Patrick Leahy Burlington International Airport



BTV Noise Exposure Map Update 2024/2029 Technical Advisory Committee Meeting #4

October 23, 2024





- Introductions
- Part 150 Overview
- Review of Noise Modeling Process
- Updated Noise Exposure Maps
- Noise/Land Use Compatibility
- TAC Member Discussion
- Public Comment







INTRODUCTIONS







Diane Carter | Principal-in-Charge Joanna Norris | Project Manager

Responsible for:

- Overall Project Management/Client/Agency Coordination
- Community Outreach



Gene Reindel | Principal-in-Charge Kate Larson | Project Manager Paul Krusell | Assistant Project Manager David Crandall | Technical Advisor

Responsible for:

- Noise Modeling
- Compliance with Federal Regulations



TAC Membership



- Vermont National Army Guard
- Burlington Airport Commission
- Patrick Leahy Burlington International Airport
- