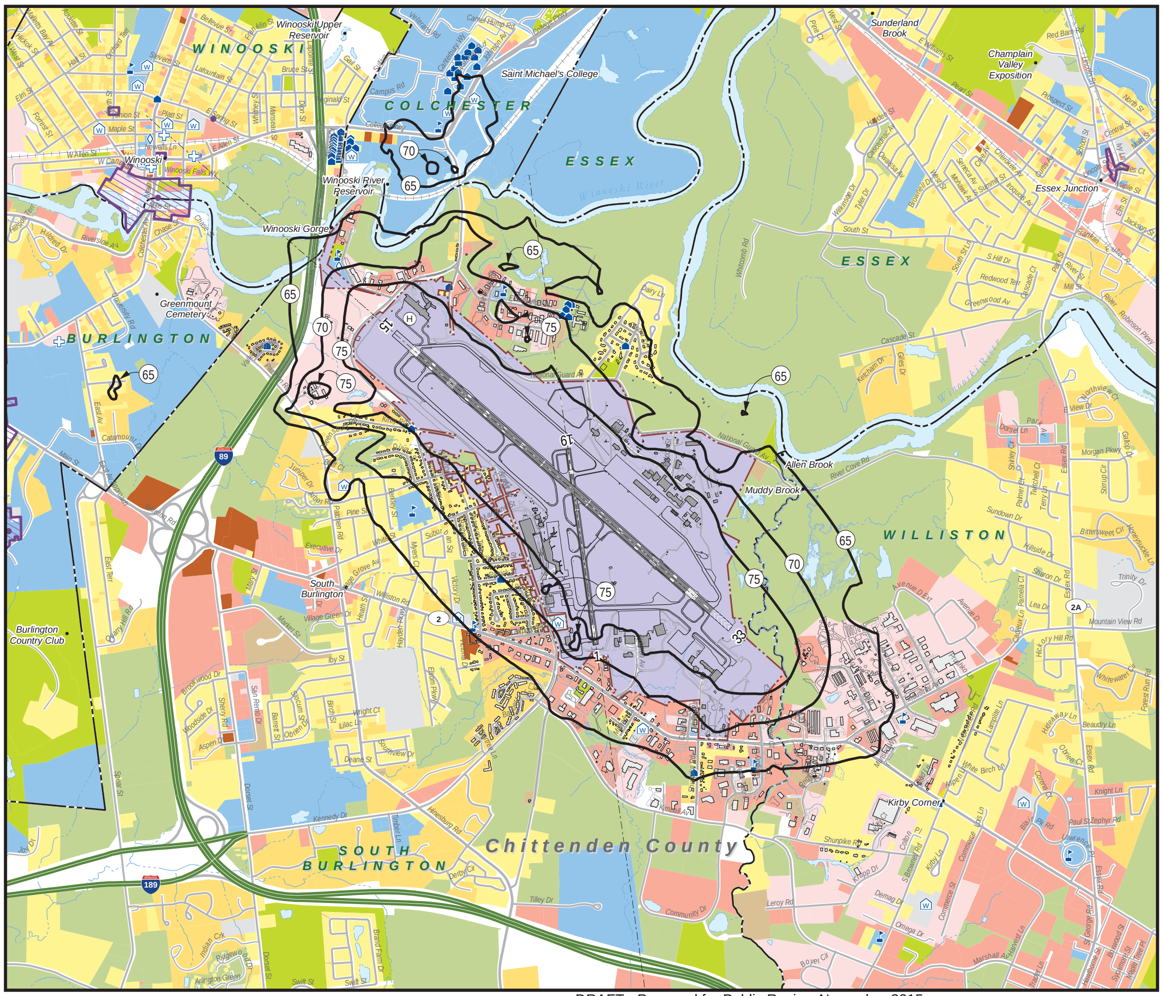
www.hmmh.com

- **Hardcopies, will be available for review during business hours at**
  - The airport offices
  - South Burlington City Hall
  - Chittenden County Regional Planning
- **Electronic, available at**
  - The airport's
  - City of Winooski Website
  - City of South Burlington's Website
  - Chittenden County Regional Planning

Thank you for attending!

23

D.3.3 Display Boards



BURLINGTON INTERNATIONAL AIRPORT

Part 150 - Noise Exposure Map Update

Figure 12
2015 Existing Conditions Noise Exposure Map

- 2015 DNL Contours
- 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
- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

North

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CAMPBELL AND PARIS ENGINEERS, P.C.

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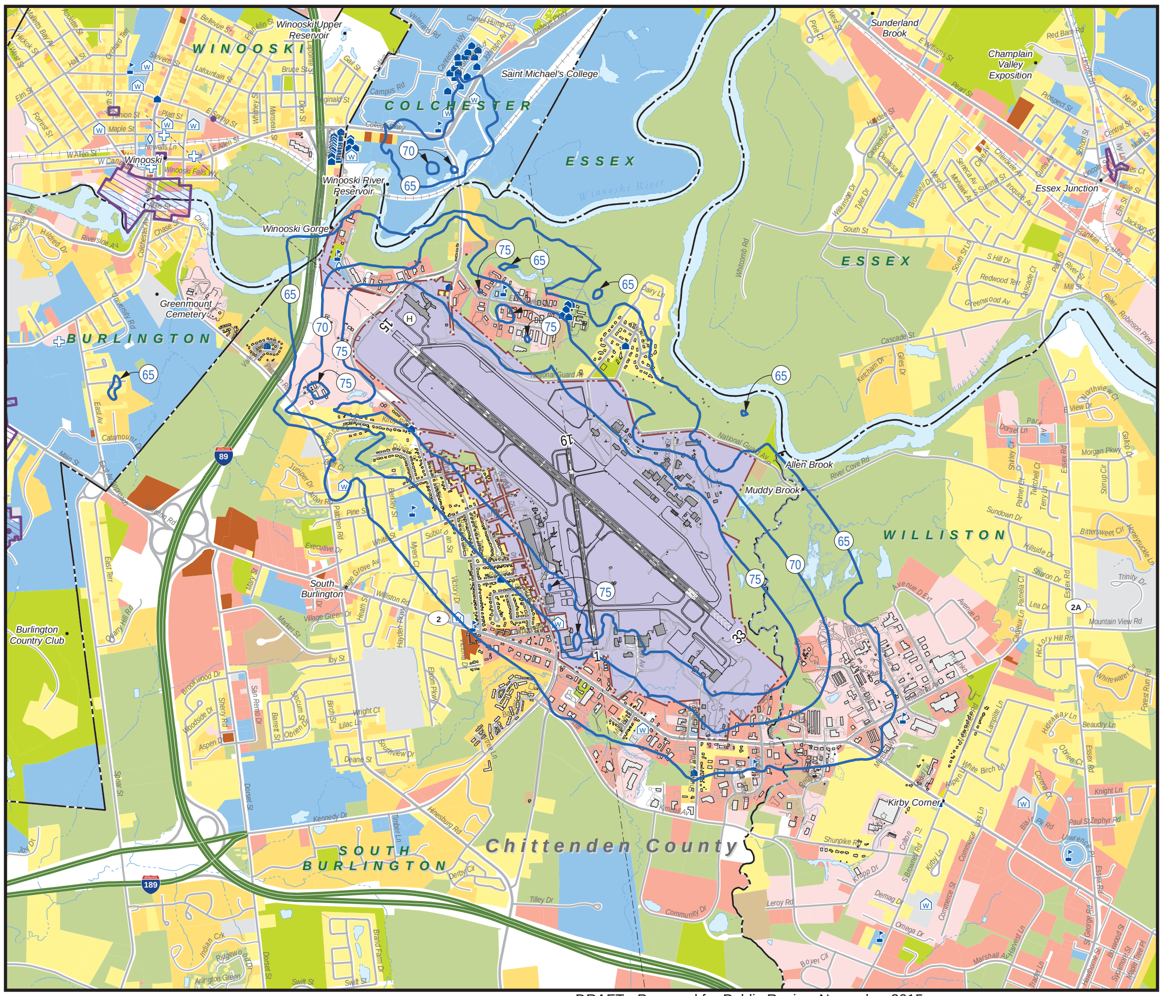

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 13
2020 Forecast Conditions Noise Exposure Map

2020 DNL Contours
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
Single Family Residential (1)
Multi Family Residential (1)
Residence or Accomodation Functions (1)
General Sales or Services (2)
Mixed Use (1)
Manufacturing and Wholesale Trade (2)
Education, Public Admin., Health Care (1)
Religious Institutions (1)
Arts, Entertainment, and Recreation (1)
Agriculture, Forestry, Fishing and Hunting (1)
Mining and Extraction Establishments
Construction-Related Businesses
Transportation, Communication, and Utilities (2)
Open Water
Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

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North

CAMPBELL AND PARIS ENGINEERS, P.C.

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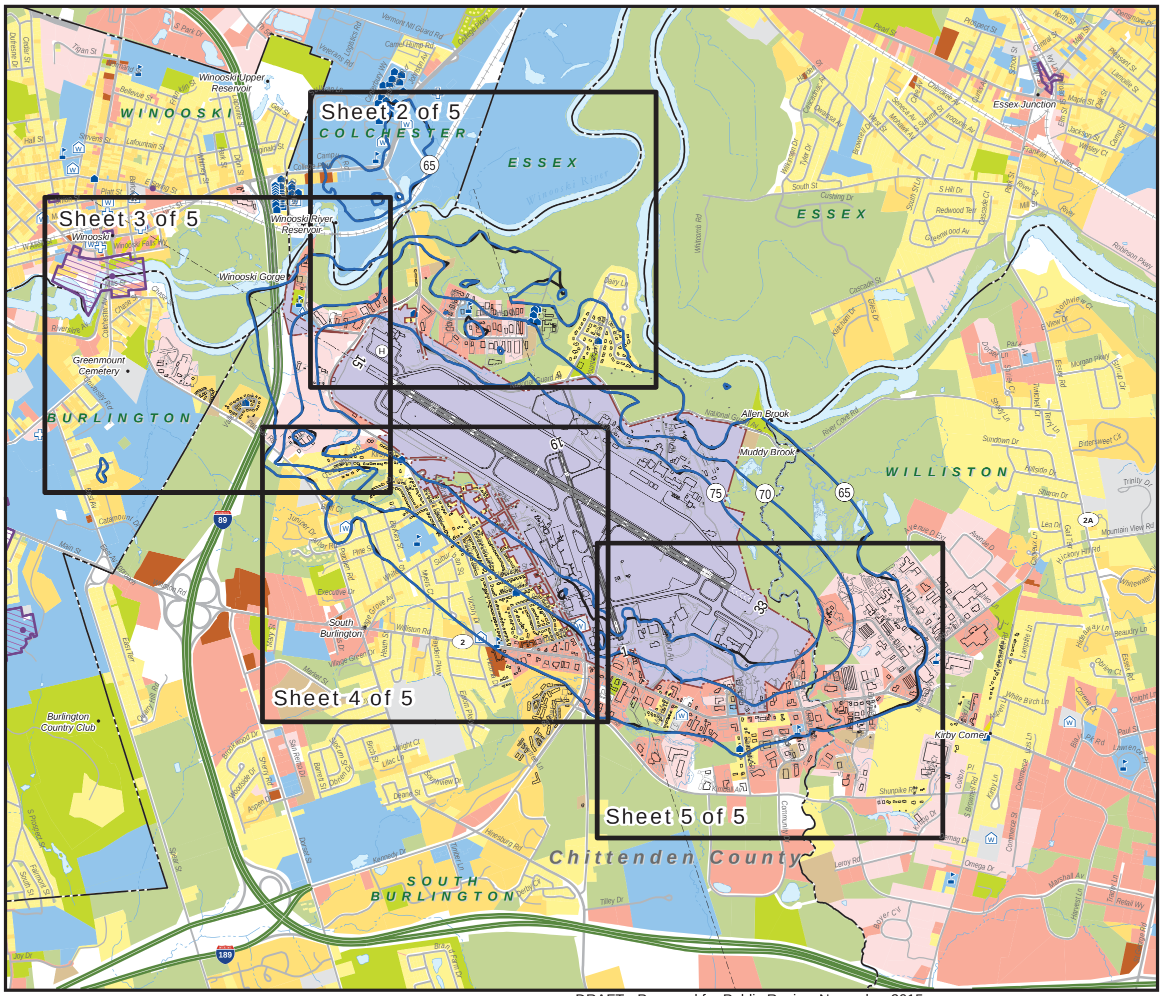

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 1 of 5

- 2020 DNL Contours
- 2015 DNL Contours
- 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
- Single Family Residential (1)
- Multi Family Residential (1)
- Residence or Accomodation Functions (1)
- General Sales or Services (2)
- Mixed Use (1)
- Manufacturing and Wholesale Trade (2)
- Education, Public Admin., Health Care (1)
- Religious Institutions (1)
- Arts, Entertainment, and Recreation (1)
- Agriculture, Forestry, Fishing and Hunting (1)
- Mining and Extraction Establishments
- Construction-Related Businesses
- Transportation, Communication, and Utilities (2)
- Open Water
- Streams

(1) Potentially non-compatible within 65 dB DNL contour as discussed in Section 3.3.
(2) Potentially non-compatible within 70 dB DNL contour as discussed in Section 3.3.

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.

North

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CAMPBELL AND PARIS ENGINEERS, P.C.

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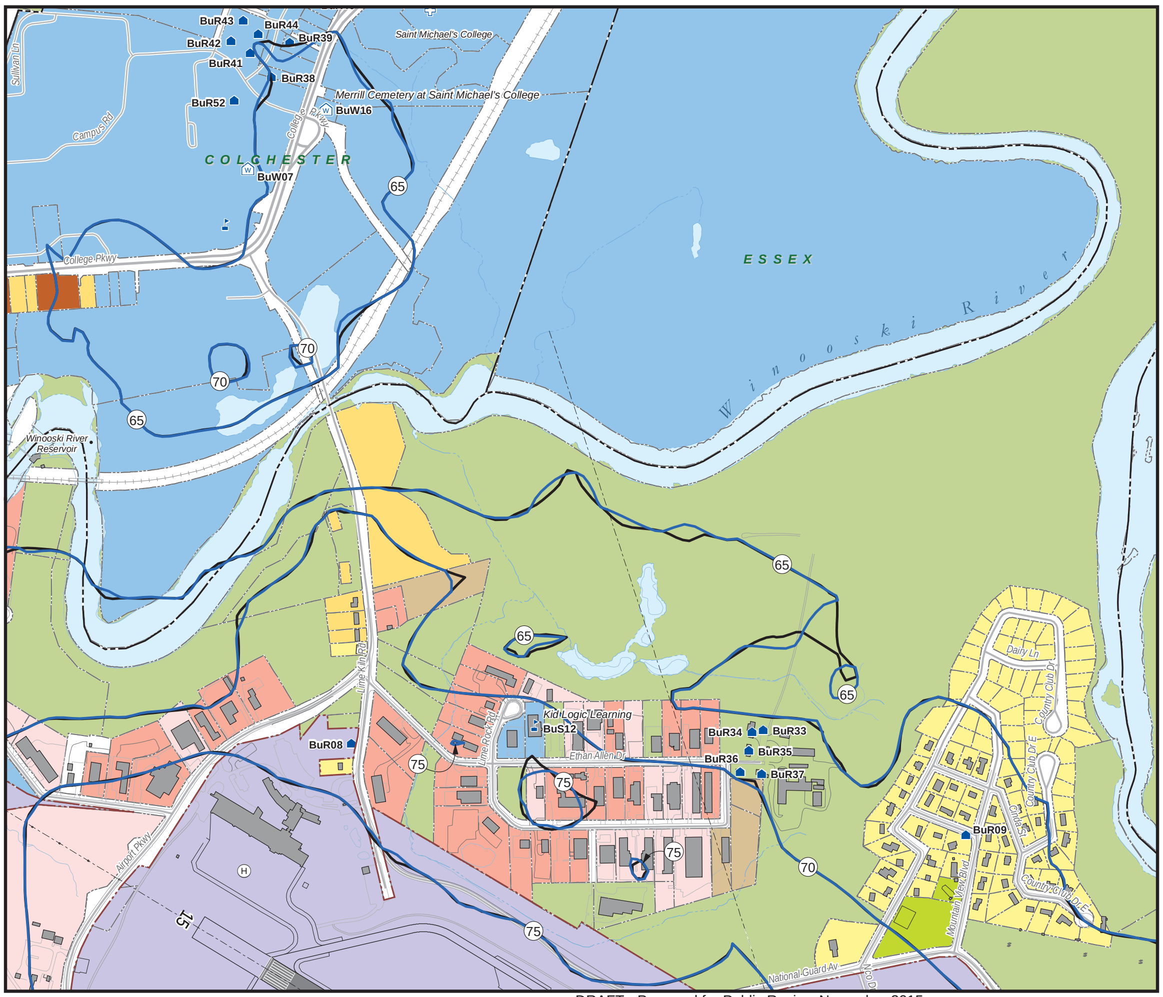
DRAFT - Prepared for Public Review November 2015



DRAFT - Prepared for Public Review November 2015

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 2 of 5

2020 DNL Contours
2015 DNL Contours

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
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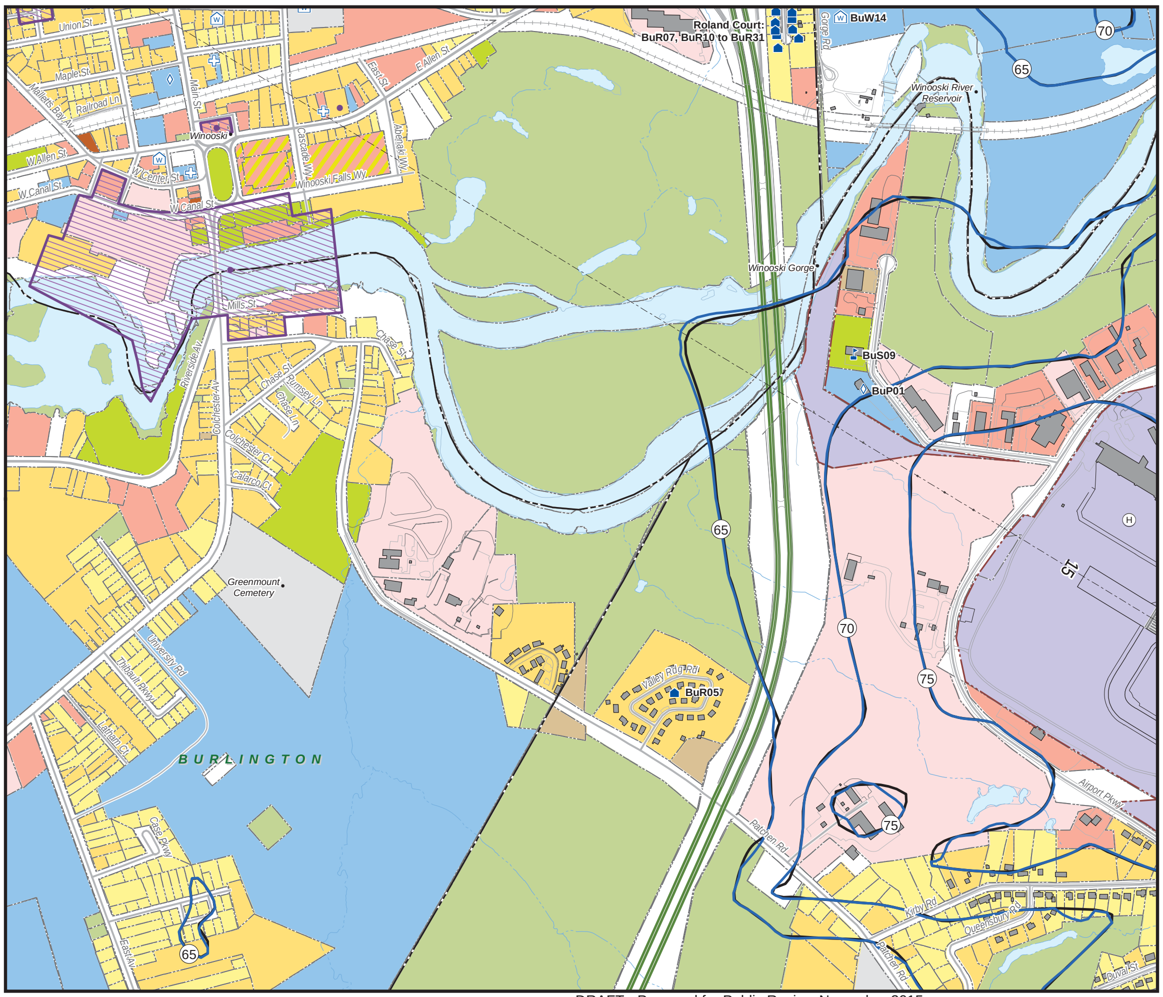

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 3 of 5

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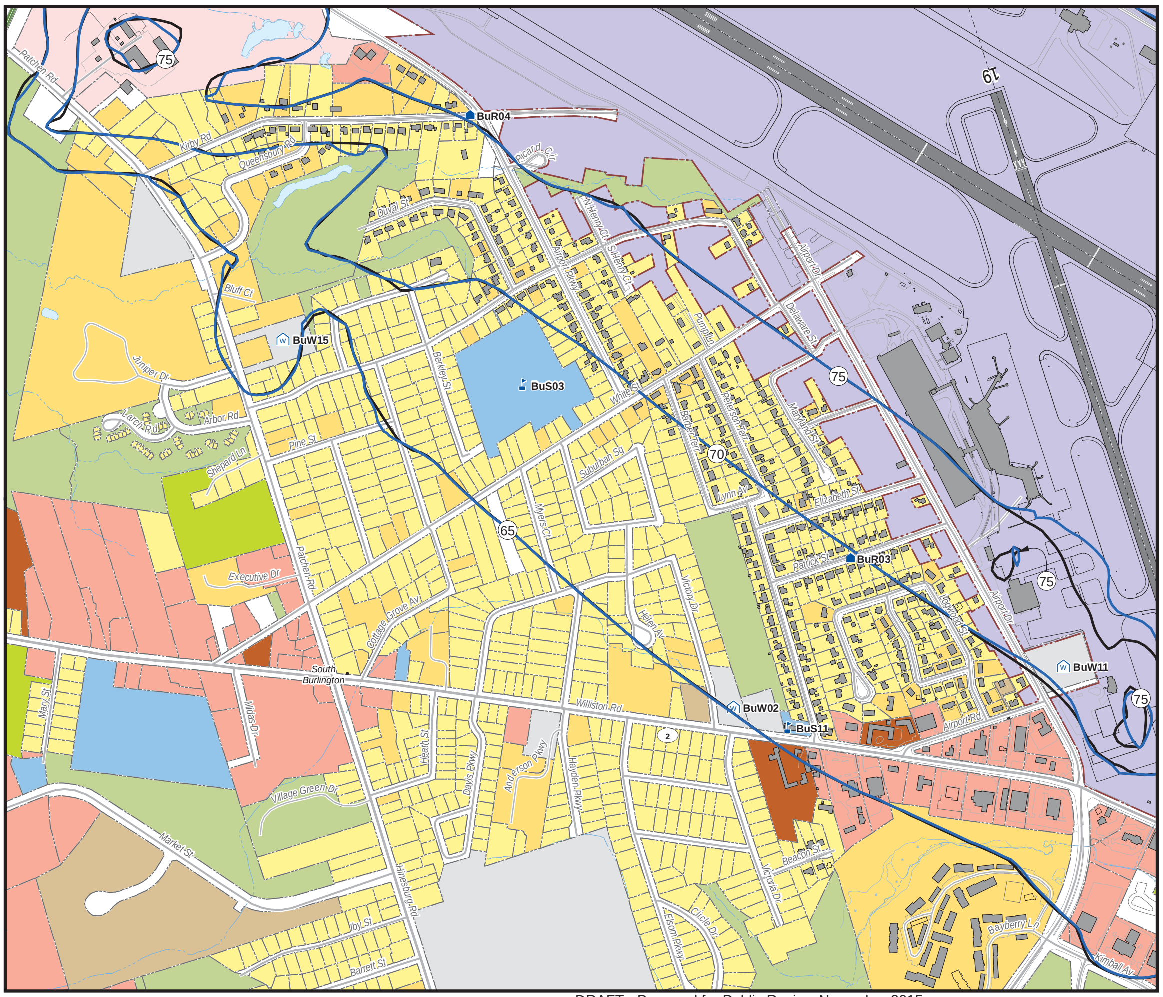

BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 4 of 5

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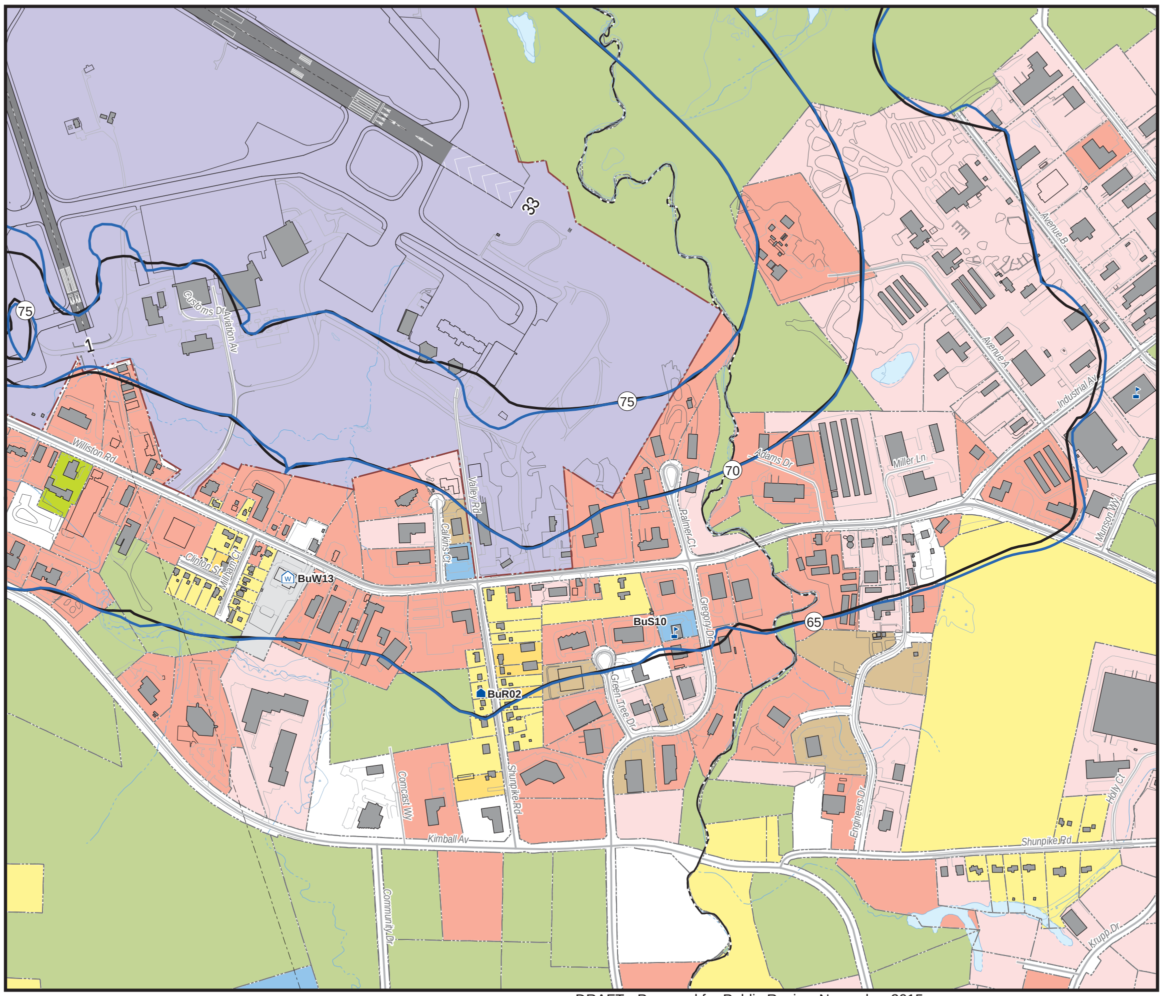
CAMPBELL AND PARIS ENGINEERS, P.C.

DRAFT - Prepared for Public Review November 2015



BURLINGTON INTERNATIONAL AIRPORT

PART 150 - NOISE EXPOSURE MAP UPDATE

Figure 14
Comparison of 2015 and 2020 Contour Enlargement with Land Use Detail
Sheet 5 of 5

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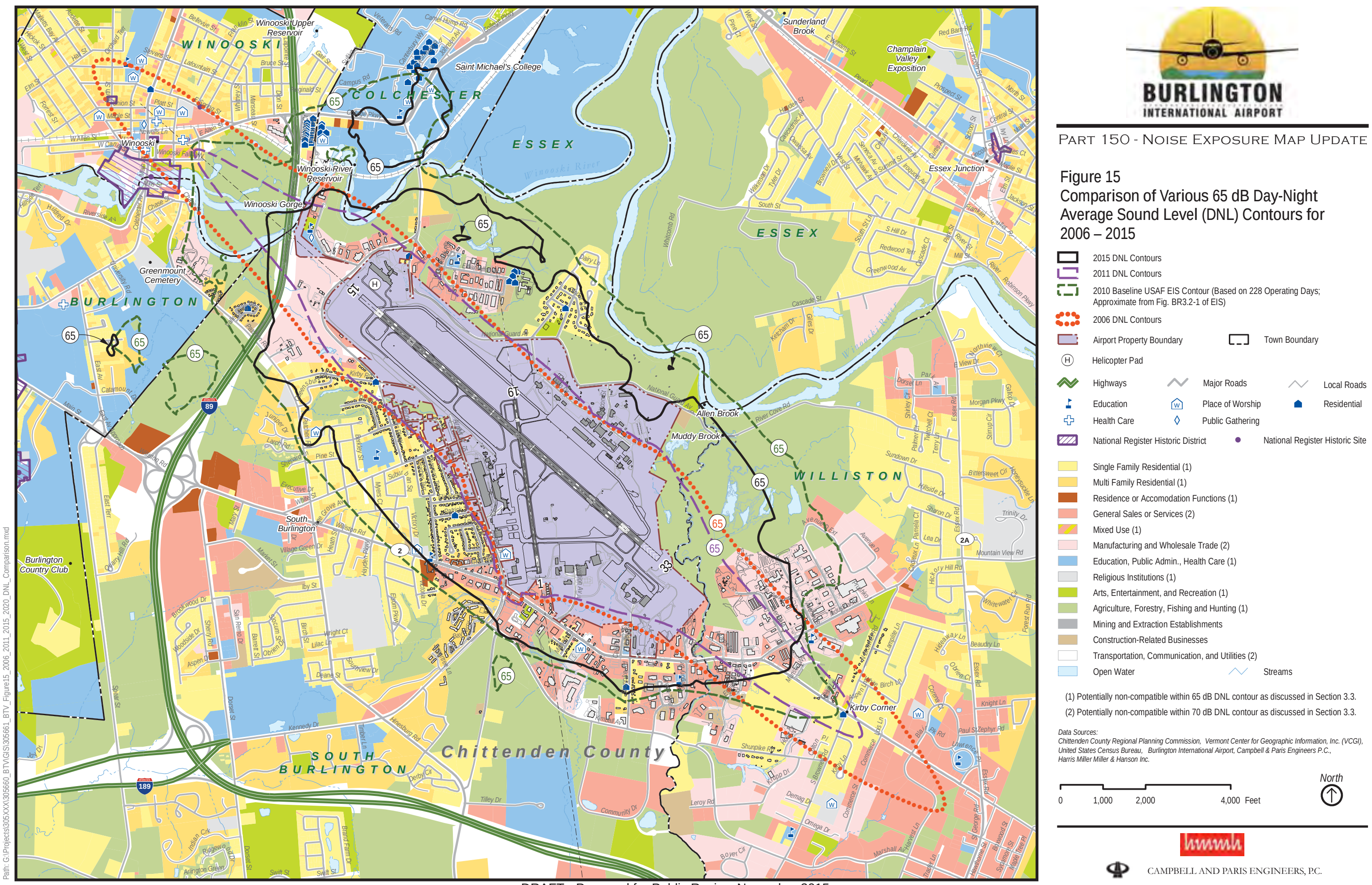

Figure 15
Comparison of Various 65 dB Day-Night Average Sound Level (DNL) Contours for 2006 – 2015

DRAFT - Prepared for Public Review November 2015

Appendix E COMMENTS RECEIVED

This appendix presents written comments received during the comment period starting on November 9, 2015 and ending on December 10, 2015.

Comments are organized by the last name of the person submitting the comment, then by the date of the comment. One comment with only a first name of "Anne" and without a last name is presented at the end. Each comment correspondence is numbered in the upper center.

1

Adrianne Morris

From: Susan Alden <sbalden@burlingtontelecom.net>
Sent: Thursday, December 10, 2015 3:21 PM
To: Burlington International Airport
Subject: NEM

I have complaints about the added noise of the F 16s, as federal mandates requiring EIS in 2008 were disregarded. When I called and complained that some jets were coming over the FAHC hospital, I was told it was 'pilot choice'.

In fairness, the F 16s take off north of Colchester Ave. and maybe North St. I don't want to think of the addition of F 35s. Already I gave glassware on a shelf that rattles and moves with the vibrations from noise. I'm not sure we are on the NEM map, but we should be. Maybe the noise intensifies as it hits the east side of the hospital and bounces down to the homes below.

I have a brother in law in S Carolina who says they would welcome the F35s down there.
Sincerely, Susan B Alden

2

Adrianne Morris

From: Susan Alden <sbalden@burlingtontelecom.net>
Sent: Thursday, December 10, 2015 3:46 PM
To: Burlington International Airport
Subject: NEM

I live on the west side of Centennial Woods down the hill from East Ave, and the hospital in Burlington. When we are outdoors, and 4 F 16s take off, all conversation has to stop as we can't hear anything else for 5 minutes. This is true when the windows are open and we are inside.
What about the analysis of the 2010 noise monitoring data study by the city of S Burlington and the city of Burlington? Why can't we know about it/them? We need real time noise monitoring, and full implementation of the FAA recommendations of 2008.

I hate to think of the added noise of the F 35s. They are planes which are 4 x louder, not maneuverable, the pilots can't see behind them, and are far too expensive. Have them stationed somewhere that wants them…not in the middle of compact housing, educational facilities, and workplaces.

Susan B Alden

3

Adrianne Morris

From:	Steve Allen <stphnallen@aol.com>
Sent:	Thursday, December 10, 2015 7:20 AM
To:	Burlington International Airport
Subject:	NEM

Please include this comment in your deliberations. Thank you. Steve Allen

It is imperative that the projected increased noise exposure from the F-35 is included in this NEM update**.** The NEM is intended as a planning tool for future land use and must project 5 years into the future.

Sent from my iPhone

4

Adrianne Morris

From: mmmvt1@aol.com
Sent: Thursday, December 10, 2015 2:44 PM
To: Burlington International Airport
Subject: NEM

I am writing to express my concerns with the new Airport Noise Exposure Maps that utilize the newly created noise modeling programs. The new NEMs "blend" 228 days of military operations with 365 days of commercial operations, thereby effectively diluting the impact of the noise on the communities most affected by airport operations.

The net effect of these diluted noise maps show that Williston and Winooski essentially receive NO impact that exceeds the 65 dB DNL and as a result, will not be eligible for any of the noise-proofing grants that BIA might apply for. As a Winooski resident, it is both unbelievable and unconscionable that BIA is effectively dismissing the intense noise impact that our community is subjected to from military operations with these newly designed noise maps.

In order to ensure credibility, accountability and transparency to this very controversial issue that holds long term implications for the citizens of Chittenden County, BIA needs to conduct a new noise study that utilizes real time noise monitoring. It should measure ground-level data through real life noise monitoring, and conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

In fact, if BIA had followed the FAA recommendations from the previous Part 150 NEM study, it would have been conducting ongoing noise monitoring since 2008. It also would have installed permanent noise monitoring equipment which could have provided a more verifiable accounting of the noise impact.

The fact that BIA did not implement those 2008 recommendations, along with multiple others, leads airport stakeholders to questions the transparency, credibility and accountability of the newly developed noise maps.

The credibility of the new noise maps is tainted by the omissions of the past. It's time to correct these errors and show the impacted stakeholders who live in the flight path and the citizens of Vermont the respect and accountability they deserve.

Eileen Andreoli
36 Hood St
Winooski, VT

5

Adrianne Morris

From: mmmvt1@aol.com
Sent: Thursday, December 10, 2015 3:08 PM
To: Burlington International Airport
Subject: NEM

I am writing to comment on the new Airport Noise Exposure Map update recently submitted by BIA.

The NEMs are used to project noise exposure to be used as a planning tool for future land use through the Noise Compatibility Program. According to regulations, the **NEMs must project 5 years into the future**.

The F35 is projected to arrive in Burlington in 2020. **Therefore, the noise impact of the F35s MUST be included in the update if it is to be considered a valid and accountable projection of future noise impacts.**

The future F35s impact has long-term implications for the citizens of Chittenden County, including new residential housing development, health impacts on schools, health care facilities and houses of worship, as well as transportation issues.

It is unconscionable and untenable that BIA would fail to include the USAF⊙s F35 project Noise Exposure Maps in their update.

Residential home buyers NEED a projection with the correct aircraft. The noise exposure maps have already been outdated since 2008 when an EIS and new noise maps should have been done of the VT ANG⊙s change from 20% to 95% afterburner use.

How can Vermonters have any confidence that the Airport will update the maps in 2020, if erroneous 2011 projected noise maps were allowed to be used knowingly by USAF, BIA and FAA for the 2008 $40 million grant. Since erroneous maps were used then, we cand even be confident that the correct houses were even purchased in the buyout!

Based on these past omissions and misrepresentations, the F35 noise maps must be included in the NEM update. If there is a change in operations after they arrive (quieter or louder) they can update the maps at that time.

Eileen Andreoli
36 Hood St.
Winooski, VT 05404

6

Adrianne Morris

From: mmmvt1@aol.com
Sent: Thursday, December 10, 2015 3:08 PM
To: Burlington International Airport
Subject: NEM

I am writing to comment on the new Airport Noise Exposure Map update recently submitted by BIA.

The NEMs are used to project noise exposure to be used as a planning tool for future land use through the Noise Compatibility Program. According to regulations, the **NEMs must project 5 years into the future**.

The F35 is projected to arrive in Burlington in 2020. **Therefore, the noise impact of the F35s MUST be included in the update if it is to be considered a valid and accountable projection of future noise impacts.**

The future F35s impact has long-term implications for the citizens of Chittenden County, including new residential housing development, health impacts on schools, health care facilities and houses of worship, as well as transportation issues.

It is unconscionable and untenable that BIA would fail to include the USAF's F35 project Noise Exposure Maps in their update.

Residential home buyers NEED a projection with the correct aircraft. The noise exposure maps have already been outdated since 2008 when an EIS and new noise maps should have been done of the VT ANG's change from 20% to 95% afterburner use.

How can Vermonters have any confidence that the Airport will update the maps in 2020, if erroneous 2011 projected noise maps were allowed to be used knowingly by USAF, BIA and FAA for the 2008 $40 million grant. Since erroneous maps were used then, we can't even be confident that the correct houses were even purchased in the buyout!

Based on these past omissions and misrepresentations, the F35 noise maps must be included in the NEM update. If there is a change in operations after they arrive (quieter or louder) they can update the maps at that time.

Eileen Andreoli
36 Hood St.
Winooski, VT 05404

7

Adrianne Morris

From:	mmmvt1@aol.com
Sent:	Thursday, December 10, 2015 3:23 PM
To:	Burlington International Airport
Subject:	NEM

I am writing to comment on the new Airport Noise Exposure Maps recently submitted by BIA.

The NEMs are used to project noise exposure impacts that are to be used as a planning tool for future land use through the Noise Compatibility Program.

The future F35s impact has long-term implications for the citizens of Chittenden County, including the location of new residential housing development, health impacts on schools, health care facilities and houses of worship, as well as transportation issues.

Because of the projected environmental impact to the Vermonters living in the proximity of the airport, I request that the NEM include the latest health studies, including those conducted by the World Health Organization, regarding the effect of noise on children and the elderly.

According to regulations, the **NEMs must project 5 years into the future**, which is when the F35s are expected to arrive in Burlington (2020). The public is not adequately informed unless the health effects of the noise are divulged. It is the purpose of the NEM to inform the public regarding noise impact.

Therefore, I request that the WHO and other studies on the health effects of noise be included in the NEM update.

Eileen Andreoli
36 Hood St.
Winooski VT 05404

8

Adrianne Morris

From: mmmvt1@aol.com
Sent: Thursday, December 10, 2015 3:40 PM
To: Burlington International Airport
Subject: NEM

I am writing to comment on the new Airport Noise Exposure Maps recently submitted by BIA.

At the release of the new NEMs, residents were informed that by regulation, new NEMs must be developed when there is a change of operations or use.

However, in 2008 the VT ANG received new, louder F16s and then changed their flight patterns from 20% afterburner use to 95% afterburner use.

According to the USAF○s EIS Manager in 2013, this change of use in operations should have triggered an Environmental Impact Statement, which is used to quantify the impact on civilians from the military aircraft.

No EIS was ever conducted for the change of use starting in 2008. Such an omission is in violation of existing National Environmental Policy Act (NEPA) mandates.

Therefore, I request that an EIS be conducted to ensure that BIA and VT ANG are in compliance with NEPA mandates and are not currently operating in violation of federal mandates.

Eileen Andreoli
36 Hood St.
Winooski VT 05404

9

Adrianne Morris

From:	mmmvt1@aol.com
Sent:	Thursday, December 10, 2015 3:53 PM
To:	Burlington International Airport
Subject:	NEM

In 2008 when BIA accepted $40 million to purchase homes around the airport impacted by airport noise and in the 65 dB DNL zone, BIA was asked to implement multiple recommendations.

These recommendations included conducting ongoing noise monitoring, the installation of permanent noise monitoring equipment, and working with surround communities to create real estate disclosure form.

It was also recommended that a Noise Abatement Committee be established.

As of 2015, not one of the recommendations have been met.

In fact, 13 of the 15 recommendations, such as obtaining easement for new developments within the 65 dB DNL zone and implemented through revisions to zoning ordinances, and independent flight track monitoring, have not been implemented.

I request that BIA fully implement the recommendations that were made in the Part 150 agreement in exchange for the $40 million it received in the buyout program.

Eileen Andreoli
36 Hood St.
Winooski, VT 05404

10

BURLINGTON
INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Roger Bonnassa **Phone:** 233-2934

Address: 93 Hannah's Place **Date:** 11/9/15

Colchester

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

Why were NEM's on the F-35 not provided? The recent EIS ~~contacted~~ had profiles of the F-35. This is a concern to all and needs to be part of the discussion.

Feedback and concerns of the entire community need to be expressed and resolution needs to come from a democratic process involving the entire community not only the politically elected officials all under the influence of those positioned to gain.

Is there a plan to gather studies on the health impact of these profiles?

11

Adrianne Morris

From: rdbourassa@comcast.net
Sent: Monday, November 30, 2015 2:10 PM
To: Burlington International Airport
Subject: NEM comment

Categories: BTV NEM 2015 Nov.

I attended the 11/9 FAA Noise Mitigation and Mapping Session. Much was discussed. Many questions and concerns were expressed. Unfortunately, there were too many unknowns or less than satisfying answers.

Below are my suggestions/feedback:

- Foremost, there should be a follow up meeting soon after the new year to discuss every ones suggestions/feedback.
- Request a real time, noise monitoring, on ground, georeferenced location and mapping.
- DNL results should be based on the military use (228) rather than the current mixed use (365). The 228 reflects the actual military operations per year.
- Latest health impact studies. The World Health Organization has completed some excellent studies with definitive results. Health and quality of life are every one's concern and needs to be paramount in our discussion.
- Most people, if not all people, present were concerned about F-16 noise as well as the noise of the F-35. Too many times, the response from Mr. Richards was, "I have little knowledge about the aircraft or that is a question for the Guard/Air Force". At our follow up meeting, the guard needs to be represented to answer questions.
- It is utter nonsense that we can not discuss the F-35 noise contours. Most people at the meeting are concerned with the noise impact of the F-35. The EIS stated that it is 4 times louder than the F-16. Furthermore, the EIS provided noise contour maps for the F-35

  and we should not wait until after they arrive to discuss their impact.

- We also need studies to determine the impact on property values. Our choice is not to move to Fairfax. All the homes along the airport were constructed before the more loud aircraft were part of the guard and civilian flights dramatically increased. I recall as a youth how many people purchased homes near the airport to get away from city life in Burlington and Winooski.

The next step needs to be at least one warned meeting to discuss every one's input and, if necessary, additional meetings to bring about positive results that will respect people's right to a healthy and quality of life. Serving pizza is not necessary to entice us to attend the meeting.

Respectively Submitted
Roger Bourassa
USAF Lt Col, Retired

12

Adrianne Morris

From:	L Boyajian <lboya233@gmail.com>
Sent:	Thursday, December 10, 2015 6:41 AM
To:	Burlington International Airport
Subject:	Nem

As a concerned homeowner in the airport neighborhood, I would like to know when and who will give us a current timeline of 1. Noise mitigation solutions and 2. Land use of the vacated property owned by the airport. There have been many, many meetings but very few solutions that have been shared with us. This is our quality of life and our most valuable asset, our homes, that we are talking about.

As a responsible neighbor, you the airport, should be more honest and transparent with us. We are trying to be proactive in determining our future here and we expect you to do the same. Frankly, the interplay between the So. Burl. City Council, Airport Commission and the Air Guard in producing a meaningful dialogue has been disappointing. Dont call a public meeting, if you are not prepared to answer obvious questions.

Those of you who are responsible for these decisions affecting so many of us, need to step up and "do your job."

13

Adrianne Morris

From: calebbronz@gmail.com on behalf of Caleb Bronz <caleb@calebbronz.com>
Sent: Thursday, December 10, 2015 9:28 AM
To: Burlington International Airport
Subject: Noise Exposure Maps

It has come to my attention that BTV noise exposure maps are going to be updated. I'm writing to you today to insist that the new maps include:

1. Include the projected increased noise exposure from the F-35 in this NEM update.
The NEM is intended as a planning tool for future land use and must project 5 years into the future.
The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

Thank you,
Caleb

14

BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: ANNE BYRNES **Phone:** 802-863-1185

Address: 1516 WILLISTON RD. S. BURLINGTON, VT 05403-6422 **Date:** 12/10/15

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

I AGREE WITH EVERY SINGLE ISSUE RAISED BY "SAVE OUR SKIES." I ATTENDED THE MEETING ON 11/9/15. TO SIT THERE AND LEARN THAT WE WERE EXAMINING MAPS PREPARED VIRTUALLY, NOT ON SIGHT AND NOT PROJECTED F-35 IMPACT MAPS, WAS DEVASTATING.

I WORKED OUTSIDE MUCH OF NOVEMBER AND WITNESSED THE F-16'S CURVING RIGHT OVER MY HOUSE, AFTERBURNERS SCREAMING. I SAW ONE MAP INDICATING THAT THE NORTHEAST CORNER OF MY YARD IS IN THE 65 RANGE. THE LINE DRAWN HAD NOTHING TO DO WITH THE REALITY. I RECALL THAT AFTERBURNER PATHS WERE BEING ALTERED TO SPARE WINOOSKI SOMETIME LAST YEAR. THOSE PATHS BECAME A WIDER CURVE OVER SOUTH BURLINGTON, SPECIFICALLY MY NEIGHBORHOOD. *

* DON'T TELL ME POLITICS AREN'T INVOLVED IN THE VIRTUAL LINE! HUNGRY DEVELOPERS ARE WAITING TO POUNCE ON THE PROPERTY. THE LINE CLEVERLY EXCLUDES A LARGE RETIREMENT COMPLEX NEXT TO ME WHICH IS PLANNING AN EXPANSION. *

* I LIVE HERE. I HAVE LIVED HERE SINCE 1981. THE APPROPRIATION OF MY AIRSPACE, NOT BY COMMERCIAL AIRLINES, AND THE DESTRUCTION OF MY QUALITY OF LIFE [illegible] IMMORAL

15

Adrianne Morris

From: Deb Chadwick <debzof@hotmail.com>
Sent: Thursday, December 10, 2015 1:07 PM
To: Burlington International Airport
Subject: NEM

Please include the following comments for the NEM.

1. Include the projected noise increase from the F-35's in this NEM update.
2. Conduct an Environmental Impact Statement for the F-16 changes in use starting with 2008 when the noise increased.
3. Include the latest health statements, including the ones set forth by the World Health Organization regarding the noise impact on the populations, especially children.
4. Release analysis of the 2010 noise monitoring data study.
5. Real time noise and monitoring should be conducted and included in the NEM update.
6. Fully implement the FAA recommended actions which were referenced in the 2008 Part 150 Agreement. Thank you.

16

David A. Crandall

From: Robert Chamberlin <Bob.Chamberlin@rsginc.com>
Sent: Tuesday, November 17, 2015 12:00
To: David A. Crandall
Cc: Lee Krohn (lkrohn@ccrpcvt.org); nlongo@btv.aero
Subject: RE: contact at HMMH

Follow Up Flag: Follow up
Flag Status: Completed

Categories: BTV NEM

David,

It was good to meet you last week. I thought the meetings went very well. I am following up with a clarification question.

It is our understanding that any homes within the newly-defined 65dnl would be eligible for FAA-funded sound mitigation such as soundproofing through installation of new windows, air conditioners, etc. (acknowledging that the airport's orientation is to no longer pursue outright purchase of homes as a mitigation strategy). Are there any limiting conditions that are based on the structural integrity of the house itself, namely, that in order to implement soundproofing, certain standards of construction in the original house must be met?

I don't believe there are any such conditions, but a member of the public who attended came away with this understanding.

A further interpretation could be that a certain level of noise reduction must be achieved through FAA-funded sound mitigation investments. Can you confirm this? If this is true, would you have any concerns or issues that existing homes within the 65dnl in the Chamberlin neighborhood would not otherwise be eligible for mitigation?

I realize these may be complicated questions to answer via email. If so, let's arrange a time to talk by phone. I suspect it would be a short call.

Thanks,

Bob Chamberlin

Robert Chamberlin, PE/PTOE
Senior Director
RSG

180 Battery Street, Suite 350
Burlington, VT 05401

802.861.0516 o
802.356.9161 c

www.rsginc.com

From: Nicolas Longo [mailto:nlongo@btv.aero]
Sent: Tuesday, November 17, 2015 11:43 AM

1

To: Robert Chamberlin <Bob.Chamberlin@rsginc.com>; David A. Crandall <dcrandall@hmmh.com>
Subject: RE: contact at HMMH

Not a problem. Thank you for attending. I've cc'ed David Crandall on this email, if you wouldn't mind keeping me in the loop that would be fantastic.

Thank you again for your help!

Nicolas Longo, C.M.
Director of Planning and Development
Burlington International Airport
1200 Airport Drive, Suite 1
South Burlington, Vermont

Office: 802-863-2874 x236
Cell: 802-503-7368
Email: nlongo@btv.aero
www.btv.aero

From: Robert Chamberlin [mailto:Bob.Chamberlin@rsginc.com]
Sent: Tuesday, November 17, 2015 11:41 AM
To: Nicolas Longo <nlongo@btv.aero>
Subject: contact at HMMH

Hi Nic,

Nice job with the new NEM. I think the meetings last week went very well.

Can you forward me the contact info for Crandall from HMMH? I have a clarification question for him on his presentation. Thanks!

Bob

Robert Chamberlin, PE/PTOE
Senior Director
RSG

180 Battery Street, Suite 350
Burlington, VT 05401

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Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Jean CHAULOT **Phone:** 802 238 7606

Address: 27 MYERS Ct **Date:** 11/18/15

S. BURLINGTON, VT 05403

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

Like with any pollution, the first step is to reduce the emission as much as possible and then mitigate the left over effects on the environment. I wish this study would help decide on the best options by quantifying each solution's results.

This study should emulate scenarios of different take off and landing options: reduce thrust take off, with and without afterburners, departure and arrival paths. With this information, we could build a compromise between airport users and neighbors.

We could also reduce duration of the noise pollution by having ground noise protection. The BTV airport has none today. A separate ground noise study should simulate the effect of blast deflectors, noise barriers and other nuisance blocking option.

Let this study be a tool to reduce the nuisance at its source and impacted area.

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BURLINGTON
INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Norma Corron **Phone:** 802 862 2725

Address: 360 White Street **Date:** 12/9/15
South Burlington, VT 05403

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

My husband & I bought our house on White St in 1958. We would never complain about airport noise, since we chose to live here. But in the 57 years, the airport has grown, the Air Guard came in, and grew & grew. Now there are only 4 houses between us and the airport. While commercial planes were never a problem before, now we hear engines revving, (why so long?) take offs, fly overs, often to the point of shaking the house. If sound-proofing insulation, windows, doors, etc, can be made available, they should be installed. We also believe that people who actually live in the neighborhood should be kept informed about what is being proposed for the now open spaces, rather than being told after developers & City Officials decide they know best what we need and want, or what they decide we just have to live with.

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** 11-11-15

Winooski, VT 05404

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

On June 19, 2008 The FAA issued a Part 150 Record of Approval for the Noise Compatibility Program developed by BTV. (A copy is attached) Given That this document clearly indicates that as of June 19, 2008 BTV had implemented only 2 of The original 1989 recommendations, had not fully implemented 3 of The 1989 recommendations and most importantly had not implemented 10 of The 15 1989 recommendations it is imperative that any 2015 Update should include the current status of all 15 of The 1989 recommendations.

Federal Aviation Administration

Memorandum

Date: June 19, 2008

From: Richard Doucette, Environmental Protection Specialist

To: LaVerne Reid, Airports Division Manager

John Donnelly, Regional Counsel's Office

Subject: Burlington International Airport, Part 150 Record of Approval

Attached is the Draft Record of Approval for the Noise Compatibility Program developed by Burlington International Airport. Only one new measure was under consideration. The prior Part 150 Noise Compatibility Program recommended acquisition of residences within the 70DNL contour. This new measure allows for land acquisition within the 65DNL contour.

No written comments were received during the FAA comment period.

In conformance with Regional and National procedures, AEE-1 has reviewed the draft Record of Approval and has no national policy concerns; and APP-400 has concurred with the draft Record of Approval. As soon as your concurrence is obtained, the Federal Register Notice on FAA's approval of the Noise Compatibility Program can be submitted.

John Donnelly, Regional Counsel, ANE-7 — Date: 6/23/08 — ✓ Concur / Nonconcur

LaVerne F. Reid, *Airports Division Manager* — Date: 6/23/08 — ✓ Approved / Disapproved

RECORD OF APPROVAL

Burlington International Airport, South Burlington VT

FAR Part 150 Noise Compatibility Program

INTRODUCTION

The Burlington International Airport sponsored an Airport Noise Compatibility Planning Study under a Federal Aviation Administration (FAA) grant, in compliance with Federal Aviation Regulation, Part 150. Burlington produced a report entitled "Burlington International Airport, 14 CFR Part 150 Update, Noise Compatibility Program Update". The Noise Compatibility Program (NCP) was submitted to FAA for review and approval on April 23, 2008. The Noise Exposure Maps were determined to be in compliance in November 2006. That determination was announced in the Federal Register on November 17, 2006.

The study focused on one administrative measure to improve compatibility between airport operations and community land use. This one measure under consideration is the acquisition of homes within the 65dB DNL contour. Burlington International Airport's most recent Noise Compatibility Program (approved September 21, 1990) recommended land acquisition within the 70dB DNL noise contour. This change will allow more incompatible land use to be converted to compatible land use, through voluntary land acquisition.

The approvals listed herein include approvals of actions that the airport recommends be taken. It should be noted that these approvals indicate only that the actions would, if implemented, be consistent with the purposes of Part 150. These approvals do not constitute decisions to implement the actions. Later decisions concerning possible implementation of these actions may be subject to applicable environmental or other procedures or requirements. Approval does not constitute a commitment by the FAA to financially assist in the implementation of the program nor a determination that all measures covered by the program are eligible for grant-in-aid funding from the FAA. Eligibility for federal funding of measures that are determined in this Record of Approval to meet the approval criteria of 150.33 will be determined at the time the FAA receives an application for funding, using the criteria in the most current version of FAA Order 5100.38, Airport Improvement Program Handbook.

The program measures below summarize as closely as possible the airport operator's recommendations in the noise compatibility program and are cross-referenced to the program with page numbers that follow the title of each measure. The statements contained within the summarized program measures and before the indicated FAA approval, disapproval, or other determination, do not represent the opinions or decisions of the FAA.

EXISTING NOISE COMPATIBILITY PROGRAM

The prior NCP, developed in the original (1987-1990) Part 150 study, includes a mix of operational, implementation, and land use elements. While this update addresses only a revision to a single NCP measure, this NCP and Record of Approval provide a summary of the entire program to provide context. All measures recommended for implementation in 1989 were approved in 1990 and remain in effect, with the one revision resulting from this Program Update.

Airport Operations Measures

1. Extension of Taxiway G (pg 13)
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.
Status: Not yet implemented. The FAA has approved the extended Taxiway G at the planning level and it is shown on the updated 2006 Airport Layout Plan; the City has scheduled it for completion sometime after the 2011 planning horizon of the accepted NEM.

2. Terminal Power Installation and APU/GPU Restrictions (pg 13)
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.
Status: Not fully implemented. The Airport terminal has "aircraft ground power" (referred to as "terminal power hooks" in the ROA and the 1989 NCP document) capability at nine gate locations that have passenger boarding bridges. Eight of the passenger gates - 3, 4, 5, 6, 11, 12, 14, and 15 are airport owned and available to any aircraft that uses these gates. Gate 8 has ground power that is owned and operated by United Airlines.

3. Nighttime Bi-direction Runway Use (pg 13)
To minimize late-night operations over the City of Winooski, the air traffic control tower would use Runways 15 for departure and Runway 33 for arrivals, traffic conditions permitting.
Status: Not implemented. The BTV ATCT is closed from 10:00 PM until 5:00 AM, which makes implementation of this measure infeasible during these hours. The ATCT has not implemented the procedure during the remaining "nighttime" hours, from 5:00 to 7:00 AM.

4. Noise Abatement Flight Paths for Runway 15 and 33 Departures, and 15 Arrivals (pg 14)
New procedures 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.
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 Runway 33 departures initiating right hand turns over Winooski.

5. Voluntary Limits of Military C-5A Training (pg 14)
An informal agreement with the military limits C-5A operations to only necessary takeoffs and landings.
Status: Implemented. This informal agreement continues in place. BTV Operations strongly discourages C-5 training at the airport, because the runways are only 150 feet wide and wake turbulence from C-5 operations tear up the runway-edge lighting.

6. Voluntary Minimization of F-16 Multiple Aircraft Flights (pg 14)
Military personnel will schedule as many single-aircraft, as opposed to multiple-aircraft, flights as possible.
Status: Not fully implemented. Based on observations during data collection for this study, F-16s in multiple aircraft flights typically operated 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.

7. Voluntary Army Guard Helicopter Training Controls (pg14)
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.
Status: Not implemented. The National Guard has continued training operations at BTV.

Monitoring and Review Elements

8. Ongoing Monitoring and Review of Noise Exposure Map (NEM) and Noise Compatibility Program (NCP) Status (pg 14)
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 as a Noise Abatement Committee and purchase of a permanent noise monitoring system.
Status: Not implemented. The City of Burlington updated its NEM in 1997 and 2006. This documentation represents the first NCP update.

9. Flight Track Monitoring (pg 15)
Utilize an outside firm to perform flight track analysis of radar data on a temporal sampling basis.
Status: Not implemented. Flight tracks for the 2006 NEM were developed from information provided by the Air National Guard, the 1997 NEM update, and interviews with FAA ATCT staff.

Land Use Measures

The City will use the 2006 and 2011 NEM contours to the extent that the following land use measures require definition of eligibility and implementation areas. The City will continuously monitor conditions affecting NEM validity, to determine when and if the contours require revision to reflect changes in the adequacy of the NEM contours.

10. Land Acquisition and Relocation (pg 15)
Incompatible land use includes mobile homes within the 65 dB DNL contour and residences within the 70 dB DNL contour. A purchase and relocation program would be voluntary and comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Status: Implemented. There are no mobile homes within the 65 dB DNL contour. The City has purchased some, and is in the process of purchasing additional, permanent residences in the 70 dB DNL contour. The City proposes to change this element to include residences in the 65 dB DNL contour, as described at the end of this document.

11. Sound Insulation (pg 15)
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.
Status: Not implemented. As discussed in Section 3.3.1 of the NCP document, the City has chosen to apply available funding to land acquisition.

12. Easement Acquisition Related to Soundproofing (pg15)
The City would attempt to negotiate avigation easements within the 65 dB DNL contour, in return for sound attenuation assistance.
Status: Not implemented. The City has chosen to apply available funding to land acquisition within the 70 dB DNL contour interval prior to providing treatment to homes in the 65-70 dB DNL contour interval.

13. Airport Zoning Overlay District (pg15)
Land use measures that would restrict uses which are highly sensitive to noise and could also feature construction standards for sound insulation.
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.

14. Easement Acquisition for New Development (pg 16)
Easements above would be obtained for new development within the 65, 70 and 75 dB DNL contours.
Status: Not implemented.

15. Real Estate Disclosure (pg 16)
A real estate disclosure policy would be developed for land uses within the 65 dB DNL contour, and implemented through revisions to zoning ordinances.
Status: Not implemented. The Airport has not actively encouraged the use of Real Estate Disclosures for properties within the 65 dB DNL contour but will be working with the City of South Burlington and the City of Winooski in that regard.

RECOMMENDED NOISE COMPATIBILITY PROGRAM REVISION

This NCP update proposes modification of one existing NCP element, as described below.

Land Acquisition and Relocation (pg 17)
The City of Burlington proposes to modify the existing Land Acquisition and Relocation Program (Land Use measure #10) to expand eligibility to the 65 dB DNL contour. This program is voluntary. Eligible property owners will be paid fair market value for their property at its 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 implementing Department of Transportation (DOT) regulations. The City, in coordination with the applicable jurisdiction, will conduct studies to define program boundaries and to identify options for compatible reuse of the acquired properties.

The City, and the jurisdiction within which the program is implemented, 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.

FAA Action: Approved.

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** 11-13-15

Winooski, VT 05404

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

The Part 150 Update currently underway is using the wrong protocol to determine the noise zones around the airport. At numerous meetings it has been clear that the noise issues - excessive noise - are associated with military aircraft not commercial planes; Thus the noise zones must be determined using the United States Air Force's Noisemap modelling. Any other process diminishes the impact of the military planes. This is easily seen when one compares the noise contours in the Air Force's EIS with the ones presented at the Nov. 9, 2015 neighborhood meeting. The FAA needs to demand use of the USAF modelling in order to be fair to all the area residents impacted by military aircraft noise.

WASMER CONSULTING Scientific and Engineering Software

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Wasmer Consulting ⇨ NMPlot ⇨ Adding Noisemap and INM Grids

Adding Noisemap and INM Noise Grids with NMPlot

Currently, there are two computer programs that are commonly used to calculate aircraft noise levels around airports: the United States Air Force's Noisemap, and the United States Federal Aviation Administration's Integrated Noise Model (INM). Both of these programs can calculate noise from both civilian and military aircraft. However, when calculating the noise at joint civilian-military airports, it is often easier to use Noisemap for military aircraft and INM for civilian aircraft. The result is two independent grids: the INM grid, containing the civilian noise levels, and the Noisemap grid, containing the military noise levels.

Wasmer Consulting is often asked if NMPlot can be used to sum these two grids: i.e., to create a new grid that contains the total (civilian + military) noise levels. The answer is yes. However, since INM does not include georeferencing information in its grid files, the process is somewhat involved, as you must manually add the missing georeferencing information.

Step by Step Instructions

1. You will need...
   - The grid file created by Noisemap. The file will be named `<casename>.grd`, where `<casename>` is the name of your noise analysis case. It is created when you run Noisemap. If there is a `.bps` file with the same name, you will need it also.
   - The grid file created by INM. This file will be named `nmplot.grd`. It is created when you use INM to display noise contours.
   - A reference point for the INM grid. A reference point is a location whose coordinates are known in both a) degrees of longitude and latitude, and b) INM's X-Y coordinate system. Pick a location near the center of the INM grid. The end of one of the runways is often a good choice.
   - The NMPlot application, available at http://wasmerconsulting.com/nmplot.htm.

- A text editor application. Microsoft Window's Notepad accessory should work fine.

2. You must convert the INM grid into a text format that you can easily edit. Start NMPlot, and open the INM grid. Choose *Save As* from the *File* menu. The *Save As* dialog box is displayed. Choose *NMAGF ASCII Grid Format* for the save as type. Press *Save*, overwriting the old INM grid file. Close NMPlot.

3. Using a text editor, open the INM grid. Search for a line that begins with the text " {CART". For example...

```
{CART 0.0 0.0 0 0 FEET 0}
```

If this line does not exist, add it.

4. Edit this line so that it specifies the coordinates of your INM reference point. The first pair of numbers should be the east longitude and north latitude of the reference point, in decimal degrees. The second pair of numbers should be the X and Y coordinates of the reference point.

For example, suppose that your INM reference point has a longitude of 118 degrees west, a latitude of 34 degrees north, a X coordinate of 3000, and a Y coordinate of 1000. Then, your edited CART line should look like this.

```
{CART -118.0 34.0 3000.0 1000.0 FEET 0}
```

☞ ***Note:***

The longitude is in degrees *east*, so west longitudes are negative.

5. Save the modified INM grid, then close the text editor. The INM grid now contains georeferencing information.

6. Start NMPlot, then open the INM grid.

7. Choose *Combine Grids* from the *Grid* menu. The *Combine Grids* dialog box appears.

8. For *File containing second grid*, enter the name of the Noisemap grid file.

9. For *Method used to combine the data points*, choose *Add Noise Decibels*.

10. For *The defined area polygon of the new grid should be*, choose *the intersection of the two existing grids' defined area polygons*.

11. For both of the *Data points* settings, choose *not be included in the grid*.

12. For *If a data point in the current grid is located within*, enter the desired tolerance, in meters. A suggested value is one half the grid point spacing in your Noisemap grid. For example, if your Noisemap grid spacing is 1000 feet, enter 500 feet (152 meters).

☞ ***Note:***

The tolerance is set in meters. Noisemap grid spacings are often expressed using feet, so you will need to manually convert the units.

13. Press the OK button. The grids are summed.

14. Choose *Save as* from the *File*, the save the grid to a new file. This is the combined grid, containing the sum of the Noisemap and INM noise levels. You can now use NMPlot to plot contours of the combined noise.

References

- Combining Two Grids in the Working With Grids chapter of the NMPlot User's Guide.
- Introduction to the Noise Model Grid Format and Quick-Start Guide to Importing Data into NMPlot in the NMPlot User's Guide.
- The Noise Model Grid Format (NMGF) reference documentation, available from the NMGF web page, http://wasmerconsulting.com/nmgf.htm.

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Page URL: http://wasmerconsulting.com/nmplot_adding_noisemap_and_inm_grids.htm
Webmaster e-mail: wasmer@wasmerconsulting.com

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** Dec 1, 2015

Winooski, VT 05404

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

The noise pollution issues described by Vermont State Senators Benning, Rodger ad Starr and State Representatives Branagan and Strong in the attached memo are very similar to those associated with the noise from the activities of BTV. The citizens who live near BTV ask all governmental agencies to ensure that their "noise pollution complaints and health and safety concerns (will be taken) seriously." Further, we the neighbors of BTV ask the appropriate governmental agencies to "take action to address these complaints in a timely fashion." As our fellow Vermonters troubled by the noise of industrial wind turbines, we the victims of BTV noise pollution ask for relief and protection.

DEC - 4 2015

October 5, 2015

From: Reps. Branagan, Strong, Sens. Starr, Benning, Rodgers

To: Governor Peter Shumlin, PSB Chairman James Volz, PSD Commissioner Chris Recchia and VDH Commissioner Harry Chen,

Our constituents living around wind turbines on mountains in Sheffield, Lowell, Georgia and Fairfax have brought to our attention that they have repeatedly filed complaints with state government agencies about noise pollution emanating from the wind turbines in their neighborhoods and that those complaints have not been responded to.

Some people report sleep disruption, others report cardiac issues, nausea, dizziness, ringing in the ears, a loss of quality of life and peaceful enjoyment of their properties. For some of our constituents this situation has been occurring for more than three years. They have been complaining throughout that time period, with no meaningful response.

Specifically, we are aware that

Sutton – The Brouhas first complained about the noise on December 24, 2011 or about six weeks after the Sheffield wind project began operating. Their complaints were referred to the wind developer who dismissed them in March 2012 by stating the project was in compliance with PSB noise standards. The Brouhas then hired an independent noise consultant to conduct testing around their home. With those data and analyses they submitted a formal complaint to the Public Service Board (PSB) on February 28, 2014, which the PSB referred to the Public Service Department (PSD) for recommendations. PSD hired a company to conduct a specific noise test at the Brouha home July 1, 2014. The same day the Brouhas had their own experts conduct the same test. PSD has not released the test results more than one year after the test was conducted.

Instead, PSD asked its noise expert *not* to send a draft report, as noted in this email:

From: Kisicki, Aaron [mailto:Aaron.Kisicki@state.vt.us]
Sent: Wednesday, December 03, 2014 2:21 PM
To: Barnes, James D
Subject: RE: Update - RE: 7156 - Sheffield Wind - Brouha Attenuation

Hi Jim,

I just left you a voicemail to this effect, but please do not sent any draft report yet. Instead, please give me a call at your convenience to discuss.

Thanks,

Aaron Kisicki
Special Counsel

Vermont Public Service Department
112 State Street
Montpelier, VT 05620-2601
802.828.3785
Aaron.Kisicki@state.vt.us

Only one year of sound monitoring was required for the Sheffield wind project. The Brouha's complaint alleges violations of the PSB's noise standard have occurred, and have been ongoing since the project began operating. At this time it appears that the PSB has abrogated its responsibility to address alleged violations of conditions of the Certificate of Public Good for the Vermont Wind project, and PSD appears to be obstructing the finalization of the report on the test conducted at the Brouha home that will show that the project has not been operating in compliance with the noise standards required by the Certificate of Public Good for interior sound levels.

Sheffield – The Therrien family had to abandon their home in December 2014 after three years of sleep deprivation and health issues. In the fall of 2012, the family was subjected to a noise test by a company hired by the PSD during which the Therriens raised questions about the wind company reducing turbine output because of foreknowledge that the noise testing would be taking place. PSD has done nothing since then to address the Therrien family's complaints. The Vermont Department of Health (VDH) has made no effort to talk to them, visit them, or in any way investigate their complaints. The PSB denied the Therriens' Motion to Intervene claiming there was no activity in the docket, at the same time the Brouhas had an active complaint before the PSB. In July 2014, the PSB directed Mr. Therrien to contact PSD's Public Advocate with his complaints. The Therrien family has had to go into debt in order to protect their family's health, and must continue to pay property taxes of land they can no longer use.

Georgia Mountain. Neighbors of the four wind turbines on Georgia Mountain have grieved their property assessments based on noise from the wind turbines and three properties have been reduced in value after visits by the Board of Civil Authority confirmed noise pollution was excessive.

Only one year of noise monitoring was required, and that is now completed. Throughout the time period that noise monitoring was occurring, neighbors complained but no actions were taken to address their complaints. They note that out of the 2000+ monitoring hours, the turbines were running at full capacity for a total of only 2 or 2 ½ hours.

Lowell and Albany. Many people on both the Lowell and Albany sides of the mountain have repeatedly complained about excessive noise and health issues resulting from the wind turbines. The PSB found that GMP violated the noise standards of its CPG in Jan. and Feb. 2013. More than two years later, PSD has hired a firm that neighbors learned has a history of bias in favor of the wind industry to conduct one year of continuous monitoring at the former Nelson home in Lowell on

the Albany side of the mountain. Residents have photographed the installation and sent those photographs to noise experts who identified problems about the location of microphones in bushes and too close to trees such that data contamination is likely to occur. To date PSD has not notified the PSB about the details of the continuous monitoring, which has now been in place for several months.

Sound Standard Investigation Docket 8167. At the end of 2013, the PSB opened a new docket to investigate sound standards. A prehearing conference was held in Jan. 2014, with three workshops in April, May and July 2014. No activity has occurred in the docket since July 2014.

Our constituents have shared with us their observations that the sound standard the PSB has set, 45 dBA Leq (averaged over an hour) is higher than the highest standard allowed by Denmark which leads the world in wind energy development. The Danish standard varies from 37 dBA to 44 dBA depending on turbine speed and location, and in all instances that is a maximum standard that does not allow averaging. We understand from our constituents who have purchased sound monitoring equipment that they often measure noise levels between 40 and 45 dBA and note that is too loud, especially when nighttime background noise levels are more than 20 dBA lower than the PSB has permitted. By allowing the noise levels to be averaged over an hour, neighbors can be exposed to noise levels much higher than 45 dBA, while the World Health Organization advises that 30 dBA is necessary for healthy nighttime sleep.

Several people living around the wind turbines have reported heart palpitations, increased blood pressure and other serious health problems that increase our concern for the health and welfare of people living in proximity to the wind turbines.

We request that the appropriate state agencies take the wind turbine noise pollution complaints and health and safety concerns seriously and take action to address these complaints in a timely manner. Two or three years without any substantive response from regulators charged with protecting public health is unacceptable.

We would like to know what your plan is to address the complaints and problems being experienced by neighbors around wind turbines in Vermont.

Sincerely,

Sen. Robert Starr
Sen. John S Rodgers
Rep. Vicki Strong

Sen. Joe Benning
Rep. Carolyn Branagan

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
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Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** 12-2-2015

Winooski, VT 05404

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

Please see attached

GC Cross

December 2, 2015

To Whom It May Concern:

Any airport noise impact report/study conducted in 2015 when the airport in question is also a part of a military base, national guard/reserve or other, needs to consider the many studies conducted by the military related to jet engine noise. One such report that should be referenced in this current BTV Part 150 update is the Naval Research Advisory Committee Report of April 2009 titled Jet Noise Report. That report can be found here:

http://www.nrac.navy.mil/docs/2009_FINAL_Jet_Noise_Report_4-26-09.pdf

Given that there are thousands of residential units impacted by jet engine noise related to take-offs and landings, particularly by military aircraft, at BTV it is imperative that the current Part 150 update include review of the health issued caused by exposure to excessive noise. There is Would Health Organization research that is applicable to the BTV situation. This research must be factored into the update.

Since these updates are conducted on what appears to be five year cycles, it is further of utmost importance that any 2015/2016 update includes up-to-date data related to the F-35. Unfortunately the communities surrounding the airport are developing and/or redeveloping land which will unquestionably fall into the US Air Force deems "not suitable for residential use" in its F-35 Environmental Impact Statement. There appears to be no coordination among governmental/military agencies and the local governments of the five or six communities surrounding the airport. A plan to establish such a coordinating body must be a part of the update. Any less of an action would be irresponsible.

George C. Cross

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BURLINGTON
INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** 12-3-15
Winooski, VT 05404

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

Please include the attached comment in the Part 150 Update.

Thank you,

[signature]

To Whom It May Concern:

There is no way a 2015/2016 Part 150, Noise Update related to the Burlington International Airport can be completed without due consideration given to the projected arrival of the F-35 fighter /bomber. According to the United States Air Force the F-35 will be deployed to the Vermont Air National Guard beginning in 2020. A noise study/report/update that fails to project out at least 5 to 10 years is worthless. There is no merit to simply stating what currently exists when we know that such will change dramatically in the near future. This is especially true in this case as the USAF in its Environmental Impact Statement related to the placement of the F-35 with the VANG states that the F-35 will be louder than the F-16 which the VANG now flies.

When the Air Force prepared its EIS considerable residential development was underway in the communities surrounding the airport. This is especially true for Winooski. Thus the EIS substantially understated the number of residential units affected by aircraft noise in Winooski and perhaps the other communities. Various individuals and groups have been updating the number of residential units within the 65 dB and above zones as those zones have been identified in the EIS. Below you will find the result of that updating:

The USAF EIS 65 dB and above zones as shown on the maps included with the EIS and when updated for the most recent residential development yields the following:

South Burlington: 909 residential units (700 parcels)
Winooski: 2,610 residential units (815 parcels)
Williston: 190 residential units (176 parcels)
Burlington: 215 residential units
Colchester: 30 residential units, plus 264 Saint Michael's College housing units

The Part 150, Update data presented at the November 9, 2015 meeting held at Chamberlin School in South Burlington indicates the following residential units within the 65 dB and above zones:

South Burlington: 957 residential units
Winooski: 0
Williston: 0
Burlington: 0
Colchester: 5 residential units, plus 136 Saint Michael's College housing units.

Clearly there is a major discrepancy in these numbers. The EIS includes noise projections for the F-35 and the Part 150 Update simply ignores this reality. The government says that the F-35 is coming; thus it cannot be ignored. Most importantly, if one of the reasons for the Part 150 Update is to determine residential units which might be eligible for federal grants to perform noise abatement projects, the Part 150 Update data as currently presented will focus all of those funds in South Burlington to the exclusion of the other communities. Given that the evidence is that Winooski will face the brunt of any noise problems with the F-35, it defies reason to exclude that community from the resources available for mitigation of aircraft noise. Given the data above, one could easily conclude that the main purpose of this Part 150 Update is to help BTV gain favor from the City of South Burlington by restricting noise mitigation funding to that community.

The failure of the Part 150 Update to include the F-35 data is without reason.

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** 12-3-15

Winooski, VT 05404

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

Please see attached.

Thank you.

[signature]

To Whom it May Concern;

Any study/review/report dealing with aircraft noise associated with incoming and outgoing aircraft at the Burlington International Airport cannot ignore the adverse health impacts on the residents of several communities who live in the area surrounding BTV. A summary and review of the many studies conducted by various researchers, governmental agencies and countries can be found in *A Review of the Literature Related to Potential Health Effects of Aircraft Noise, PARTNER Project 19 Final Report, July, 2010.* http://www.noisequest.psu.edu/pdfs-documents/PARTNER-19-A_Review_of_the_Literature_Related_to_Potential_Health_Effects_of_Aircraft_Noise.pdf

Over the last few years the City of Burlington has purchased and torn down, via federal funds, close to 200 homes in the immediate area of BTV located in South Burlington. These homes were among the most affordable residences in Chittenden County. They were destroyed because the officials of Burlington and South Burlington expressed concern over the noise and safety issues related to aircraft noise at BTV. Thus, it is clear that governmental officials understood the connection between aircraft noise and the adverse impact on healthy neighborhoods. Unfortunately, the communities surrounding the airport have not zoned areas around the airport as "unfit for residential use." Thus, while the City of Burlington is tearing down houses close to the airport, the same city and others are promoting building in areas similar to that which has now been cleared of homes. Consequently, it is imperative that those preparing the Part 150 Update take into consideration procedures to protect the health and welfare of citizens regardless of community of residence who live near the airport.

Thus, I encourage the consultant employed to prepare the Part 150 Update to consider the data found in the above noted literature review. In particular, the following sections should be considered:

2.2.1 Types of Noise Metrics Used in Noise and Health Studies, Page 8

2.2.2 Types of Noise Metrics, Page 8

2.2.3 Method of Measurement and Prediction of Noise Exposure, Page 9

2.2.4 Sources of Error in Noise Studies, Page 10

The current update must ensure that it will not be necessary to destroy homes 5 or 10 years down the road because they are in a noise zone "unfit for residential use." Thus, any noise metrics used in the update must include not only current noise levels by also the projected noise levels of any aircraft expected to be deployed in and out of BTV in the next 5 to 10 years.

George C. Cross

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Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: George Cross **Phone:** 655-4611

Address: 82 Dufresne Dr **Date:** 12-2-15
Winooski, VT 05404

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

While the attached comment by Annette Smith is directed at another noise intrusion, the idea of real-time, in-place measurement of the noise pollution from BTV is also important. Computer modelling will never be as accurate as on-the-ground measuring. BTV should be collecting noise level data from various positions surrounding the airport, not only for this Part 150 report, but constantly in order to determine the extent of the noise pollution. These measures will be incident specific and not "averaged." The problem is not the average noise, it is the noise from specific incidents.

DEC - 4 2015

VTDigger 11/11/15

Annette Smith :
November 11, 2015 at 2:04 pm
HMMH, the same geniuses who brought residents of Sutton and Sheffield the noise pollution at the UPC First Wind SunEdison Terraform Sheffield Wind project. Therriens 3/4 miles to the left abandoned their home because of the noise pollution, Brouhas 1.25 miles to the east are suing in federal court over noise. DPS did a test and found the project is out of compliance. HMMH assured the PSB the project was in compliance.

There is no excuse in this day and age for treating the public this way. Convene a stakeholder process, issue an RFP for noise experts, get community buy-in so that there is some confidence in the study. If the City of Burlington paid for the study, they need to explain to up their public engagement component to treat the public as equals.

Averaging over time is a favorite game of the wind industry, and it is disappointing to see it being played with so many people's lives in the airport study. Each operation should be modeled separately, and for its actual noise levels. Combining commercial with the F-16 is absurd.

I was at UVM last week and the airport noise was disturbing. But then something REALLY LOUD went over and it must have been a F-16. If I correctly analyzed what I was hearing — first the commercial airlines, then the F-16 — I can attest to the dramatically louder and longer duration noise levels coming from the F-16.

Be good neighbors. Toss this report and do it right. Show respect to the people who live here, stop treating Vermonters like children.

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Adrianne Morris

From:	Matthew Ennis <mennis8@gmail.com>
Sent:	Thursday, December 10, 2015 12:46 PM
To:	Burlington International Airport
Subject:	NEM

I would like to comment on the Noise Exposure Map process conducted by Burlington International Airport in conjunction with the FAA. I have lived in Winooski for 2 1/2 years. I am not directly under the passenger jet flightpath. However, F16s and occasionally other military jets regularly pass over my house (at Lafountain & Hood). Noise exposure should be measured at specific locations in the area. It is my understanding that the NEM that BIA produced was from computer modeling and mixed passenger and military air traffic together over the course of a year. This is not representative of the reality with which we live.

The change in engines with the F16s in 2008/2009 which has led to much increased afterburner use, has increased actual noise levels substantially in Winooski, South Burlington and Williston. There was no official process done by the military to effect that change. And there will be a new dynamic with increased noise if the F35s are based here in 2020. The Air Guard and the military have not been up front with the public about the noise which its operations are inflicting on the most populous area of Vermont.

I have witnessed that many houses near the airport have been demolished because they were in a high noise area. These houses should never have been demolished. There is a shortage of affordable housing in the greater Burlington area, and there are people that could have still lived in these houses and had a place to have a starter home. I also contend that there are many more areas of South Burlington, Winooski, and Williston that are almost as noisy, where the houses are still in place. Finding ways to mitigate the noise and preserving remaining housing stock should be the priority.

Thanks for reading my comments.

Matthew Ennis
49 Hood St Apt B
Winooski, VT 05404

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Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Kai Mikkel Forlie **Phone:**

Address: 27 Germain Street, Burlington **Date:** 11/10/2015

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

I recentrly reviewed the City of Burlington's proposed 14 CFR Part 150 update regarding Burlington International Airport. I am writing to express my concerns over the ramifications of the noise contours as they appear on the 2020 map. It seems to me that the City would do right by the residents who live, work or go to school in and/or around the airport environment in opposing the basing of all military airplanes and helicopters. No justification in favor of these operations overrides the very real negative affects they have on the people described. There are other far more suitable locations for such operations and the City should be doing everything in its power to persuade the U.S. government to relocate all associated aircraft away from BTV.

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Adrianne Morris

From: Kai Gmail <kaimikkelforlie@gmail.com>
Sent: Thursday, December 03, 2015 11:33 AM
To: Burlington International Airport
Subject: NEM Comments

Categories: BTV NEM 2015 Nov.

Dear Ma'am/Sir,

I am writing to offer some additional suggestions regarding your proposed update to KBTV's existing FAA Part 150 Noise Exposure Map (NEM). In my opinion, several important factors/considerations are missing from the existing proposal:

1. It is my understanding that SOP's related to the Air National Guard's operation of its F16 fleet has undergone a major change since the last Environmental Impact Statement (EIS) was submitted. The fact that the Guard now relies upon afterburner use in 95% of takeoffs (versus the 20% detailed in the existing EIS) needs to be addressed. Therefore, I urge you to submit an updated EIS that takes this major change into account.

2. As I understand it, the proposed NEM update relies on computer-modeling to determine the noise impacts of air operations at the airport on nearby communities. Given the limitations associated with computer modeling, I urge you to contract with an independent, un-biased third-party firm and for them to undertake comprehensive real-time noise monitoring *and* for the results of their study to be included in the final version of your proposed NEM update. Any noise scoping study included in the proposed NEM needs to be based on current, real-time, geo-referenced, measured Airport noise levels.

3. I urge you to separate out military aircraft modeling from commercial aircraft modeling. Under the current methodology (and its reliance on the law of averages) it is impossible to determine the impact that military operations-alone have on nearby communities.

4. As I understand it, your proposed NEM update does not include the F35's increased noise exposure. I urge you to correct this omission in the proposed NEM update.

5. Your proposed NEM update also omits the results of the latest health studies, including those carried out by the World Health Organization, concerning the effects of noise on children and others. I urge you to ament the proposed NEM update to include the results of said studies.

6. In conjunction with your proposed NEM update, I urge you to complete and then release the entirety of the 2010 noise monitoring data study, including the final analysis.

7. I urge you to schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

8. I urge you to fully implement the all of the FAA's outstanding recommended actions as detailed in the 2008 Part 150 Agreement.

Thank you.

Kai

Kai Mikkel Førlie
27 Germain Street
Burlington, Vermont 05401
802-318-4137

29

Adrianne Morris

From: Jeffrey Frost <jeffrey.frost@myfairpoint.net>
Sent: Thursday, December 10, 2015 8:32 AM
To: Burlington International Airport
Subject: NEW

Sirs:

Thank you for proceeding with your mapping work. I am however deeply disturbed about the many ways in which this work falls shy of the requirements you must meet. Just two of many examples:

1. The F35 noise parameters must be included.
2. An Environmental Impact Statement must be produced.

Regards,

Jeffrey Frost

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Adrianne Morris

From:	keeksmarie@gmail.com
Sent:	Thursday, December 10, 2015 2:54 PM
To:	Burlington International Airport
Subject:	NEM

I am VERY concerned about the basing of the f35s and the impact it will have on my home and my community. As it is, my child tells me his ears hurt every time the f16s fly over!! Hearing loss is CUMULATIVE- it starts out gradually and by the time you realize something is wrong, there is no way to fix it. The jets are sometimes so loud I have to cover my own ears if I am outside. Soundproofing our windows will NOT be an acceptable alternative- it is not feasible to ask our community members to stay indoors at all times for their safety. PLEASE be transparent and conduct thorough research, and relay this information to the public. My own health and my child's are at risk, not to mention the effect this will have on our property value. Winooski is a thriving, up-and-coming city, and we deserve more than the treatment we have been getting.
Thank You,
Kelci Gibbard
Orchard Terrace, Winooski
802-279-2698

Sent from my iPhone

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Burlingto Interntaional Airport
Part 150 Noise Exposure Map

Ann Goering 94 Chase Street Burlington, Vt 802-660-8501

December 10,2015

I attended the public forum on 11/9/15 and have several concerns and questions about the presentation and plan.

1) the NEM

The NEM presented seems to be very different than any of the maps form Air Force EIS studies. The 65 dB area is significantly smaller, I believe grossly underestimating the impact of the current level of combined commercial and military aircraft. It seemed inconsistent that it is based on data only but the paid consultants were unable to incorporate a projected NEM for 2020 when we are supposed to be exposed to the F-35's. If there is model data for the F16' from the Air Force then there has to be models for the F35's. It would seem that being proactive would really be looking out for the interests and health of the citizens of Chittenden county

Therefore I think that we should have a NEM that is based on real data that takes into account for true seasonal variations of sound absorption in the environment. We should not move forward with any plan that does not predict and prepare for the F35's.

2) Mitigations plans

This lacked any creativity or true concern for the residents of the county. There needs to be a comprehensive plan that includes physical noise absorption alterations at the airport. I believe that there are models in similar small cities like Madison Wisconsin.

Gene Richards seemed to be more of an obstructionist to creative solutions with commnets like " I don't think that would be a good use of the money" at a public forum.

Insulation homes does not address a population that is traditionally be outdoors. Keeping people in their homes with new air conditioning units adds to chronic illnesses like diabetes, hypertension and uses more energy ina time when we are trying to decrease energy consumption.

I would like to see the following items be a mandatory part the planning

1) Real data maps of noise- not model based
2) Adding impact of the F35's
3) Thorough review of the medical literature on the impact of chronic noise exposure on children and adults and acute noise exposure to children
4) Regular public meeting and forums during the process to address community issues
5) Implement FAa recommendations from 2008

Thank you for your attention to this important for our community.

32

Nicolas Longo

From: Gene Richards
Sent: Sunday, November 15, 2015 8:32 PM
To: Nicolas Longo
Subject: Fwd: Chamberlin Front Porch Forum No. 1497

Categories: BTV NEM 2015 Nov.

Gene Richards
Director of Aviation
Burlington International Airport
grichards@btv.aero

1200 Airport Drive, # 1
South Burlington, VT 05403

Phone: 802-863-2874 ext. 200
Cell: 802-343-9909
Fax: 802-863-7947

"There is always a way to do it better .. Find it "
-Thomas Edison

Begin forwarded message:

From: Front Porch Forum <chamberlin@frontporchforum.com>
Date: November 15, 2015 at 4:29:28 PM EST
To: grichards@btv.aero
Subject: Chamberlin Front Porch Forum No. 1497
Reply-To: Front Porch Forum <chamberlin@frontporchforum.com>

front porch forum™

POST A NOTE TO YOUR NEIGHBORS BECOME A SUPPORTING MEMBER

ISSUE NO. 1497
NOVEMBER 15, 2015

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Chamberlin Neighborhood Forum

Upland 17 Woodstove for Sale
QUINN WILCOX ï WILLISTON ROAD

Response to Impact of Loud Noise on Hearing
RAY GONDA ï BERKLEY STREET

News from Neighboring FPFs
POSTINGS FROM: KENNEDY, MAYFAIR PARK, WILLISTON, EAST TERRACE

Still need to line up a snow plowing service? Ask neighbors who they recommend on FPF…

VIEW YOUR FPF CALENDAR POST TO YOUR FPF VIEW THIS ISSUE ON THE WEB

Upland 17 Woodstove for Sale

QUINN WILCOX, QCWILCOX@GMAIL.COM, WILLISTON ROAD

Air tight, was going to use it myself in a tiny house operation but plans fell through, some cosmetic rust but burns very well, elbow pipe and top grate included, can meet in the burlington area for serious inquiries only.

EMAIL AUTHOR REPLY TO FORUM

Response to Impact of Loud Noise on Hearing

RAY GONDA, GONDA05403@YAHOO.COM, BERKLEY STREET

Regarding the post on Wednesday's FPF on noise levels and hearing. The method of measuring and expressing noise level in the referenced data using the 8-hr average 85 dBA as the damage-to-hearing-threshold leaves a false impression that anyone living or working or going to school within a 65 dB DNL zone is on safe ground. However, the airport noise contour maps are expressed in dB DNL not dBA so one cannot directly compare the DNL scale with the dBA scale which has led to this misunderstanding.

Most sources of research which indicate negative health impacts use the threshold of 65 dB DNL though I have seen at least one that asserts that health impacts begins at lower levels such as 55 dNL - the method used with the airport's noise contour maps shown at Monday night's presentation.

http://www.cdc.gov/niosh/docs/98-126/pdfs/98-126.pdf

The EIS shows the F-35 at 1000 feet altitude on takeoff registering 115 dBA (Lmax) (or 118 dBA (SEL)) to an observer standing on the ground sinilarly at 500 feet altitude the F-35 registers 124 dBA on takeoff.
~~~~

Thus, according to NIOSH, exposure to the F-35 on takeoff equal or greater than 28 seconds per day could be expected to inflict hearing loss. For those exposed at 124 dBA the allowable exposure time is less than 3 seconds. These levels are common from military jet takeoffs the airport.

It is extremely important to note that this standard applies to adults. It is well established by the American Academy of Pediatrics that the hearing impact of loud noise on infants-- because the small size of the infant ear canal magnifies the noise-- is far greater, making them more vulnerable. A 20 dB differential between infants and adults has been cited. (that is 4x louder than adults hear)

Regarding noise related cardiovascular health effects and the cognitive impairment of children at 65 dB DNL and below, the World Health Organization's Burden of Disease from Environmental Noise :

http://www.euro.who.int/__data/assets/pdf_file/0008/136466/e94888.pdf is a good summary of scientific research up to 2011.

EMAIL AUTHOR REPLY TO FORUM

News from Neighboring FPFs

Kennedy FPF
LIVING ROOM FURNITURE FOR SALE BY REBECCA KARWAN READ POST (AND 5 MORE) »

Mayfair Park FPF
FRIENDLY MALE CAT (BENGAL-BLACK AND BROWN) FOUND - YOURS? BY SAMANTHA WENDEL READ POST (AND 2 MORE) »

Williston FPF
MEN'S SKI BOOT FOR SALE BY SARA CAMPBELL READ POST (AND 4 MORE) »

East Terrace FPF
ABSENTEE LANDLORDS BY SETH STEINZOR READ POST (AND 2 MORE) »

VIEW THIS ISSUE ON THE WEB

READ THE PREVIOUS ISSUE

POST YOUR ITEM

3

33

Adrianne Morris

From:	Ray Gonda <gonda05403@yahoo.com>
Sent:	Thursday, December 03, 2015 3:55 PM
To:	Loretta Marriott; Burlington International Airport
Cc:	Eileen Andreoli; Meaghan Emery; Maida Townsend; Marc Companion; George Cross
Subject:	Re: NEM Comments ... may be incorporated into the final submission to the FAA!
Categories:	BTV NEM 2015 Nov.

My guess is the criteria are probably if the comments are pertinent to the specific subject of the NEM - and if the airport officials choose to include them. I have little confidence in the latter. That is why it is important to put these comments in writing and to keep a copy of them - to create a document trail of all comments submitted. - Ray

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From: Loretta Marriott <lmarriot@uvm.edu>
To: btv <btv@btv.aero>
Cc: Eileen Andreoli <mmmvt1@aol.com>; Ray Gonda <gonda05403@yahoo.com>; Meaghan Emery <meaghanee@yahoo.com>; Maida Townsend <mftownsend@comcast.net>; Marc Companion <marcc2@comcast.net>; George Cross <gccrossvt@hotmail.com>
Sent: Thursday, December 3, 2015 2:09 PM
Subject: NEM Comments ... may be incorporated into the final submission to the FAA!

Greetings BIA,

The BIA website invites FAA Part 150 review and comments and clearly states the following...

"Comments received before 4:00pm Thursday, December 10, 2015 at the airport offices may be incorporated into the final submission to the FAA."

MAY be incorporated! What are the criteria?

Please respond. Thank you.

Loretta Marriott
13 Mills Ave
South Burlington, VT

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Adrianne Morris

From: Ray Gonda <gonda05403@yahoo.com>
Sent: Thursday, December 10, 2015 2:38 PM
To: Burlington International Airport; Gene Richards
Subject: 2015 NEM comments

2015 NEM comments

From:

Ray Gonda 31 Berkley Street., South Burlington, VT 05403 264-4886

Thank you for the opportunity to list my concerns over the new NEM study.

The part 150 "agreement" between the BIA and the Federal Aviation Authority (FAA) contained 15 recommendations the BIA made to the FAA regarding actions to be taken upon receiving the grant for house buyouts. Examples are noise monitoring and development of real estate, noise-*disclosure forms.* However, long after receiving the grant, the status of recommendations are "not yet implemented", "not fully implemented", or simply "not implemented". Is there no accountability? . The completion of these recommendations should be fully implemented beginning now.

The reason for the current Noise Exposure Map (NEM) study is to apply for funding from the FAA for mitigation purposes, for sound-proofing of windows and doors of houses lying within the 65 dB DNL noise contours. It has come to light since that meeting FAA funds would apply only to houses built before October 1, 1998 and which also meet other FAA requirements. Why was the public not informed about this latter point?

When the older block 25 F-16s were replaced by newer Block 30 ones from Montana, they were supposed to be quieter than the old ones. This was not true. When switching to the newer F-16s with higher thrust engines, larger air intakes and additional fuel tanks necessitating increased afterburner use going from 20% to 95%, the increased noise levels should have triggered an environmental impact study - a legal requirement - which was never done. Why not? Whose responsibility was it to initiate the EIS?

The VTANG top leadership has recently stated that these things happened piecemeal each of which would not trigger and EIS. Yet the noisier planes came intact, not piecemeal. We need definitive documentary proof of the veracity of the VTANG assertions.

NEM measurements data were taken Nov 2010 but not made publicly available until April 2012 ï a 17 mo. delay during which time important decisions were made by our city without the benefit of that data. Why was that data not used for a NEM study at the time the data were taken? Why the delay in releasing the data? I believe this may have amounted to criminal fraud given that subsequent decisions were made by the South Burlington City Council without the benefit of that data which may have been material to those decisions and which may have caused harm to residents. The measure noise levels from that data when compared to earlier NEM data should have triggered the EIS process.

The real future threat to our communities will be from the F-35 bed-down here in 2020 which will greatly increase airport noise and impact many more residential and commercial units ï particularly in Winooksi and Williston. Then the 65 dBA DNL contour line will enclose about 2/3 of Winooski and a significant part of Williston (an enclosed area which will become "not suitable for residential use"). Yet the F-35 noise footprint was not included in this study even though the Air Force has generated its own NEM of the future F-35 impact. This is important because in addition to the noise annoyance and health impacts issues, property values decrease about 0.7% dBA DNL for each decibel louder that noise (as when moving toward the airport or getting louder planes) increases.

In any NEM study the impact of low military jet overflights needs to be taken into account since that is the major source of military noise on my street, much more than from the takeoff and landings. Also the ambient noise levels from road traffic and all other sources are a legitimate part of any NEM part 150 study. For this reason, actual noise measurements for a modeling of noise contours needs to incorporate all of these factors.

The latest research on health impacts of noise to humans should be included in this study since that is a major reason for such studies to begin with ï its impacts on humans in the vicinity of the airport. This should include research done in the past decade as well as earlier research. I would be happy to supply you with referenced at your request.

To sum it up you should be concerned with the impacts of airport noise on the areaǒs residents rather than trying to meet the absolute minimum of requirements for such a study. It is likely that residents of the area will not roll over so easily if their concerns are not met and addressed.

35

Adrianne Morris

From:	Beth Gutwin <bethgutwin@bethgutwin.com>
Sent:	Thursday, December 10, 2015 3:27 PM
To:	Burlington International Airport
Subject:	NEM

We wish to comment on the plans for basing F-35 fighter bombers at Burlington International Airport.
We strongly oppose the idea of basing these planes at a civilian airport in a densely-populated area based on health, safety and quality of life concerns. We urge you to follow the guidance of the Air Force planners themselves who initially did not favor basing these bombers here.
Please listen to the residents of this community who are strongly opposed to basing F-35s at this airport.

Beth and Paul Gutwin
49 Shady Lane
Williston, VT 05495

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Adrianne Morris

From: Aaron S. Hawley <aaron.s.hawley@gmail.com>
Sent: Thursday, December 10, 2015 12:21 PM
To: Burlington International Airport
Subject: NEM Part 150 BTV comments

Dear Burlington International Airport,

My name is Aaron Hawley, and I am a resident of Winooski. I live in a home on Platt Street underneath the takeoff and landing paths just north of runway 15/33. I travel a few times a year through Burlington International for business and holiday. I work for a small education technology firm an hour south in Middlebury, but I occasionally work at home, since I am able to telecommute.

As a neighbor of the airport who benefits from its existence, I want the airport to serve the community, but also operate in a responsible manner that reasonably minimizes its impact to my fellow neighbors. The airport is run by a lot of hard-working and competent employees. There are also a lot of hard-working people who work, live and sleep nearby. Some of them sleep during the day, since they work night hours. It's incumbent that the airport be run successfully and within compliance, so we can retain the airport's operation. I commend the airport for operating under FAA Part 150 and an NCP so as to study and remediate noise pollution.

In section 4.6 of the 2015 draft NEM, "Voluntary Minimization of F-16 Multiple Aircraft Flights" suggests scheduling "as many single-aircraft, as opposed to multiple-aircraft, flights as possible", and that "based on observations, F-16s in 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." Would it be possible to report the number of single- and multiple-F16 operations in tables 9 and 10, "Modeled Average Daily Aircraft Operations"? Based on my observation, multiple F16 operations occur more often than not.

Is an F16 "low approach" operation considered a touch and go in tables 9 and 10, "Modeled Average Daily Aircraft Operations"? Obviously, a "low approach" would be present in the flight tracks depicted in figure 16 and Figure 17. According to the documentation, "flight track density plots do not by themselves, indicate noise exposure nor do they provide aircraft altitude information, something which strongly influences noise exposure." These activities occur within the runway traffic pattern and produce a comparable environmental impact as the other runway operations -- takeoff, landing, touch and go -- and are often done by multiple aircraft in formation, so a "low approach" should be reported in the model.

According to section 6.4, "Aircraft Operations", one of the assumptions listed is that:

> "Military operations are identical for 2015 and 2020
> conditions. The TAF shows no change and the USAF EIS
> and associated Record of Decision does not indicate
> any changes through, and including, 2020. The total
> annual F-16 operations (arrivals, departures, and
> touch-and-goes) represented in the NEM are the same
> as the USAF EIS. As noted in Section 6.4, this NEM
> assumes that the ANG operates only F-16s throughout
> forecast period to 2020."

1

However, in BR2.1.1., "Aircraft Transition", of the F-35A USAF EIS,

> "Either 18 (Air National Guard [ANG] Scenario 1) or
> 24 (ANG Scenario 2) F-35A aircraft would be beddown
> at Burlington AGS no sooner than 2015. Under either
> scenario, the F-35A beddown would be completed in
> 2020, when the full complement of 18 or 24 F-35As
> would be at the installation."

It seems from the above, nearly all the F-35A would exist at Burlington AGS by 2020, so the NEM model for 2020 should reflect that at all, else it is an inaccurate model. The 2015 draft NEM uses parts of the 2013 USAF EIS information for the 2015 NEM model, but omits the parts that could be used for the 2020 model. Please refer to BR2.1.2, "Aircraft Operations" of the F-35A USAF EIS for commentary, tables and figures.

In the introduction of the 2015 draft NEM,

> The 2006 NEM update included a 2011 NEM forecast
> contour with an assumption that the transition to
> the General Electric-powered F-16 aircraft would not
> require afterburner for take-off. However, according
> to recent interviews with the City and ANG staff,
> F-16 departures are currently using afterburners.

The FAA should require an updated EIS by the USAF for these newer F-16s using afterburners to get a baseline understanding of the ANG compliance with the 2008 Noise Compatibility Program. There is no evidence that the 2013 USAF EIS for the F-35 documents the current amount of afterburner use by F-16s. Instead, the military data is "baseline F-16 data [...] provided by Burlington AGS in 2010".

According to measure 8 of the 2008 NCP for BIA, "Ongoing Monitoring and Review of Noise Exposure Map (NEM) and Noise Compatibility Program (NCP) Status", recommended "the Technical Advisory Committee as a Noise Abatement Committee and purchase of a permanent noise monitoring system". The airport is also urged to make a "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 should have been done when F-16s with different engine configuration and operation began in 2008, and should be done when F-35A jets begin flying in the next 5 years since these were both unanticipated changes in the level of airport activity.

It wasn't clear from the public workshop on November 9, 2015 what the various interlocking programs, requirements, studies that BIA is responsible for complying with, and how citizens can understand what level of compliance the airport is in and what remediation or recommendations could be made by the public. Please consider adding more workshops in the community now that the draft Noise Exposure Maps are available so as to provide information to and for getting feedback from area residents. Unveiling the maps and having a meeting should have been staggered to let people digest and process the data and documentation. This would make the comment period more productive.

Page 75, section 6.4.1 has a typo in the first sentence of the 4th paragraph, "The ROD included [several provisions] related to noise mitigation."

Thank you for your time.

Sincerely,
Aaron S. Hawley

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Adrianne Morris

From:	Marie Heintz <heintzmarie@gmail.com>
Sent:	Thursday, December 03, 2015 9:39 AM
To:	Burlington International Airport
Subject:	NEM
Categories:	BTV NEM 2015 Nov.

Dear Friends,
I hope you will take seriously the concerns of the residents in Winooski and Burlington areas. For example, one important point

Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use.

Thank you...we count on you

Marie
Concerned resident

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Adrianne Morris

From: Marie Heintz <heintzmarie@gmail.com>
Sent: Thursday, December 03, 2015 9:48 AM
To: Burlington International Airport
Subject: NEM

Categories: BTV NEM 2015 Nov.

Dear Friends,
We count on you to listen to the concerns of residents in Winooski and Burlington
In particular: NOISE MONITORING.

--Real time noise monitoring should be conducted and included in the update.
--Measure ground-level data through real life noise monitoring instead of computer modeling.
--Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels For example, one important point
Include the projected increased noise exposure from the F-35 in this NEM update

Thank you...

M. Heintz
Winooski resident

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Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: FRED G. HILL **Phone:** 802-864-4385

Address: 30 DAVIS PKWY **Date:** 11 NOV. 2015

S. BURLINGTON VT 05403

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

The decibel contours of your NEM maps do not reflect actual sound on the ground. They are neither based on actual measurements nor even projected for F35 deployment. Instead, we're told simply that they'll be updated after that full deployment.

I think most attendees at the Nov.9 "workshop" were concerned, as I am, with F35 noise, not with map contours. I think they hoped for some small, remaining chance of moderating the noise. Instead, the purpose was really just to meet a grant requirement for a "public meeting."

I think that few of us have much faith any more in official pronouncements, which are meant to soothe public concern and avoid criticism. Full transparency would meet criticism head-on and impress us by, at least, arguing realistically.

I live 0.8 mile from the airport, at about the "60 db" level of an earlier map. An F16 takeoff is a prolonged thunderclap, drowning conversation indoors with the windows closed, let alone outdoors. We shrug and live with it, but the Air Force describes the F35s as 3-4 times louder, and that's not liveable.

Most "workshop" attendees support the Guard, I think. Support for the F35s, though, is driven by the prospect of federal money coming into the county. Costs that are distant, broadly based and hard to define, such as decline in property values and damage to hearing, are discounted.

Actual sound measurements could be laborious and costly, but I think they could be usefully estimated from measurements taken above tree level on a "standard" day, at, say, 8 or 10 representative points at each of 3 or 4 disances from the airport, at moments of F16 takeoff. We, the public, could judge for ourselves the effect of trees, housing and weather. The cost would be small compared with the increase in public trust.

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12-10-'15 14:27 FROM- Winooski Family Hlth 8028612678 T-070 P0001/0003 F-615

Winooski Family Health
32 B Malletts Bay Ave.
Winooski, VT 05404
Telephone: 802-655-4422 Fax: 802-861-2678

Fwd 12/10/15

FAX COVER SHEET

TO: NEM Part 150 for FAA
DATE: 12/10/15
FAX NUMBER: 863-~~2874~~ 8947
PHONE:
NUMBER OF PAGES INCLUDING COVER SHEET: 3

☐ Urgent For Review ☐ Please Comment ☐ Please Reply ☐ Please call ☐ Please Recycle

Please add these to comments and input.

1. is ~~a~~ a repeat of ~~the~~ an email sent last night

************************************NOTICE OF CONFIDENTIALLITY****************************

12-10-'15 14:27 FROM- Winooski Family Hlth 8028612678 T-070 P0002/0003 F-615

Burlingto Interntaional Airport
Part 150 Noise Exposure Map

Ann Goering 94 Chase Street Burlington, Vt 802-660-8501

December 10,2015

I attended the public forum on 11/9/15 and have several concerns and questions about the presentation and plan.

1) the NEM

The NEM presented seems to be very different than any of the maps form Air Force EIS studies. The 65 dB area is significantly smaller, I believe grossly underestimating the impact of the current level of combined commercial and military aircraft. It seemed inconsistent that it is based on data only but the paid consultants were unable to incorporate a projected NEM for 2020 when we are supposed to be exposed to the F-35's. If there is model data for the F16' from the Air Force then there has to be models for the F35's. It would seem that being proactive would really be looking out for the interests and health of the citizens of Chittenden county

Therefore I think that we should have a NEM that is based on real data that takes into account for true seasonal variations of sound absorption in the environment. We should not move forward with any plan that does not predict and prepare for the F35's.

2) Mitigations plans

This lacked any creativity or true concern for the residents of the county. There needs to be a comprehensive plan that includes physical noise absorption alterations at the airport. I believe that there are models in similar small cities like Madison Wisconsin.

Gene Richards seemed to be more of an obstructionist to creative solutions with commnets like " I don't think that would be a good use of the money" at a public forum.

Insulation homes does not address a population that is traditionally be outdoors. Keeping people in their homes with new air conditioning units adds to chronic illnesses like diabetes, hypertension and uses more energy ina time when we are trying to decrease energy consumption.

I would like to see the following items be a mandatory part the planning

1) Real data maps of noise- not model based
2) Adding impact of the F35's
3) Thorough review of the medical literature on the impact of chronic noise exposure on children and adults and acute noise exposure to children
4) Regular public meeting and forums during the process to address community issues
5) Implement FAa recommendations from 2008

Thank you for your attention to this important for our community.

BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Sharon Hopper **Phone:** 802-660-8501

Address: 94 Chase St **Date:** 12-9-15
BURLINGTON VT 05401

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

I listened to the ideas for noise mitigation, stuff like special windows and soundproofing. What are neighborhood people going to do? Stay inside their soundproof homes 24/7? Where are children going to play? How will we garden, enjoy the parks, the paths along the river? The deck?

It is nuts that this is all happening to a densely populated area and all you can imagine is how to create spaces to hide in. This is totally life-destroying.

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Adrianne Morris

From: Greg Hostetler <hostetler.greg@gmail.com>
Sent: Saturday, December 05, 2015 9:02 AM
To: Burlington International Airport
Subject: NEM

Categories: BTV NEM 2015 Nov.

Dear Burlington Airport,

It has come to my attention that the Burlington international Airport is updating its FAA Part 150 Noise Exposure Map (NEM) to determine noise exposure of the current airport operating conditions, and projected future conditions. I am a Winooski resident, and the noise is often unbearable when the F16s fly overhead. If you have a hard time imagining what it's like, you are welcome to come to my place for coffee on a Saturday morning. We will not be able to have a conversation indoors when the jets fly over.

When developing the new noise exposure map, I urge you to do the following:

-Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use.

-Conduct real time noise monitoring and include it in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured airport noise levels.

-Separate the military aircraft modeling from commercial aircraft modeling. My experience has been that the military aircraft are far more disruptive.

-Include the projected increased noise exposure from the F-35 in this NEM update.

-Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

Best regards,

Greg Hostetler
20 River St.
Winooski, VT

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Adrianne Morris

From:	Jan Hughes <jeh8719@gmail.com>
Sent:	Thursday, December 10, 2015 10:23 AM
To:	Burlington International Airport
Subject:	Homeowner options - newly in 65 dB zone

Hi

My residence at 75 Pine Tree Terrace is newly within the 65 dB zone.

What are my options to improve and restore the quality of life that existed before the increased airport noise?

I have owned that property since 1995.

Thank you for your attention to this request.

Jan E. Hughes

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Adrianne Morris

From: Jansalz <jansalz@sover.net>
Sent: Thursday, December 10, 2015 9:19 AM
To: Burlington International Airport
Subject: F35's

NO. NO F 35's

It's that simple

The noise from the f 16's is already awful.

Rabbi Jan
Blessings abound

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Adrianne Morris

From: Richard Joy <rjoy1217@hotmail.com>
Sent: Thursday, December 10, 2015 7:54 AM
To: Burlington International Airport
Subject: NEM

As a homeowner living in the Chamberlin School Neighborhood the noise levels produced by Burlington Airport activities is of special importance to me. I propose the following suggestions to keep the relationship between the airport and nearby homeowners civil:

1. Include the projected increased noise exposure from the F-35 in this NEM update.
The NEM is intended as a planning tool for future land use and must project 5 years into the future.
The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

Thanks,
Richard Joy

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Adrianne Morris

From: Jack Keefe <keefejack@hotmail.com>
Sent: Thursday, December 10, 2015 3:21 PM
To: Burlington International Airport
Subject: NEM

To whom it may concern:

Please endure the NEM is fully compliant with all federal mandates. The NEM must include impacts in the increase of noise from F16 afterburner use (from 20% in 2008 to 95% currently). It must also comply with past FAA recommended actions such as ongoing noise monitoring, installing permanent monitoring equipment, and creation of real estate disclosure.

To ensure transparency, accountability, and credibility throughout this process:

1. Include the projected increased noise exposure from the F-35 in this NEM update.
The NEM is intended as a planning tool for future land use and must project 5 years into the future.
The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7. Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

Thank you for your consideration of these very important issues to protect the health, safety and quality of life of those living near the airport.

Yours sincerely,
John (Jack) Keefe

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
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Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Kathleen A. LaLiberté **Phone:** 802 434 4025

Address: 2975 Hinesburg Rd.
Richmond, Vt 05477

Date: ~~[illegible]~~ 12-5-15

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

I live in Richmond near the Williston town line. Air traffic is a daily part of my life. I have been here in this house for 30+ years and the increase in commercial and military traffic noise overhead has been dramatic. The F-16 noise is particularly upsetting, disturbing my sleep, work and well-being. Surrounding areas such as Winooski, Williston and Richmond should be included in any valid NEM report. Noise assessment should be in real time, at ground level, using GIS-referencing. Modeling is not a valid/accurate way to assess noise levels of this kind. Commercial and military noise should be documented and evaluated separately. Future F-35 noise levels should also be included in this evaluation — with the same real-world testing data. Health studies about noise impact on human well being (such as WHO studies) must be part of any analysis — otherwise how can it be a valid assesment of the impact of these activities on residents of the local area?

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Adrianne Morris

From: beanandbub@yahoo.com
Sent: Wednesday, December 09, 2015 8:14 PM
To: Burlington International Airport
Subject: NEM

To: Gene Richards,Nicolas Longo

I'd like to share with you a few of my thoughts on the up dating of the NEM.

1..I would like to see that military and commercial crafts be separated when up dating the NEM.
2..Real time noise monitoring for both airport noise and ground level noise. [not computer generated results]
3..We should have an EIS for the F-16 changes starting around 2008. I have heard that there was no EIS done with the changes to the F-16. I would also like you to include the data on the increase of the after burners from 20% to 95%
4..The public has the right to know of any studies { hopefully up dated] on what effects the noise has on humans and animals.
5.. Rumor has it that the 2010 noise study was never released to the public. This could be a bad mistake if true.
6..We should have some facts on the results of the increased noise that will come along with the F-35

Last but not least, the airport and the city of So.Burlington could be doing a much better job at making the time to have public Q and A meetings. Your neighbors have a lot to say. Put the airport and the VTANG in the same room and listen to the suggestions and answer the questions.Maybe then the public [your neighbors] will be more accepting. When things don't go as planned Gene, pick yourself up and dust yourself off and do it again. Please remember that the public has had limited time to speak.

Thank you for taking the time to read this and I do hope you will highly consider my request

Kim Lane

Yahoo Mail Stationery

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BURLINGTON INTERNATIONAL AIRPORT

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Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Gordon And Paulette Lawrence **Phone:** 802-863-1820

Address: 35 Suburban Sq **Date:** 12/7/15

So Burlington, VT 05403

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

Please See Attached sheets Pages 1-5

Date: December 9, 2015

From: Gordon R. Lawrence and Paulette J. Lawrence
35 Suburban Square
South Burlington, Vermont
grlawrence@myfairpoint.net

To: Burlington International Airport
Part 150 Noise Exposure Map Update
1200 Airport Drive Suite 1
South Burlington, Vermont 05403

My wife and I have been residents in the area between White Street and Williston Road since the mid nineteen seventies. We have attended meetings held by the Burlington International Airport at Chamberlin School concerning the excessive noise generated by the Airport. The Airport used the meetings as a platform to discuss their plans to remove housing close to the airport and to abate aircraft noise generated at their facility. I wish to comment on what we have noticed and how we feel about the process.

First of all, there appears to be a major disconnect between the Airport and the Chamberlin neighborhood. It's hard to tell whether this disconnect is the result of blunders, incompetence or chicanery. What I do know is that a once vibrant area of affordable housing is dying.

A few years ago, maps came out showing contour lines around the Airport indicating where different noise levels generated by the airport traffic were located. We learned that living within certain contours was dangerous to our health. The airport began a program of purchasing housing located within that dangerously high noise area. Neighbors came to believe that all houses in the affected area would be purchased. A tiny berm and living fence was erected across the street from the airport, indicating that some noise abatement was being considered. But, the purchase program ended. Evidently there were not enough funds to buy out every home effected. More recent maps indicate that the dangerously high noise levels go well beyond the initial projections affecting a greater number of homes and people. In addition, Chamberlin School is located

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within the area affected and it appears that the same dangerous noise levels that affect the households in the community are sounding the death knell for this school, a neighborhood gathering spot and community center. The entire process has left the neighborhood in shock!

If one looks back over the last few years, one sees a number of factors that have caused the issue to become cloudy and create distrust in the minds of the community. I will attempt to summarize them from what I remember.

At the same time as the house purchase/noise abatement program was under discussion, it was announced that the Vermont Air National Guard, a tenant at the Airport, would be receiving a new aircraft, the F35, in the future. This advanced aircraft, with noise levels said to be four times louder than the current F16, would replace the F16 when it goes into production in the next few years. (It's interesting that the Vermont Air National Guard Unit will be the only such unit in the country to be given such an aircraft.)

The South Burlington City Council discussed the F35 at meetings and voted to state its opposition to having the aircraft based here. (It was around this time that the first airport noise maps appeared.) A hot discussion ensued within the community. A short time later, new members were elected to the council and its leadership changed. One of first things the council did after the election was to take a second look at their own position concerning the F35. They held a public forum at Chamberlin School to listen to comments from the public. Many spoke that night. I mentioned how the neighborhood was dying and listed the names of people whose homes had been vacated. I also mentioned how one of my grandchildren couldn't take naps at my house after having been awakened, screaming, to the noise of an F16. Other neighborhood residents expressed their concerns over noise and safety that evening, as did residents of surrounding communities who are now and will be affected by the noise levels of all planes. It appears the way the F16 operates is different from its original configuration.

There were also a number of business interests present who voiced the benefits to having the new airplane. Real estate and development people said there would be no negative effects to the noise levels these aircraft generated. (It appears that was wrong as I'm told a disclosure must

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now be made to buyers. That disclosure takes place at the time of a sale of property in the areas affected by the noise. This may effect property value.) I may be wrong, but I think that someone from the National Guard was at that meeting and said something to the effect that we'll just have to get one of them (F35) up here to prove it's not so noisy. We haven't seen one yet. (I also found it interesting at the time that many of those with business interests placed a large advertisement in the local paper supporting the plane. When I looked up their addresses in the phone book after the meeting, I found many of them listed home phones in areas well away from the noise, Charlotte, Shelburne, Stowe, etc. Not in my backyard, that said to me.)

The council took a vote that evening and reversed its position, now supporting placement of the F35. The sad part was that council members refused to discuss their reasons when questioned by people living in the neighborhood. (My wife called a local council member after that meeting to express her concern about health effects to children attending Chamberlin School. The councilor told her that we'll just have to move the school.) The entire process generated outside interest by politicians. They said they would look into the noise concerns. Several traveled to an Air Force base in Florida to evaluate the noise. A picture of some politicians wearing ear protection later appeared in the news alongside comments that noise is not an issue.

Over the last year, the process of removing houses already purchased by the airport has proceeded. A great green space now exists where homes, families, and neighborhoods once stood. The berm and living fence has not grown. At the same time the open space grew, so did the void between the community and the Airport. Recent meetings held by the Airport at Chamberlin School have fueled it. At both meetings, the Airport attempted to break up the community into smaller groups to disseminate their message. The community refused this tactic at the last meeting. The community wanted everyone to hear the same thing so they asked pointed questions which the Airport did not seem to answer well. My memory of some of the more important questions is as follows. If the F16s now use afterburners on takeoff (producing more noise), why have the contour lines on the map grown smaller? No real answer. If we know that the F35s are coming, why don't you use data associated with that plane in order to do adequate planning now? No real answer. What will you be doing to abate that noise? No real answer. Do the noise contour lines on the map indicate actual sound levels (readings)? NO.

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NONE WERE TAKEN!!! THESE ARE COMPUTER GENERATED MODELS ONLY!!!!! When asked about noise associated with the new planes, the Airport denied knowing anything about them. This may be true but one would think that a business that provides service to airplanes, runways for airplanes, and shares airspace with airplanes, should know something about all the airplanes that use it. If they don't, they should bring someone who does. After these and other questions were fumbled, one of the councilors stood up and defended the Airport for doing a great job. It was the kind of defense one would love to hear from a loyal friend if one were under siege but, in this case, it appeared to suggest a relationship that wasn't appropriate between a councilor representing a neighborhood and their opposition.

I hope you can see from my narrative why we feel that this has been a long, strange trip. And it's not over.

I think that the airport must attend to a number of things to restore the faith of the community in the Airport. Here are a few that I can think of.

First, an independent, outside consultant should be hired immediately to document the entire history of the Airport's actions to record noise levels and abate dangerous noise affecting the community over the last ten years. This report should include all data collected, all recommendations made, promises promised and actions taken. This entire document should be made available to the public. Make everything open, transparency is the latest catchword.

Second, real noise monitoring should begin immediately. This should be recorded continuously from around the area, for all aircraft (current and expected) so that the public is aware of the differences in levels between commercially generated noise and military generated noise. This data should be made available to the public on an ongoing basis.

Third, an independent, outside consultant should be hired to document the relationships between airport personnel, local developers, consultants, and the city council members in both Burlington and South Burlington. This entire document should be made available to the public. There cannot be the slightest hint of impropriety. Rumors are rampant.

Fourth, the airport should make regular statements to the public of its efforts to recognize and abate noise that dangerously affects the community. What are you doings other than tearing down houses and planting grass? There is a hazard to health associated with airport noise. (If the current noise levels are correct, children are already affected.) The airport is creating the noise that is harmful to the community. It's not the other way around.

Fifth, if the Burlington Airport is in fact not familiar with or cognizant of the characteristics of the types of aircraft proposed by the military for use here, they should be. There are many cases where that knowledge will be important. Consider for example, the knowledge necessary in the event of a crash. The airport needs to be knowledgeable. They need to know the environmental impact of ALL aircraft. They need to share that information with the public. The public expects it. The airport doesn't have to support or fight the Guard but it can't look foolish or act ignorant when questions are posed by the public.

We appreciate the opportunity to express our opinions. We would be interested in seeing the other comments from the public.

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
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Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: James Leas **Phone:** 8028641575

Address: 37 Butler Dr. S. Burlington VT 05403 **Date:** 11/9/15

I/we wish to comment or inqnire about the following aspects of this project:

① what is the health impact at each decibel level for children? for seniors?

② Is there a conflict of interest for the Airport Director to be working every day to increase air traffic while also being the person to address concerns that increased air traffic causes?

BURLINGTON INTERNATIONAL AIRPORT

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Name: James Leas **Phone:** 8028641575

Address: 37 Butler Dr. S. Burlington VT 05403 **Date:** 11/9/15

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

③ The Air Force EIS states noise levels for the F-16 and the F-35: more than 4 times louder for the F-35. This means that homes will experience more noise with the F-35. If the airport plans mitigation based on the 2015/2020 noise maps based on F-16 noise level will homes be outfitted twice — once for F16 noise and again when F-35 arrives?

50

Adrianne Morris

From: James Marc Leas <jolly39@gmail.com>
Sent: Thursday, December 10, 2015 5:39 AM
To: Burlington International Airport
Subject: NEM

My comment regarding the Noise Exposure Map:

The noise exposure map update fails to include the projected increased noise exposure from F-35 basing. The Air Force and the Vermont Guard said the F-35 is expected to arrive in 2020. The noise from that basing should be included. Here is why: The NEM is intended as a planning tool for future land use and must project 5 years into the future.
Failure to include noise from F-35 basing violates the purpose.

The Air Force already supplied a noise map that includes the projected noise from F-35 basing. That map is in the Air Force Environmental Impact Statement that you have in your possession. The airport supplied no valid reason why this Air Force supplied information should not be included in the NEM update.

Therefore, I request that the projected increased noise exposure from F-35 basing be included in this NEM update.
best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

51

Adrianne Morris

From:	James Marc Leas <jolly39@gmail.com>
Sent:	Thursday, December 10, 2015 5:47 AM
To:	Burlington International Airport
Subject:	NEM

Another comment regarding the Noise Exposure Map (NEM):

I request that the airport conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008 as part of its NEM update. No EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use. The purpose of the NEM is to allow the public to see the changes in noise. This purpose will not be satisfied without an EIS regarding the F-16 afterburner changes.

best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

52

Adrianne Morris

From:	James Marc Leas <jolly39@gmail.com>
Sent:	Thursday, December 10, 2015 5:50 AM
To:	Burlington International Airport
Subject:	NEM

Another comment regarding the Noise Exposure Map (NEM):

I request that the NEM include the latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and the elderly. The public is not adequately informed unless the health effects of the noise are divulged. It is the purpose of the NEM to inform the public regarding noise. Therefore, I request that the health effects be included.

best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

53

Adrianne Morris

From: James Marc Leas <jolly39@gmail.com>
Sent: Thursday, December 10, 2015 5:56 AM
To: Burlington International Airport
Subject: NEM

My further comment regarding the Noise Exposure Map:

I Request release of the 2010 noise monitoring data study as part of the NEM. This study was formally agreed to between City of So. Burlington and City of Burlington. The City of Burlington owns the airport. The study was never finished or released to the public.

The purpose of the NEM is to allow the public to see noise data. The 2010 noise monitoring study includes actual measurements of noise. The purpose of the NEM will not be satisfied without release of the 2010 noise monitoring study.

Therefore, I request that the 2010 noise monitoring data study be included.
best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

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54

Adrianne Morris

From: James Marc Leas <jolly39@gmail.com>
Sent: Thursday, December 10, 2015 5:58 AM
To: Burlington International Airport
Subject: NEM

My further comment regarding the Noise Exposure Map:

I request release of the 2010 noise monitoring data study as part of the NEM. This study was formally agreed to between City of So. Burlington and City of Burlington. The City of Burlington owns the airport. The study was never finished or released to the public.

The purpose of the NEM is to allow the public to see noise data. The 2010 noise monitoring study includes actual measurements of noise. The maps shown only include computer modeling. Verification of the computer modeling is essential for the public. This verification may or may not be provided by the measurements in the 2010 noise monitoring study. We need to see those results in the NEM. The purpose of the NEM will not be satisfied without release of the 2010 noise monitoring study.

Therefore, I request that the 2010 noise monitoring data study be included.
best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

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55

Adrianne Morris

From: James Marc Leas <jolly39@gmail.com>
Sent: Thursday, December 10, 2015 6:04 AM
To: Burlington International Airport
Subject: NEM

Another comment regarding the Noise Exposure Map (NEM):

I request that noise monitoring data should be conducted and included in the update.

The purpose of the NEM is to allow the public to see noise data. Noise monitoring includes actual measurements of noise. The maps so far shown only include computer modeling. Verification of the computer modeling is essential for the public. This verification may or may not be provided by actual real live measurements. We need to see such measurements in the NEM. The purpose of the NEM will not be satisfied without inclusion of noise monitoring data verifying computer modeling .
best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

56

Adrianne Morris

From:	James Marc Leas <jolly39@gmail.com>
Sent:	Thursday, December 10, 2015 6:10 AM
To:	Burlington International Airport
Subject:	NEM

My further comment regarding the Noise Exposure Map:

I request that the airport implement all the FAA recommended actions in the 2008 Part 150 Agreement. Many of these recommendations were not implemented at all by the airport. Some were only partially implemented. No one can trust an airport that does not timely implement FAA recommendations in full. Therefore, I request that the airport implement all the FAA recommended actions in the 2008 Part 150 Agreement before final approval of the NEM.

best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

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57

Adrianne Morris

From:	James Marc Leas <jolly39@gmail.com>
Sent:	Thursday, December 10, 2015 6:14 AM
To:	Burlington International Airport
Subject:	NEM

Another comment regarding the Noise Exposure Map (NEM):

I request that follow-up public workshops be scheduled prior to the completion and approval of noise exposure maps. The last meeting revealed intense public dissatisfaction with the airport administration. The concerns must be addressed before approval of the noise maps.

best regards,
James Marc Leas
37 Butler Drive
South Burlington, Vermont 05403
802 864-1575

58

Adrianne Morris

From:	Eric Lind <eolind@hotmail.com>
Sent:	Thursday, December 10, 2015 3:26 PM
To:	Burlington International Airport
Subject:	NEM

Expansion of the airport "noise footprint" into surrounding communities is a poor idea. I believe that the negative effects of noise pollution on the adjacent population is not something that can be remedied by studies and plans. The airport should seriously reconsider adding anything more to the existing site as well as consider moving some assets to a more appropriate site. Constructing a new airport far enough away from the general population such that it minimizes noise pollution is expensive but perhaps an appropriate investment for the future when situated in a growing and increasing population density area. Apparently the airport has reached or even surpassed the point at which people are going to continue to put up with increasing problems.

Respectfully,
Eric Lind
Winooski, VT

59

Adrianne Morris

From: Alison Lockwood <aconnorslockwood@msn.com>
Sent: Thursday, December 10, 2015 6:42 AM
To: Burlington International Airport
Subject: NEM

To Whom It May Concern:

I have the following comments on the proposed F-35:

A huge area area of concern is the omission of future F35 noise contours. NEMS updates are required to project 5 years into the future. The F-35, expected to arrive in Burlington in 2020, therefore should be included in the update.

Other issues include **disregard of federal mandates** which require an EIS for such changes as the increase in F16 afterburner use (from 20% in 2008 to 95% currently).
Additional issues are
the **non- adherence by the Airport to past FAA recommended actions** such as ongoing noise monitoring, installing permanent monitoring equipment, and creation of real estate disclosure.

The newly created NEMs depict **NO** 65 dB DNL noise impact in Williston and Winooski, and therefore these homes will now not be eligible for any sound proofing programs for which BIA might apply. These maps do <u>not</u> reconcile with those created by the USAF in its Environmental Impact Statements. I have been at the Walmart in Williston when the F-16s have taken off and have been subjected to deafening noise that has caused children to cry in fear and animals to run under vehicles to hide. The maps have to be reconciled and the noise mitigated for those subjected to it.

Here are the topics that should be included in the update to ensure transparency, accountability, and credibility throughout this process:

1.
Include the projected increased noise exposure from the F-35 in this NEM update.
The NEM is intended as a planning tool for future land use and must project 5 years into the future. The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

Sincerely yours,

Alison C. Lockwood

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Adrianne Morris

From: Anne MacLeod <agmacleod@aol.com>
Sent: Thursday, December 10, 2015 1:14 PM
To: Burlington International Airport
Subject: NEM

I am a resident of Winooski who bought a home several years ago, despite knowing that the F-16s have a huge noise impact. It never occurred to me that I would be so powerless to protest that they -- never mind F-35s -- would continue to be flown at deafening noise levels. I just could not conceive that we would be expected to go on, year after year, living with such disturbing and frightening take-offs and landings (while paying the same tax rates as Vermonters who enjoy quiet and serenity). An elderly gentleman was once in my garden during take-offs. He is no wimp, having fought in two wars, but he was visibly terrified as an F-16 came roaring overhead. He said, "Is *that* SAFE...*here*?" He knew that it is an incongruous situation; my home is not on a military base. It just sounds and feels like it is. The situation cannot continue.

As a tax-paying citizen, I require that the airport:

1. **Project 5 years into the future and include the impact of the F-35s in the mapping.**

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Conduct and include real time noise monitoring in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

The claim that the airport and VtANG have been 'good neighbors' is both absurd and insulting. If I sound irritated, that's what living with unpredictable sudden blasts of frightening noise year after year does to people. Please honor our requests; we are your neighbors and we deserve consideration.

Anne MacLeod
62 Maple Street
Winooski VT 05404
802-999-9899

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Michael Mahoney **Phone:** 655-3750

Address: 36 Hood St. Winooski, VT **Date:** 12/8/15

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

The new NEM is much different than the maps provided in the EIS. The differences may be attributed to different modeling techniques; inaccurate data in the EIS map, revised military flight procedures to benefit the new NEM that may not continue into the future or data used to the benefit of the VTANG objectives of ultimately flying the F-35.

The perception of manipulation is present due to past improprieties. (omission or falsification of data)

62

Nicolas Longo

From:	Gene Richards
Sent:	Sunday, November 15, 2015 1:40 PM
To:	Nicolas Longo
Subject:	Fwd: NEM Comment
Categories:	BTV NEM 2015 Nov.

Gene Richards
Director of Aviation
Burlington International Airport
grichards@btv.aero

1200 Airport Drive, # 1
South Burlington, VT 05403

Phone: 802-863-2874 ext. 200
Cell: 802-343-9909
Fax: 802-863-7947

"There is always a way to do it better .. Find it "
-Thomas Edison

Begin forwarded message:

From: BTV Airport <btvairport@gmail.com>
Date: November 15, 2015 at 1:23:16 PM EST
To: Gene Richards <grichards@btv.aero>
Subject: Fwd: NEM Comment

---------- Forwarded message ----------
From: **Maida Townsend** <mftownsend@comcast.net>
Date: Sat, Nov 14, 2015 at 4:47 PM
Subject: Re: NEM Comment
To: Meaghan Emery <meaghanee@yahoo.com>
Cc: Loretta Marriott <lmarriot@uvm.edu>, "btvairport@gmail.com" <btvairport@gmail.com>, Marc Companion <marcc2@comcast.net>, "lkrohn@ccrpcvt.org" <lkrohn@ccrpcvt.org>

Ditto!

Sent from my iPhone

On Nov 14, 2015, at 3:25 PM, Meaghan Emery <meaghanee@yahoo.com> wrote:

I very much agree, Loretta. The fact that they don't appear on the map seems counter-intuitive.

Meaghan

On Saturday, November 14, 2015 1:43 PM, Loretta Marriott <lmarriot@uvm.edu> wrote:

Greetings,

As I look at the proposed 2015 and 2020 BTV NEM, it looks clear to me that the residents of Winooski who live, shop and work under the airplane flight path are exposed to significant noise that is underrepresented by the currently proposed map.

Perhaps the statistical aberration is a result of the steep drop off at the Winooski Gorge. However Winooski contours go up from the gorge and there are many families living there.

I don't agree with the proposal that the ear splitting noise experienced by these families is ok because it can be averaged out to acceptable levels. The ANG fighter jets are particularly loud.

Loretta Marriott
13 Mills Ave
SB, VT
802-862-2990

--
"Visit the Burlington Airport at www.btv.aero"

63

Adrianne Morris

From: Loretta Marriott <lmarriot@uvm.edu>
Sent: Thursday, December 03, 2015 9:52 AM
To: Burlington International Airport
Subject: NEM Comment

Categories: BTV NEM 2015 Nov.

Greetings,

I have a comment and a question re the proposed 2015 and 2020 NEM.

Clearly a permanent noise monitoring system and a permanent noise abatement committee are needed.

What are the steps needed to get this done?

Loretta Marriott
13 Mills Ave
South Burlington, VT 05403

64

Adrianne Morris

From: Loretta Marriott <lmarriot@uvm.edu>
Sent: Thursday, December 03, 2015 2:10 PM
To: Burlington International Airport
Cc: Eileen Andreoli; Ray Gonda; Meaghan Emery; Maida Townsend; Marc Companion; George Cross
Subject: NEM Comments ... may be incorporated into the final submission to the FAA!

Categories: BTV NEM 2015 Nov.

Greetings BIA,

The BIA website invites FAA Part 150 review and comments and clearly states the following...

"Comments received before 4:00pm Thursday, December 10, 2015 at the airport offices may be incorporated into the final submission to the FAA."

MAY be incorporated! What are the criteria?

Please respond. Thank you.

Loretta Marriott
13 Mills Ave
South Burlington, VT

65

Adrianne Morris

From: Loretta Marriott <lmarriot@uvm.edu>
Sent: Friday, December 04, 2015 10:20 AM
To: Gene Richards
Cc: Burlington International Airport; Eileen Andreoli; Ray Gonda; Meaghan Emery; Maida Townsend; Marc Companion; George Cross
Subject: What comments would be helpful?

Categories: BTV NEM 2015 Nov.

Good Morning Gene,

What comments would be helpful?

I have reviewed the 2015 and 2020 BTV NEM draft.

I understand there are no specified criteria for inclusion. "Comments received before 4:00pm Thursday, December 10, 2015 at the airport offices may be incorporated into the final submission to the FAA."

How does this process work?

Gene, I would appreciate a response.

Thank you,
Loretta

Quoting Loretta Marriott <lmarriot@uvm.edu>:

> Greetings BIA,
>
> The BIA website invites FAA Part 150 review and comments and clearly
> states the following...
>
> "Comments received before 4:00pm Thursday, December 10, 2015 at the
> airport offices may be incorporated into the final submission to the
> FAA."
>
> MAY be incorporated!   What are the criteria?
>
> Please respond. Thank you.
>
> Loretta Marriott
> 13 Mills Ave
> South Burlington, VT

66

DEC 10 2015

Greetings BIA, NEM Comment 12/10/15

I have reviewed the BIA 2015 and 2020 NEM Report. Also I have researched noise mitigation practices at other airports, some similar to BIA.

Successful programs have many components in common. They are multimodal and continuously evolving. There is much to learn from their experience.

Due to the complexity and the changing nature of airport noise as it interfaces with surrounding communities I feel that it is imperative that a permanent noise mitigation committee be formed. More than simply creating a committee, this body needs an effective structure to be successful.

A successful noise abatement committee requires an ongoing commitment of financial support (a budget), access to information (including a permanent noise monitoring system) and a dedication to community involvement. It will be worth the effort. Are you willing to do this?

Loretta Marriott

Loretta Marriott
13 Mills Ave
SB VT

67

Adrianne Morris

From:	Loretta Marriott <lmarriot@uvm.edu>
Sent:	Thursday, December 10, 2015 1:57 PM
To:	Burlington International Airport
Subject:	NEM comment

There is an educational facility you may not have on your maps:

Leaps & Bounds Child Development Center
1600 Williston Road
SB, VT

It is on the corner of Williston Rd and Mills Ave

Loretta

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Adrianne Morris

From:	Loretta Dow Marriott <lmarriot@uvm.edu>
Sent:	Thursday, December 10, 2015 3:45 PM
To:	Burlington International Airport
Subject:	NEM comment

There is an educational facility that might not be identified on the NEM:

Leaps & Bounds Child Development Center
1600 Williston Rd
South Burlington, VT

It is on the corner of Williston Rd and Mills Ave in South Burlington

Loretta Marriott
13 Mills Ave
South Burlington, VT

69

Adrianne Morris

From:	Michael Mittag <mittag.michael@gmail.com>
Sent:	Thursday, December 10, 2015 9:53 AM
To:	Burlington International Airport
Subject:	NEM

These topics should be included in the update to ensure transparency, accountability, and credibility throughout this process:

1. Include the projected increased noise exposure from the F-35 in this NEM update.
The NEM is intended as a planning tool for future land use and must project 5 years into the future.
The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include the latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release the analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

Michael Mittag.
South Burlington VT

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Please excuse typos and imaginative spellings, sent from my mobile device.

70

Adrianne Morris

From: Sue Morris <suereel@editide.us>
Sent: Friday, December 04, 2015 11:39 AM
To: Burlington International Airport
Subject: Save Our Skies!

Categories: BTV NEM 2015 Nov.

Hello:

We are writing to support Save Our Skies. We have children and grandchildren who live in the Burlington area (Winooski and South Burlington), and suggest the following actions on your part:

1. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008.

2. Conduct real-time noise monitoring and include results in the update. Measure ground-level data through real noise monitoring rather than computer modeling. Conduct a noise scoping study that is based on current, real-time, georeferenced, measured Airport noise levels.

3. Separate military aircraft modeling from commercial aircraft modeling.

4. Include the projected increased noise exposure from the F-35 in this NEM update.

5. Include the latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

6. Release analysis of the 2010 noise monitoring data study. A final analysis was never completed for planning use or released to the public.

7. Follow-up with public workshops: Schedule follow-up public workshops prior to the completion and approval of noise-exposure maps.

8. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

Thanks for considering our thoughts.
Regards,
Sue and John Morris

Let's understand that when we stand together, we will always win. When men and women stand together for justice, we win. When Black, White and Hispanic people stand together for justice, we win. ð Bernie Sanders, 2016 presidential candidate

Sue Morris
Editide
1392 VT Rte 232
Marshfield, VT 05658
USA
(888) 259-8216 toll free
(732) 334-8433 outside the USA
suereel@editide.us
http://www.editide.us

71

Adrianne Morris

From:	Bernard Paquette <bernie.paquette@yahoo.com>
Sent:	Friday, November 20, 2015 10:11 PM
To:	Gene Richards
Cc:	Barbara Paquette; Nicolas Longo
Subject:	What are known effects of the noise environment? RE: inform policy-makers and the public about the health impacts of exposure to noise/ estimate levels of effect at specific Db DNL levels
Categories:	BTV NEM 2015 Nov.

Gene,
In the BTV NEM (draft) report page 17, Second bullet under 3.1.6 "The measure [DNL] should correlate well with **known effects of the noise** environment and on individuals and the public." I also note that on page 25 the report states, "**People may get used to a level of exposure that guidelines indicate may be unacceptable**, and changes in exposure [houses removed and therefore no longer acting as a noise barrier for example] may generate response that is greater than that which the guidelines might suggest.

Aside from the Aircraft noise effects on human activity listed at 3.2, 3.2.1 through 3.4 (Speech interference, sleep interference, community annoyance) **what other aircraft noise effects on human activity AND HUMAN HEALTH are known** and recognized by the FAA, EPA, BTV Airport or other related agency that the BTV airport management team is aware of or has access to (the information)? (And how do the degrees of Db DNL impact those other effects including human health?)

What **health risk assessments and related public-inform / warnings** have been done or will be done regarding the newly recognized BTV NEM report (including cardiovascular disease, and cognitive impairment)- tied to specific levels of Db DNL, for example at 65Db, at 70Db, at 75Db.

I note that the WHO (World Health Org) 2011 report, Burden of Disease from environmental noise, states, on page XV, "Cardiovascular diseases The evidence from epidemiological studies on the association between exposure to road traffic and aircraft noise and **hypertension and ischaemic heart disease** has increased during recent years. Road traffic noise has been shown to increase the risk of ischaemic heart disease, including myocardial infarction. Both road traffic noise and aircraft noise **increase the risk of high blood pressure**."

As a general direction of policy I note the following from A Review of the Literature Related to Potential Health Effects of Aircraft Noise PARTNER Project 19 Final Report, July 2010,
"... education programs could **let the public know of the potential risks and allow individuals to make informed decisions**. Presumably doing so would affect hedonic indicators as individuals began taking the information into account and thus the system

could maintain usefulness, even with the added considerations, although this might take some time to adjust. (This of course assumes that individuals generally take potential health risks into account in determining their behavior in a way representative of the actual cost to them of their behavior, which may be incorrect). Alternatively, a costing system such as the Disability Adjusted Life Year (DALY) system **could allow decision makers to take measure of the aggregated health effects in a single number representative of total loss of health and life, which could then be weighed against potential increases in welfare and quality of life resulting from proposed transportation infrastructure changes.** Either of these methods could be used effectively to balance the positive and negative features of proposed growth leading to additional noise exposure provided that the above assumption of people realistically weighing the potential effects of individual exposure proves valid."

I also note that our (my wife and I) house appears to be in the ~73Db DNL.
The EPA reports, "An estimated 15 million American workers are exposed to an $L_{eq}(8)$ of 75 dB or above which may be hazardous to their hearing. Because of tie overlap between persons in occupational and non-occupational noise exposure situations, there is an estimated total of 20 to 25 million persons who may possibly incur hearing losses based on an L_{eq} (8) of 75 dB or above (7)".

I applaud the airport management and team for providing the latest NEM report. My hope is that the appropriate agencies (BTV airport, SB city, State of VT., with help from EPA, FAA, and health agencies, use the NEM report as a basis to **inform the public on potential health issues** related to the newly known Db DNL measurements, and for city and state government to **set policies that consider potential potential health impacts** effected by the noise levels in order to help **protect the health and welfare of the citizens living inside the effected NEM (65Db and higher)**.

I also hope that sound mitigation options and house purchase programs, and operational sound mitigation, (as well as potential health impacts tied to specific Db DNL levels) reviews can continue forward with fact based information - communicated to the public - towards a goal of informed discussion, debate, and decision making-(both individual and public policies).

As an example, It appears to me that options for sound mitigation though on the table as possibilities, do not have costs identified, cost burden agents, or (most importantly) projected effectiveness associated with each of them. Another example- though we now know the Db DNL for our location, we do not know the potential health impact if any of living in that Db DNL.)

I think the citizens of SB that live in the effected areas ID'd on the NEM have decisions to make, opportunities at hand (thanks to the potential airport / Faa grants), however to make the best decisions and policies, an informed public and policy makers- are required.

References:

http://web.mit.edu/aeroastro/partner/reports/proj19/proj19-healtheffectnoise.pdf

http://www.euro.who.int/__data/assets/pdf_file/0008/136466/e94888.pdf

https://www.faa.gov/about/office_org/headquarters_offices/apl/research/science_integrated_modeling/media/NoiseRoadmap_2011_FINAL.pdf

Look forward to your responses,
Regards,

Bernie Paquette

Web site: http://www.litterwithastorytotell.blogspot.com/
Images and commentary reflecting on Vermont values of Green, Clean, and Community.

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Adrianne Morris

From:	Bernard Paquette <bernie.paquette@yahoo.com>
Sent:	Friday, November 20, 2015 8:22 PM
To:	Nicolas Longo
Cc:	Gene Richards; Barbara Paquette
Subject:	BTV NEM Report: Comparing existing noise conditions to the effects of noise abatement
Categories:	BTV NEM 2015 Nov.

Hello Nicolas,

Page 24/25 of the NEM report Section 3.4 Noise/Land use compatibility guidelines states, "DNL estimates have two principal uses in a Part 150 study.: 1. Provide a basis for comparing existing noise conditions to the effects of noise abatement procedures and/or forecast changes in airport activity."

Has a study been completed, or will there be a study and if so when, to compare noise conditions to the effects of potential noise abatement procedures/installations (effects of each individual procedure/installation on their own as well as effects of combined procedures/installations)?

Please advise,
Thank You

Bernie Paquette

Web site: http://www.litterwithastorytotell.blogspot.com/
Images and commentary reflecting on Vermont values of Green, Clean, and Community.

73

Adrianne Morris

From: lindapatterson313@gmail.com
Sent: Thursday, December 10, 2015 7:31 AM
To: Burlington International Airport
Subject: Comments

This project has no validity nor justification if the previous recommendations and study results are incomplete. Secondly: we are ignoring the profoundly damaging impact on our quality of life and sense of security that sudden extreme loud noises have. These searing shocks to our systems interrupt concentration, attention, focus, rest, caring exchanges between people, joyful moments, times of worship and meditation, rest, study, conversation, music, education and, for so many, an overall sense of security. and so many other essential elements of Sent from my iPhone

74

Adrianne Morris

From:	lindapatterson313@gmail.com
Sent:	Thursday, December 10, 2015 7:40 AM
To:	Burlington International Airport
Subject:	Rest of email

(Sorry I pressed send too early). In our world of increasingly traumatic and sudden intrusions of gunshots and other more relentless noise pollution, we must make choices that support physical, mental, emotional, social and environmental health. The air and noise pollution created by these jets are not supportive of the essential elements of life. Thank you. Linda Patterson

Sent from my iPhone

75

Adrianne Morris

From: Nari E Penson <npenson1@myfairpoint.net>
Sent: Thursday, December 10, 2015 5:57 AM
To: Burlington International Airport
Subject: New

Hi ,
I live in Winooski . I understand that the NEM doesn't include everything that would really help you make good choices.
What about health studies and the projected noise from the F35s.
Why was the noise study agreed to between Burlington and south Burlington never released.
Airport noise impacts my living in Winooski. Why has no one really addressed what happens when the much louder F35s arrive and my house gets tagged as unfit for residency by the air forces own study???
You are not inspiring trust in me as a member of the public who would be negatively impacted !
Nari E. Penson

Sent from my iPhone

76

Adrianne Morris

From: V Pinga <vebpinga@gmail.com>
Sent: Thursday, December 10, 2015 10:39 PM
To: Burlington International Airport
Subject: NEM Comment

The airport should just present a straightforward contour line following the general patterns of 2006 and 2011 DNL Contours and the 2010 USAF FEIS Contour.

The 2015 and 2020 NEMs are the most convoluted and improbable DNL contour maps possible.

Consider the area near Ahavat Gerim Cemetery mentioned in Table 3, page 55. How is it possible that houses #5 and #9 Clover Street are outside the 65 dB DNL yet are physically closer to the airport than the cemetery? The "bulge" shown in that area in Figures 12 and 13 defy practical logic, however they may make sense in a mathematical model. These areas are as flat as the areas around Victory Drive and Suburban Square where the contour lines are smooth.

It seems the 2015 and 2020 NEMs are not based on ground-truth data.

Victor Pinga

77

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:00 PM
To: Burlington International Airport
Subject: NEM (comment #1)

I have no idea how loud the F-35 will be. I believe getting the following information will help with that a LOT: supplement the HMMH report and noise contour maps with a 2015 average busy day map using the merged noise data of the F-16 GE engine with 95% afterburner noise AND and average busy month map (same). Then make a 2020 projected map using Noisemap data of F-35 one each busy day and busy month with F-35 afterburner along with another set of 2020 Map projections WITHOUT afterburner. Doing this will give MUCH more accurate information on noise impact than anything weôve seen so far, and doing this is not unheard of. The use of these supplemental maps are often used in situations where the military is jointly using an airport.

This is a reasonable request. The F-35 is coming to a highly populated place. The DNL averaging doesnôt begin to cut it for individuals living within the dangerous noise contour, especially those whose health is already compromised (weak heart, tinnitus, etc.), and babies and young children who havenôt finished growing and whose ears are at great risk for serious damage.

Because of the serious health effects the F-35 can cause, The Harvard and Who Noise studies, along with other health studies of noise impact should be referenced and included in the HMMH.

Sincerely,
Ellen Powell
911 Dorset #31
S. Burlington

78

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:03 PM
To: Burlington International Airport
Subject: NEM (comment #2)

You need to conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite very significant changes in F16 use, including increase from 20% afterburner to 95% afterburner use. Why wasnqt that done already?

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

79

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:08 PM
To: Burlington International Airport
Subject: NEM (comment #3)

What we have seen thus far gives citizens no way to understand what the noise impact of the F-35 will be. There could easily more done to give us a better idea. One would be to conduct REAL TIME noise monitoring. The results should be included in the updated report. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels. Why havenɑt you done this already?

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

80

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:10 PM
To: Burlington International Airport
Subject: NEM (comment #3)

So far, citizens have no way to understand what the noise impact of the F-35 will be. There could easily more done to give us a better idea. One would be to just bring an F-35 to BIA and fly it around for a few days (with public notice you are doing this) using the afterburner and not using the afterburner. Why havenαt you done this already?

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

81

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:10 PM
To: Burlington International Airport
Subject: NEM (comment #4)

So far, citizens have no way to understand what the noise impact of the F-35 will be. There could easily more done to give us a better idea. One would be to just bring an F-35 to BIA and fly it around for a few days (with public notice you are doing this) using the afterburner and not using the afterburner. Why havenǿt you done this already?

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

82

Adrianne Morris

From:	Ellen Powell <ellenpowell911@comcast.net>
Sent:	Thursday, December 10, 2015 1:22 PM
To:	Burlington International Airport
Subject:	NEM (comment #6)

I use the S. Burlington Dog Park regularly. The commercial air traffic is completely in the realm of reasonableness in terms of how loud they are on take-off. I have tinnitus and my ears can take that volume easily. Although I try to avoid the times of day that I GUESS the F-16s will be taking off, I have missed a few times. The sound of the F-16 is in a COMPLETELY DIFFERENT LEAGUE compared to the sound of the commercial aircraft flying in and out of there. The pressure in my ears is HORRIBLE, and the sound feels like knives staying into them. The pressure on my chest is also horrible, and at the age of 65 I wonder if itôs going to give me a heart attack. My dog completely freaks out when the F-16s take off- runs around frantically while itôs happening and afterwards trembles in utter terror. For ANYPNE to equate the volume of the F-16s and commercial jets is UTTER HOGWASH.

Separate the military aircraft modeling from commercial aircraft modeling.* PLEASE.

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

P.S. One Sunday I went to the S. Burlington dog park thinking I was safe from the sound of the F-156. Four of them took off while I was there. I called the number given to register a complaint. No one ever responded to me- and Iôd asked for someone to please cal me back.

83

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:24 PM
To: Burlington International Airport
Subject: NEM (comment #7)

I still don't have any idea how loud the F-35 will be. This is a NO-brainer: ***Include the projected increased noise exposure from the F-35 in this NEM update.***

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

84

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:28 PM
To: Burlington International Airport
Subject: NEM (comment #7)

You need to include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others. BIG TIME. You need to show that you are concerned about the health of people living within the dangerous noise contour of the F-35.

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

85

Adrianne Morris

From:	Ellen Powell <ellenpowell911@comcast.net>
Sent:	Thursday, December 10, 2015 1:28 PM
To:	Burlington International Airport
Subject:	NEM (comment #8)

You need to include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others. BIG TIME. You need to show that you are concerned about the health of people living within the dangerous noise contour of the F-35.

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

86

Adrianne Morris

From:	Ellen Powell <ellenpowell911@comcast.net>
Sent:	Thursday, December 10, 2015 1:31 PM
To:	Burlington International Airport
Subject:	NEM (comment #9)

I suffer from tinnitus. I use the S. Burlington dog park regularly. I need to be able to not be there when the F-16s are taking off and landing. I would like a schedule of that posted so I can know when it is safe for me to bring my dog there. OR a number to call where someone could tell me what times that particular day the F-16s will be taking off and landing.

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

87

Adrianne Morris

From:	Ellen Powell <ellenpowell911@comcast.net>
Sent:	Thursday, December 10, 2015 1:34 PM
To:	Burlington International Airport
Subject:	NEM (comment #10)

So much more could be done for the citizens who will be impacted by the F-35 when it comes to town. One thing would be this: release analysis of 2010 noise monitoring data study NOW. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public. Why wasnȇt that done already??

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

88

Adrianne Morris

From:	Ellen Powell <ellenpowell911@comcast.net>
Sent:	Thursday, December 10, 2015 1:37 PM
To:	Burlington International Airport
Subject:	NEM (comment #11)

A lot could be done in the communication department. I suggest follow-up public workshops: schedule follow-up public workshops prior to the completion and approval of noise exposure maps. Citizens need to be included!

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

89

Adrianne Morris

From: Ellen Powell <ellenpowell911@comcast.net>
Sent: Thursday, December 10, 2015 1:40 PM
To: Burlington International Airport
Subject: NEM (comment #12)

Why were the FAA recommendations referenced in the 2008 Part 150 Agreement not implemented or only partially implemented? This needs to happen!

Sincerely,
Ellen Powell
911 Dorset St. #31
S. Burlington VT 05403

90

Adrianne Morris

From: Candace Pratt <prattcandace@gmail.com>
Sent: Thursday, December 10, 2015 7:49 AM
To: Burlington International Airport
Subject: NEM

To BIA Noise Exposure Map committee,

I write you because of my grave concern that the Noise Exposure Map, for the BIA does not tell the entire story.

My long term home is in Williston, Vermont, and I regularly have to stop conversations both inside and outside my home when the F 16s fly over. I can only imagine what the noise exposure will be with the F 35s which are expected to arrive at BIA in 2020. Since 2020, will be here in less than five years, and the NEM is intended as a planning tool for future land use projected 5 years in the future, I feel it is imperative that the noise of the F 35 and any additional noises associated with it, be included in developing noise maps for BIA. This is the only way that transparency, accountability and credibility are ensured.

While computer modeling is a tool, it is by no means a replacement for ground-level data. Real time noise monitoring, using a noise scoping study which is based on current, real time, geo-referenced, measured airport noise levels should be employed.

I am also dismayed to learn that no Environmental Impact Statement, EIS, was done for the F16 when it increased its afterburner use from 20% to 95%.

It has also been brought to my attention that only a part of the FAA recommended actions referenced in the 2008 Part 150 Agreement were implemented, and I wonder why. I request that they be fully implemented.

As a nurse, I strongly support the inclusion of the World Health Organizations studies, regarding the impact on children, that noise has.

And finally, I would stress that if the BIA is not transparent, accountable, honest and inclusive with the public, then they will not be credible. Thus follow-up public workshops prior to completion and approval of the noise exposure maps is a must.

Thank you for addressing these issues. I look forward to future gatherings on the topic of NEM.

Sincerely, Candace Pratt, RN

91

Adrianne Morris

From: Mary Provencher <mmprov@me.com>
Sent: Thursday, December 10, 2015 2:47 PM
To: Burlington International Airport
Subject: NEM Stop the F-35

Hello BTV, Not in Vermont ! Military fighter jets do not belong on top residential communities! Re-open Plattsburgh airbase ! Or move to a less populated state that wants them !

You are single handedly destroying our most livable of cities ! I have paid a large amount of taxes my whole life. Now I fear I have to protect myself from the very military I have supported my whole life. This is the worst idea ever , Our tourism generates 3.7 billion a year from neighboring states. They come here to vacation because it a rural quiet experience of romantic tranquil beauty . In this great vast country of ours find a unpopulated place to kick this "failure of a fighter jet " to the curb. NOT IN VERMONT. I will start a group to boycott the Burlington International Airport .

profanity , profanity,

profanity, profanity, profanity,,,,,,,,,,,,

!

BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Sheila Quenneville **Phone:** (802) 777-7758

Address: 364 White St. South Burlington, VT 05403 **Date:** 12/4/15

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

I'd like to inform BTV that my home and home child-care and preschool are impacted by the noise generated at the airport. Previous to the houses being torn down, it was only the F-16s which were very loud and causing vibrations to our home. Now, the noise from idling commercial jets is heard frequently. Some days, I hear little; and on other days, I hear them all day long. I find the whining very annoying and can hear it inside my home. I am outside much of the day with the children; and in the late afternoon, we hear the planes most often. I once heard them late on a Friday night - Oct. 23 - when I told Gene Richards, he did give me his cell phone number. I have yet to call because usually they don't

BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

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Name: Sheila Quenneville **Phone:** (802) 777-7758

Address: **Date:** 12/4/15

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

page 2.

idle longer than 5 to 6 minutes. (Just as I start to think of complaining, they fly off.) When I hear that noise, normally, there are several planes queued up (I am assuming) so the noise continues.

My largest concern is my childcare program and preschool. I am contracted through Act 166 with several school districts to provide preschool ten hours a week. I am worried the noise could negatively affect these children and the younger ones in my program - especially when we are outside. I have operated my program for almost 31 years, and the noise was never this troublesome. I was always one of the neighbors complaining about the F-16s as the commercial planes never bothered us. Now, the noise comes straight down White St.
I [illegible] for noise mitigation for my home and sound buffering

93

Nicolas Longo

From: kristen rajewski <kristen.rajewski@gmail.com>
Sent: Monday, November 09, 2015 9:35 PM
To: Burlington International Airport
Subject: Meeting tonight

Categories: BTV NEM 2015 Nov.

Hello,

My husband told me to e-mail to get "on the list" for the sound home improvement grant. We're interested in anything offered.

Also, I'm confused that the decision not to take down/buy more houses "is what the community wants." Given I have a 1 year old and a 3 year old and the consultant claimed it was unhealthy to live here according to studies, I would entertain the option of the airport purchasing my home. I just don't remember ever being asked as a community if we want more houses taken down or not??

Thanks,

Kristen

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Jeff Ramsey **Phone:** 802-999-8831

Address: 62 Logwood St. **Date:** 12/07/15

So. Burlington VT 05403

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

Please see attached.

1. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use.

2. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

3. Separate the military aircraft modeling from commercial aircraft modeling.

4. Include the projected increased noise exposure from the F-35 in this NEM update.

5. Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

6. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public

7. Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

8. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

95

Adrianne Morris

From: Joseph Randazzo <wordsmiths_communications@msn.com>
Sent: Thursday, December 10, 2015 2:57 PM
To: gonda05403@yahoo.com; Burlington International Airport; Gene Richards
Subject: RE: 2015 NEM comments

Greetings Ray Gonda,

Excellent study.
However, asking the Air Force to police itself is like asking a Ford salesman what he thinks of Chevrolets. We will never get any satisfaction waiting for them to do the right thing.

We need litigation, not the threat of lawsuits, but actual lawsuits. Shumlin, Sanders, Welch, and especially Leahy are all complicit. They should also be held accountable. Bernie is running for president. He should be tagged with the line "friendly to the military/industrial/government complex at the expense of the people." Since the South Burlington City Council changed hands, they are mostly all complicit as well.

Where are Bernie's so-called liberal ideas and ideals when the reality of horrific noise abuse presents itself? As far as I'm concerned our congressional delegation and our governor sold us out.

Not only are the F16s a major problem. So are the huge C130 transports and tanker aircraft that practice touch and gos at our airport. It's madness to have these military planes flying over civilian areas. I'm all for a strong defense, but a military base should be isolated. It shouldn't be located in the most densely populated part of our state.

The F35 will be a new and untested aircraft. Accidents are at their highest when pilots are learning how to fly, especially those craft piloted by reserve pilots.

Lawsuits, that's the only thing that's left.

Date: Thu, 10 Dec 2015 19:38:04 +0000
From: gonda05403@yahoo.com
To: btv@btv.aero; grichards@btv.aero
Subject: 2015 NEM comments

2015 NEM comments

From:
Ray Gonda 31 Berkley Street., South Burlington, VT 05403 264-4886

Thank you for the opportunity to list my concerns over the new NEM study.

The part 150 "agreement" between the BIA and the Federal Aviation Authority (FAA) contained 15 recommendations the BIA made to the FAA regarding actions to be taken upon receiving the grant for house buyouts. Examples are noise monitoring and development of real estate, noise-*disclosure forms.* However, long after receiving the grant, the status of recommendations are "not yet implemented", "not fully implemented", or simply "not implemented". Is there no accountability? . The completion of these recommendations should be fully implemented beginning now.
The reason for the current Noise Exposure Map (NEM) study is to apply for funding from the FAA for mitigation purposes, for sound-proofing of windows and doors of houses lying within the 65 dB DNL noise contours. It has come to light since that meeting FAA funds would apply only to houses built before October 1, 1998 and which also meet other FAA requirements. Why was the public not informed about this latter point?
When the older block 25 F-16s were replaced by newer Block 30 ones from Montana, they were supposed to be quieter than the old ones. This was not true. When switching to the newer F-16s with higher thrust engines, larger air intakes and additional fuel tanks necessitating increased afterburner use going from 20% to 95%, the increased noise levels should have triggered an environmental impact study - a legal requirement - which was never done. Why not? Whose responsibility was it to initiate the EIS? The VTANG top leadership has recently stated that these things happened piecemeal each of which would not trigger and EIS. Yet the noisier planes came intact, not piecemeal. We need definitive documentary proof of the veracity of the VTANG assertions.
NEM measurements data were taken Nov 2010 but not made publicly available until April 2012 ï a 17 mo. delay during which time important decisions were made by our city without the benefit of that data. Why was that data not used for a NEM study at the time the data were taken? Why the delay in releasing the data? I believe this may have amounted to criminal fraud given that subsequent decisions were made by the South Burlington City Council without the benefit of that data which may have been material to those decisions and which may have caused harm to residents. The measure noise levels from that data when compared to earlier NEM data should have triggered the EIS process.
The real future threat to our communities will be from the F-35 bed-down here in 2020 which will greatly increase airport noise and impact many more residential and commercial units ï particularly in Winooksi and Williston. Then the 65 dBA DNL contour line will enclose about 2/3 of Winooski and a significant part of Williston (an enclosed area which will become "not suitable for residential use"). Yet the F-35 noise footprint was not included in this study even though the Air Force has generated its own NEM of the future F-35 impact. This is important because in addition to the noise annoyance and health impacts issues, property values decrease about 0.7% dBA DNL for each decibel louder that noise (as when moving toward the airport or getting louder planes) increases.
In any NEM study the impact of low military jet overflights needs to be taken into account since that is the major source of military noise on my street, much more than

from the takeoff and landings. Also the ambient noise levels from road traffic and all other sources are a legitimate part of any NEM part 150 study. For this reason, actual noise measurements for a modeling of noise contours needs to incorporate all of these factors.

The latest research on health impacts of noise to humans should be included in this study since that is a major reason for such studies to begin with ï its impacts on humans in the vicinity of the airport. This should include research done in the past decade as well as earlier research. I would be happy to supply you with referenced at your request.

To sum it up you should be concerned with the impacts of airport noise on the areaôs residents rather than trying to meet the absolute minimum of requirements for such a study. It is likely that residents of the area will not roll over so easily if their concerns are not met and addressed.

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BURLINGTON
INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Becky Rochford **Phone:** 233-1058

Address: 47 Maryland St South Burlington **Date:** 12/6/15

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

The noise level is much higher without the buffer of the demolished homes. We hear and see the traffic now. The lights from the airport are now visible to us. The most annoying noise would be when the Airplane engines run for hours. I heard something mentioned about funding to replace our windows with sound proof ones. That would be an improvement for sure.

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BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Chris Rochford **Phone:** 338-2721

Address: 47 Maryland ST. **Date:** 12/6/15

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

Took Down houses mAkes the noise level much higheR. Jets Rattle the windows, I was told we could get Windows, Insulat and Central AiR.

98

Adrianne Morris

From:	Cynthia Roriosn <cyn.rorison@gmail.com>
Sent:	Thursday, December 10, 2015 2:51 PM
To:	Burlington International Airport
Subject:	NEM

The NEM is intended as a planning tool for future land use and must project 5 years into the future.
The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

Thank you,
Cynthia Rorison
14 Cedar Street
Winooski, Vt. 045405

cynrorison@gmail.com

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Adrianne Morris

From: Rabbi Jan Salzman <rabbijan@ohavizedek.org>
Sent: Thursday, December 03, 2015 10:00 AM
To: Burlington International Airport
Subject: noise!

Categories: BTV NEM 2015 Nov.

already too much noise with the F16's...

NO TO THE F 35's!!!!!

Rabbi Jan
Blessings abound

100

Adrianne Morris

From: Rabbi Jan Salzman <rabbijan@ohavizedek.org>
Sent: Friday, December 04, 2015 10:22 AM
To: Burlington International Airport
Subject: noise!

Categories: BTV NEM 2015 Nov.

already too much noise with the F16's...

NO TO THE F 35's!!!!!

Rabbi Jan
Blessings abound

101

Adrianne Morris

From:	jeanblu@aol.com
Sent:	Thursday, December 10, 2015 7:17 AM
To:	Burlington International Airport
Subject:	NEM's

The F35 is the aircraft operating in BTV in 2020 and Noise contours from the AF NOISEMAP should be used to project the "real' projected Noise contours for 2020, NOT F16 noise projections. Since weight well documented potential problem with the F35 and F35 use is mission driven; supplemental maps one with afterburner used and one map without afterburner used must be included. The Air Force Data for the EIS and FEIS was accurate enough for the AF to make a basing decision, it is "accurate" enough for Noise compatibility planning. If not, the Air Force must do ANOTHER EIS for the basing. Home buyers NEED a projection with the correct aircraft.The noise exposure maps have already been outdated since 2008 when an EIS and new noise maps should have been done because the Air Guard got different Mission (flights to Middle East) Montana planes with larger big mouth inlet engines flown in, a change in operations -adding external fuel tanks plus 95%afterburner use not 20%. There is no confidence that the Airport will update the maps in 2020, if erroneous projected NOISE MAPS of 2011 were allowed to be used knowingly by AF, airport and FAA for a 2008 $40 million grant (were the right houses even bought?)
In a February 7, 2013 email Mr Doucette of the FAA responded to my complaint that the 2006/2011 maps were incorrect for 2008 grant. His answer was that they knew they were incorrect, and would be updated BUT held up because there was a delay in the F35 basing decision and the FAA wanted to be "accurate".
The Decision has been made, F35 noise data must be used for 2020 projected map. If there is a change in operations after they arrive (quieter or louder) they can update the maps.
Jean Saysani
Winooski Vermont

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Adrianne Morris

From: jeanblu@aol.com
Sent: Thursday, December 10, 2015 7:49 AM
To: Burlington International Airport
Subject: NEM Comment #2
Attachments: NoiseBasicsandEffects.pdf

HMMH needs to supplement it's report and noise contour maps with an 2015 AVERAGE BUSY DAY map using merged noise map data of F16 GE engine with 95% afterburner and an average BUSY MONTH map. (same) Then a 2020 projected map using NOISEMAP data of F35 one each busy day and busy month with F35 afterburner and another set of 2020 map projections without afterburnir. These supplemental maps often used in unique military joint use airports. This methodology more accurately depicts noise impact and not some watered down DNL version alone. This is extremely necessary for homebuyers with young children/small ear canals or others whose health issues can be impacted by single noise events. The DNL averaging is not at all adequate or accurate for individuals with cardiovascular disease etc The Harvard Study and Who Noise study and other current health studies of impact of noise upon health should be referenced and included in HMMH's report

Jean Saysani
Winooski VT

(from link below)

"The inclusion of daytime and nighttime periods in the computation of the DNL and CNEL reflects their basic 24-hour definition. It can, however, be applied over periods of multiple days. For application to civil airports, where operations are consistent from day to day, DNL and CNEL are usually applied as an annual average. **For some military airbases, where operations are not necessarily consistent from day to day, a common practice is to compute a 24-hour DNL or CNEL based on an average busy day, so that the calculated noise is not diluted by periods of low activity.**

Although DNL and CNEL provide a single measure of overall noise impact, they do not provide specific information on the number of noise events or the individual sound levels that occur during the 24-hour day. For example, a daily average sound level of 65 dB could result from a very few noisy events or a large number of quieter events. "

http://198.1.119.239/~flyrduco/rduaircraftnoise/noiseinfo/downloads/NoiseBasicsandEffects.pdf

103

Adrianne Morris

From:	jeanblu@aol.com
Sent:	Thursday, December 10, 2015 3:58 PM
To:	Burlington International Airport
Subject:	NEM
Attachments:	Noise_test_key_and_map_clean.pdf; ATT00001.htm

Monitoring data from 2010, website is below. Were noise monitors set up only that one time? No report was ever done. Why no monitors in Winooski? The modeling data cannot be trusted. There has been no accountability and what has been reported always fuzzy and unclear. We all know in reality there has been undocumented change in noise with newer block 30 F16 engines and 95% afterburner, and there ***will*** be change in 2020 when F35 arrives. We need 2020 noise contour map projections of the F35 not the F16

Noise monitors need to be installed and georeferenced, with data compiled in a report. That report should include RECENT health studies like Harvard Study and WHO Burden of health study among many others not included. DNL averaged noise is NOT the only or pertinent noise mapping, when ghere are health issues tinnitus, cardio vascular, small children and ear canals. SEL and CNEL are crucial if the public is to be able to detetmine how their health can be impacted. Supplements need to be done to mapping including CNEL and SEL.
Jean Saysani
Winooski Vt

http://www.sburl.com/vertical/sites/%7BD1A8A14E-F9A2-40BE-A701-417111F9426B%7D/uploads/Noise_test_key_and_map_clean.pdf

104

Adrianne Morris

From:	Janice Schwartz <janicebeth5@gmail.com>
Sent:	Thursday, December 03, 2015 8:19 PM
To:	Burlington International Airport
Subject:	NEM
Categories:	BTV NEM 2015 Nov.

I would like to add my comments and register my utter dismay at the BTV's refusal to look at the impact that the Air Forces Military Jets have on the community. I live by the airport and have never had a noise problem with the commercial jets but do with the F 16"s If you are going to conduct a noise impact study on the community please include the following:

Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use.

Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

Separate the military aircraft modeling from commercial aircraft modeling.

Include the projected increased noise exposure from the F-35 in this NEM update.

Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

For the Airport's findings to have credibility I believe these factors can not be ignored. Thank you.

Janice Schwartz
Suburban Square
South Burlington Vt

105

BURLINGTON INTERNATIONAL AIRPORT

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Horace B Shaw III **Phone:** 802-863-3987

Address: 119 Hood St **Date:** 12/10/2015

Winooski VT 05404

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

See attached.

To: Federal Aviation Agency, Burlington International Airport, and City of Burlington

From: Horace B. Shaw III
119 Hood St.
Winooski, Vermont 05404

RE: BTV Noise Exposure Map Comments

Forecast Conditions Are Not Based on Reasonable Planning Assumptions

The FAA's noise map checklist asks: "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?" (NEM Report, page 7)

The underlying assumptions clearly are not reasonable.

The Air Force Record of Decision (ROD) states: "...the Air Force has decided to base eighteen (18) F-35A aircraft with associated construction at Burlington AGS in Vermont to accommodate aircraft anticipated to start arriving in 2020. ...The 18 F-16 PAA fighter aircraft currently assigned to Burlington AGS are scheduled to retire as F-35As are brought into the Air Force inventory." (ROD, page 1) No uncertainty there.

Vermont Air National Guard's (VTANG) required mitigation plan, issued April 18, 2014, states "The Air Force will beddown one PAA squadron of 18 F-35As under the 2 December 2013 ROD at Burlington AGS." (F-35A Operational Basing Environmental Impact Statement Mitigation And Management Plan [EIS MMP], page 2.) Again, no uncertainty as to which fighter jets the Vermont Air National Guard will be flying.

Both the Air Force and VTANG describe the beddown of the F-35As at BTV as a certainty.

In addition we know that the basing decision was based in large part on political influence. Vermont's United States Senators, its United States congressman, the governor, the mayor of Burlington, and the city council of South Burlington all strongly support the beddown at BTV. These political influences will not disappear.

Thus, the only ***reasonable*** planning assumption for forecast conditions would absolutely include modeling the substantial increase in noise impacts due to Air Guard flights by the coming F-35A fighters.

Further, as the Air Force EIS forecast a massive increase in the size of the 65dB and higher DNL noise contours, the only reasonable planning assumption would be to base the noise modeling on the full complement of 18 F-35s. Any delay in basing the F-35s at BTV does not preclude modeling the noise impacts based on the full number of F-35 because the FAA guidelines explicitly indicate the forecast map be based on conditions ***at least five years*** after the current conditions map.

Incidentally, the Air Force Record of Decision also indicates that "An understanding of various aspects that are part of a complex interrelated F-35A operation environment may not be achieved without a more long-term process built around a continuous cycle of experimentation, evaluation, learning, and improvement over time." (ROD, page 4) Thus the noise impacts at the time all 18 F-35As are in operation here will likely reflect the noise impacts forecast in the Air Force's EIS. Any increases or decreases in noise impacts will not become apparent until some significant time later. So changes due to noise mitigation strategies could call for a revised noise map when they are confirmed (Note: The noise modelers were apparently satisfied with the Air Force's noise modeling, indicated in the NEM Report: "NOISEMAP modeling inputs, documented in the following sections, were generally based on the inputs used in the United States Air Force F-35A Operational Basing Final Environmental Impact Statement (USAF EIS). (NEM Report, page 60) There shouldn't be any reluctance to use Air Force noise values for the F-35A.)

Use of Unreasonable Calculation of the Average DNL Noise Contours

Using 365 days as the denominator to determine the average DNL noise contours unrealistically dilutes and minimizes the extent and impact of noise exposure due overwhelmingly to Vermont Air National Guard F-16 flights and, in 2020, to F-35 flights. The U.S. Air Force Environmental Impact Statement acknowledged that the noise of the F-16 fighter jets contributes by far the vast majority of noise impacts around BTV. The use of the same denominator as used in the Air Force's Environmental Impacts Statements, 229 days, would significantly increase the area, the number of housing units, and the population exposed to incompatible noise exposure.

Other airports have apparently submitted DNL contours for their busiest days. These days at BTV are most likely the more than 6 out of every 10 days when the Air Guard is flying its jets.

Using the Air Force denominator reflects common sense and reasonable assessment of noise impacts. Exposure to F-16, and future F-35 noise impacts is a regular, recurring danger to cardiovascular health and childrens' learning, not too mention economic impacts due to reduced property values and compensating increases in property taxes. At a minimum, an additional map showing the noise contours of these busy days of military flights should be submitted to demonstrate the thousands of additional housing units and people who will be impacted by F35A flights. These flights will impact not only the immediate vicinity of the airport in South Burlington, but also about two-thirds of the City of Winooski and parts of Williston and the City of Burlington.

In conclusion, the noise exposure modeling and maps included in this NEM Report should be redone to reflect the noise exposures that can now be reasonably forecast. They should be based on the beddown of the full complement of 18 F-35As.

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Barbara Pickard Sirvis, Ed.D.
24 Arbor Road
South Burlington, VT 05403

December 9, 2015

To whom it may concern:

When I retired as a college president, I specifically chose South Burlington because of its sense of community and the convenience of the airport for travel to my aging mother (now 92!). Burlington International Airport (BIA) is an important regional resource and could be an important part of the community. However, there appears to be a conflict between the perception and the reality of BIA's professed desire for communication and transparency. Perception and reality are different for the Airport Administration and the South Burlington community, especially those residents who are neighbors of the Airport. The November meeting about the NEM is a good example. Many members of the community continue to express frustration about poor communication and evidence of the lack of dialogue among all interested parties, i.e., BIA personnel, neighborhood residents, and VTANG. A recent meeting with the South Burlington City Council reinforces the perception of BIA's lack of engagement because BIA personnel did not appear when VTANG sent five representatives, all of whom appeared willing to engage in dialogue. BIA personnel indicated "late notice" when, in fact, they had several weeks' notice.

I want BIA to be a successful community partner. The Noise Exposure Map response process can open dialogue, so I write today with several areas of concern.

Environmental Impact Statement. There are different interpretations of whether or not a new EIS was required when VTANG changed to the newer F-16s with 95% afterburner usage. It is also not clear which agency should have responsibility for a new EIS—BIA, VTANG, or the Air Force. Regardless, the planes are noisier, and the impact is reaching a point where conversations have to stop in area homes when F-16s use afterburners. ***The appropriate body to complete a new EIS should be identified, responsibility assigned, and the EIS completed in a timely fashion.***

"Real-time" noise modeling. There is a general lack of trust toward BIA in the community. "Computer models" used by the consultants were not convincing that the data could accurately represent actual noise. Ground-level data obtained through real-time monitoring that includes both aircraft and vehicle traffic noise measures would either confirm the report or affirm the real-life experiences of neighborhood residents. ***Real-time noise modeling including vehicular traffic should be completed to confirm or negate the computer-modeled data presented.***

Commercial and military aircraft data. These two types of aircraft are different and create different types of noise. Mixing the two data sets is like mixing the proverbial apples and oranges and "dilutes" the noise impact, especially of the F-16s with increased afterburner usage. ***The data for commercial and military aircraft should be separated and examined for their respective noise exposure effects.***

Projected F-35. Some of the dialogue also revolves around the anticipated arrival of the F-35 in approximately 2020. The current noise challenges will be exacerbated by the noisier planes. This is NOT about some kind of anti-military response; there is general support for and appreciation of the efforts of VTANG. It is clearly about the quality of life for those households in the affected area. BIA personnel continue to be unwilling to project or discuss this impact within the NEM. ***F-35 impact projections should be required in the proposed NEM.***

In addition, if BIA and VTANG truly want to be good neighbors, they should demonstrate considerably more transparency. ***A joint committee should be appointed with representatives from BIA, VTANG, and neighborhood representatives from both South Burlington and Winooski who are able to engage in open dialogue if this issue is ever to be resolved.***

Health concerns. This area is of considerable concern based on my personal experience. My family moved to Los Angeles in 1952—far ahead of the expansion of LAX. However, as that airport expanded, the noise also increased until ultimately the community in which I grew up was decimated with all of the houses eventually removed. More importantly, my mother experienced early-onset hearing loss as a result of the airplane noise. There are numerous studies that demonstrate the effect of airplane noise on health. In the case of BIA noise exposure, it is not only the effect on residents in their homes, but it is also the effect on the children enrolled in Chamberlin School. ***Research reports should be reviewed and considered in the NEM process.***

Previous reports. Significant turnover in BIA Administration may have affected the timeline for implementation of some actions the FAA recommended after the 2008 study. Regardless of whether or not FAA recommended actions were made during the current administration or under a previous one, there should be attention to the previous report. ***The 2008 FAA recommendations should be reviewed and those not yet accomplished implemented immediately.***

It is also my understanding that there was a noise-monitoring data study completed in 2010 that was the basis of an agreement between the City of Burlington and the City of South Burlington. ***The final analysis of this report should be completed for planning purposes and the report released for public information.***

Follow-up. Hopefully, the NEM will be updated prior to submission. ***At such time as a new draft is completed, additional community forums should be held and public input solicited prior to approval of the final 2015 NEM.***

BIA and the FAA have an opportunity to give these comments—and those of all who respond to the Draft Noise Exposure Map—every due consideration. I hope they will do so with a genuine commitment to transparency and communication.

Sincerely,

Barbara P. Sirvis

Barbara P. Sirvis, Ed.D.

107

Adrianne Morris

From:	Glenn Sousa <druid199m@gmail.com>
Sent:	Thursday, December 10, 2015 8:18 AM
To:	Burlington International Airport
Subject:	NEM

1.
Include the projected increased noise exposure from the F-35 in this NEM update.
The NEM is intended as a planning tool for future land use and must project 5 years into the future.
The F-35, expected to arrive in Burlington in 2020, therefore MUST be included in the update.

2. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use

3. **Include latest health studies**, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

4. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public.

5. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

6. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented.

7.
Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

108

Adrianne Morris

From:	mtier62513 <mtier62513@aol.com>
Sent:	Friday, December 04, 2015 3:43 AM
To:	Burlington International Airport
Subject:	Noise studies
Categories:	BTV NEM 2015 Nov.

To Whom it may Concern:

I am a citizen of Burlington concerned that the Environmental Impact Statement for the F16 change in use was never implemented when the change was made from using 20% afterburner to 95% afterburner occurred. The noise monitoring should be done in REAL time, not according to computer generated models. It is real people who are listening to the noise.

And, very importantly, the projected increase of noise exposure from the F-35 should be included in the NEM update, including latest health studies (especially by the World Health Organization) regarding exposure of noise on children and residents.

I also request that you please release the analysis of the 2010 noise monitoring study, how can there be transparency if the facts are not revealed?

Please have follow up Public Workshops and hearings, voices need to be heard.

And, finally, please fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not fully implemented (or not implemented at all).

thank you for your consideration,

Linda Tierney
Burlington, Vermont

109

Adrianne Morris

From:	Martin Tierney <martin.tierney77@gmail.com>
Sent:	Friday, December 04, 2015 4:22 AM
To:	Burlington International Airport
Subject:	NEM
Categories:	BTV NEM 2015 Nov.

In regard to the NEM update to determine existing and future noise conditions for the areas surrounding the BIA, I think the following matters should be considered and/or explained.
How and why was the decision to change 20% afterburner to 90%? What external conditions changed to require the increased afterburner usage?
How do the sound proofing programs for which the BIA might apply work? What methods might be applied?
It is of major importance to have real time collection of data rather than to rely on computer models alone. If these real collections are performed their collection should be monitored by interested parties and agencies.
Winooski and Wiliston must be included in 65 dB noise impact maps. These are real communities composed of real people who will hear the noise. How is it that the existing noise impact maps do not reconcile with the USAF Environmental Impact? Studies will not be valid until these discrepancies are cleared up.
What is the economic impact on the real estate by new F-35 noise contours and why has this not been been shared? Why has there been non-compliance by the Airport to past FAA recommendations and what are the results of this non-compliance?
I am not an expert in noise abatement with planes, and have included a few concerns that I could think of, I am, however, an expert of the level of noise and its human perception in the affected areas because I have been a property owner there for thirty years.
Thank you for your consideration,
Martin Tierney

110

Adrianne Morris

From: Maida Townsend <mftownsend@comcast.net>
Sent: Thursday, December 10, 2015 1:20 PM
To: Burlington International Airport
Subject: NEM comments/in-put

Greetings.

It is my understanding that the Burlington International Airport (BIA) is updating its FAA Part 150 Noise Exposure Map (NEM) to determine noise exposure related to the current airport operating conditions, and projected future conditions. It is further my understanding that BIA is seeking citizen input in this regard.

I offer the following three areas of suggestion:

1) "Real time" noise monitoring should be conducted and included in the update. Ground-level data should be measured through "real life" noise monitoring rather than "computer modeling." A noise "scoping study" should be conducted that is based on current, "real-time," geo- referenced, measured BIA noise levels.

2) The update should Include the latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

3) Once analysis of the information from noise monitoring and the health impact studies is completed, it should be released to affected municipalities (e.g., South Burlington, Winooski, Williston, Burlington) as well as to the general public. Transparency and accountability are necessary for trust, and for enhancing any conversation/planning regarding noise mitigation.

Please confirm receipt of these comments. Thank you.

Maida F. Townsend
232 Patchen Road
South Burlington, Vermont 05403
802-862-7404

111

Adrianne Morris

From:	Paul Ugalde <ugalde.paul@gmail.com>
Sent:	Thursday, December 10, 2015 10:51 AM
To:	Burlington International Airport
Subject:	NEM comment from SB resident

Dear BTV,

I have concerns for a couple of issues related to military airport noise.

With the new NEM in the works, you must include the impact of the F-35, expected to be part of our noise environment by 2020. You can't ignore the elephant that is on its way into the room. Please include it.

Also, the revised EIS for the increased use of F-16 afterburners on takeoff must be conducted. I see the latest 65dB contour line now touching the top of my street (Victoria Drive) and I fear further encroachment.

Thank you for your attention.

Paul Ugalde

112

Adrianne Morris

From: gwaite@myfairpoint.net
Sent: Thursday, December 03, 2015 12:30 AM
To: Burlington International Airport
Subject: re. 'NEM'

Categories: BTV NEM 2015 Nov.

To Whom: To ensure transparency, accountability, and creditbility: 1. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use. 2. Real time noise monitoring should be conducted and included in the update. Measure ground-level data through real life noise monitoring instead of computer modeling. Conduct a noise scoping study that is based on current, real-time, geo-referenced, measured Airport noise levels.

3. Separate the military aircraft modeling from commercial aircraft modeling.

4. Include the projected increased noise exposure from the F-35 in this NEM update.

5. Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

6. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public

7. Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

8. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented. GCWiatt, Winooski

113

Adrianne Morris

From: gwaite@myfairpoint.net
Sent: Saturday, December 05, 2015 9:37 AM
To: Burlington International Airport
Subject: Fwd: re. 'NEM'

Categories: BTV NEM 2015 Nov.

----- Forwarded message from gwaite@myfairpoint.net -----

Date: Thu, 03 Dec 2015 05:29:52 +0000
From: gwaite@myfairpoint.net
Reply-To: gwaite@myfairpoint.net
Subject: re. 'NEM'
To: btv@btv.aero

To Whom: To ensure transparency, accountability, and creditbility:

1. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use.
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3. Separate the military aircraft modeling from commercial aircraft modeling.

4. Include the projected increased noise exposure from the F-35 in this NEM update.

5. Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

6. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public

7. Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

8. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented. GCWiatt, Winooski

----- End forwarded message -----

114

Adrianne Morris

From: gwaite@myfairpoint.net
Sent: Wednesday, December 09, 2015 7:41 AM
To: Burlington International Airport
Subject: Fwd: re. 'NEM'

Categories: BTV NEM 2015 Nov.

----- Forwarded message from gwaite@myfairpoint.net -----

Date: Sat, 05 Dec 2015 14:37:06 +0000
From: gwaite@myfairpoint.net
Reply-To: gwaite@myfairpoint.net
Subject: Fwd: re. 'NEM'
To: btv@btv.aero

----- Forwarded message from gwaite@myfairpoint.net -----

Date: Thu, 03 Dec 2015 05:29:52 +0000
From: gwaite@myfairpoint.net
Reply-To: gwaite@myfairpoint.net
Subject: re. 'NEM'
To: btv@btv.aero

To Whom: To ensure transparency, accountability, and creditbility:

1. Conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008. No federally mandated EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use.
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3. Separate the military aircraft modeling from commercial aircraft modeling.

4. Include the projected increased noise exposure from the F-35 in this NEM update.

5. Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

6. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public

7. Follow-up Public Workshops: Schedule follow-up public workshops prior to the completion and approval of noise exposure maps.

1

8. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented. GCWiatt, Winooski

----- End forwarded message -----

----- End forwarded message -----

2

115

Adrianne Morris

From: gwaite@myfairpoint.net
Sent: Wednesday, December 09, 2015 6:54 PM
To: Burlington International Airport
Subject: Fwd: re. 'NEM'

----- Forwarded message from gwaite@myfairpoint.net -----

Date: Wed, 09 Dec 2015 12:41:04 +0000
From: gwaite@myfairpoint.net
Reply-To: gwaite@myfairpoint.net
Subject: Fwd: re. 'NEM'
To: btv@btv.aero

----- Forwarded message from gwaite@myfairpoint.net -----

Date: Sat, 05 Dec 2015 14:37:06 +0000
From: gwaite@myfairpoint.net
Reply-To: gwaite@myfairpoint.net
Subject: Fwd: re. 'NEM'
To: btv@btv.aero

----- Forwarded message from gwaite@myfairpoint.net -----

Date: Thu, 03 Dec 2015 05:29:52 +0000
From: gwaite@myfairpoint.net
Reply-To: gwaite@myfairpoint.net
Subject: re. 'NEM'
To: btv@btv.aero

To Whom: To ensure transparency, accountability, and creditbility:
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3. Separate the military aircraft modeling from commercial aircraft modeling.

4. Include the projected increased noise exposure from the F-35 in this NEM update.

5. Include latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and others.

1

6. Release analysis of 2010 noise monitoring data study. This study was formally agreed to between City of So. Burlington and City of Burlington but a final analysis was never completed for planning use or released to the public

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8. Fully implement the FAA recommended actions referenced in the 2008 Part 150 Agreement that were not implemented, or only partially implemented. GCWiatt, Winooski

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2

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Adrianne Morris

From: Barbara Wanner <barbara@wannervt.com>
Sent: Thursday, December 10, 2015 10:27 AM
To: Burlington International Airport
Subject: NEM

It is imperative to conduct an EIS which indicates changes in the F-16 afterburner noise from 20% to 95%. It is also important to include the estimated noise for the F-35!

Barbara Wanner
97 Robinson Pkwy., Burlington

117

Adrianne Morris

From:	Mark Williams <markewilliams@gmail.com>
Sent:	Thursday, December 10, 2015 2:43 PM
To:	Burlington International Airport
Subject:	NEM

Public comment from Frances Williams

Hi, I live on White St near Maplewood.. I need to know what the sound contours will be for the F-35 so I can plan for the future. I also wonder if the F-35 noise will impact housing being built near the proposed city center.

The NEM is intended as a planning tool for future land use and is supposed to project 5 years into the future. So with the F-35 expected in 2020, the noise contours should be included in the update. And so should the most recent health studies conducted by the World Health Organization regarding the effect of noise on children and adults.

It seems to me that real time monitoring of noise level at ground level at the Airport needs to be done, instead of computer modeling. It really isn't the average noise that we need to worry about, its the loudest noise at any given time that may result in deafness, PTSD and so on. I was at the dog park one time when the F16's took off and the noise was almost unbearable.

The neighborhood is going to need much more than sound deadening windows, if the F-35 is four times as loud as the F-16. At the very least, the FAA recommended actions referenced in the 2008 Part 150 Agreement should be fully implemented.

In addition, the public should be warned regarding when the aircraft will be taking off, so they can avoid being outside and having their children outside during those times, and use ear protection.

Frances Williams

118

Adrianne Morris

From: Irene Wrenner <imwren@aol.com>
Sent: Thursday, December 10, 2015 12:52 PM
To: Burlington International Airport
Subject: NEM

As an Essex Center resident, I live far enough away from the airport that I should hear virtually nothing, but there are days when I'm bothered by plane noise even out here.

And, of course, there are days when I'm running errands in South Burlington, or Winooski that noise from military planes is truly deafening to behold. My heart goes out to those who live and work in such communities, who are regularly unnerved, if not also injured, by such extreme levels of sound. I believe our government has regulations to protect them.

I would ask that the noise contours of the F-35 be included in your update, as that plane-type is projected to be here within 5 years. And my understanding is that NEMS updates are required to cover that time period.

How about developing an EIS while the consultants are at it, for such changes as the increase in F16 afterburner use (from 20% in 2008 to 95% currently)?

Thank you for your attention to my letter.

Irene Wrenner
Essex, Vermont

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Adrianne Morris

From:	Igor Zbitnoff <igorzbitnoff@comcast.net>
Sent:	Thursday, December 10, 2015 2:36 PM
To:	Burlington International Airport
Subject:	NEM

My comment regarding the Noise Exposure Map:

The noise exposure map update fails to include the projected increased noise exposure from F-35 basing. The Air Force and the Vermont Guard said the F-35 is expected to arrive in 2020. The noise from that basing should be included. Here is why: The NEM is intended as a planning tool for future land use and must project 5 years into the future.
Failure to include noise from F-35 basing violates the purpose.

The Air Force already supplied a noise map that includes the projected noise from F-35 basing. That map is in the Air Force Environmental Impact Statement that you have in your possession. The airport supplied no valid reason why this Air Force supplied information should not be included in the NEM update.

Therefore, I request that the projected increased noise exposure from F-35 basing be included in this NEM update.

Igor Zbitnoff
20 Mansion Street
Winooski, VT 05404

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Adrianne Morris

From:	Igor Zbitnoff <igorzbitnoff@comcast.net>
Sent:	Thursday, December 10, 2015 2:36 PM
To:	Burlington International Airport
Subject:	NEM

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Therefore, I request that the projected increased noise exposure from F-35 basing be included in this NEM update.

Igor Zbitnoff
20 Mansion Street
Winooski, VT 05404

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Adrianne Morris

From: Igor Zbitnoff <igorzbitnoff@comcast.net>
Sent: Thursday, December 10, 2015 2:40 PM
To: Burlington International Airport
Subject: NEM

Another comment regarding the Noise Exposure Map (NEM):

I request that the airport conduct an Environmental Impact Statement (EIS) for the F16 changes in use starting in 2008 as part of its NEM update. No EIS was conducted despite changes in F16 use, including increase from 20% afterburner to 95% afterburner use. The purpose of the NEM is to allow the public to see the changes in noise. This purpose will not be satisfied without an EIS regarding the F-16 afterburner changes.

Igor Zbitnoff
20 Mansion Street
Winooski, VT 05404

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Adrianne Morris

From:	Igor Zbitnoff <igorzbitnoff@comcast.net>
Sent:	Thursday, December 10, 2015 2:42 PM
To:	Burlington International Airport
Subject:	NEM

Another comment regarding the Noise Exposure Map (NEM):

I request that the NEM include the latest health studies, including those carried out by the World Health Organization, regarding the effect of noise on children and the elderly. The public is not adequately informed unless the health effects of the noise are divulged. It is the purpose of the NEM to inform the public regarding noise. Therefore, I request that the health effects be included.

Igor Zbitnoff
20 Mansion Street
Winooski, VT 05404
802 655-7458

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Adrianne Morris

From: Igor Zbitnoff <igorzbitnoff@comcast.net>
Sent: Thursday, December 10, 2015 2:45 PM
To: Burlington International Airport
Subject: NEM

My further comment regarding the Noise Exposure Map:

I Request release of the 2010 noise monitoring data study as part of the NEM. This study was formally agreed to between City of So. Burlington and City of Burlington. The City of Burlington owns the airport. The study was never finished or released to the public.

The purpose of the NEM is to allow the public to see noise data. The 2010 noise monitoring study includes actual measurements of noise. The purpose of the NEM will not be satisfied without release of the 2010 noise monitoring study.

Therefore, I request that the 2010 noise monitoring data study be included.

Igor Zbitnoff
20 Mansion Street
Winooski, VT 05404
802 655-7458

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Adrianne Morris

From: Terry Zigmund <terry@burlingtonglass.net>
Sent: Thursday, December 10, 2015 9:56 AM
To: Burlington International Airport
Subject: NEM

I am writing to express my comments and concerns about the Noise Exposure Maps for Burlington International Airport.
As I understand it, the NEM is a planning tool for the future, it MUST include projections for 5 years and therefore MUST include the F-35's, which are expected to arrive in 2020.
The information contained in the NEM is based on computer models that can't adequately account for topography and weather. The BIA airport director, Mr. Richards, stressed that the airport wants to be a "good neighbor". While the FAA doesn't require it, REAL TIME noise monitoring needs to be conducted and included in the update; a "good neighbor" would honor this request from their neighbors!
At the public meeting on November 9, 2015 several citizens asked what is the "acceptable" noise level for schools. None of the presenters were able to answer this question. "Acceptable" noise levels MUST be identified (by the world health organization, perhaps) and considered before any changes in use are allowed at BIA.
Citizens at the public meeting also asked if noise mitigation around the airport (such as physical barriers, berms) had been investigated and considered. Again, none of the presenters could answer this question and seemed unaware that such noise mitigation options even existed. As a citizen I demand that noise mitigation options be investigated and considered. Simply providing funding to sound proof homes (in the designated area) is not sufficient when there are other ways to protect the health of the community.

I appreciate your attention and consideration.
Sincerely,

Terry Zigmund
Winooski, VT

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DEC - 3 2015

Burlington International Airport
Part 150 Noise Exposure Map Update
November 9, 2015
Public Workshop

Comments received by 4 p.m. Thursday December 10, 2015 at the airport offices will be incorporated into the final submission to the FAA.

Name: Anne **Phone:** 802-578-6895
Address: Duval St. South Burlington **Date:** 12-1-2015

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

Noise Mitigation of the neighborhood homes in the 65 drb zone should be the most important objective. The large amount of affordable housing, wonderful neighborhoods, and community is important to sustain. The mitigation measures should take into account the huge impact the placement of the military F-35's will have when a new study needs to be done. This should be a joint Air/~~Army~~ Guard and BTV effort.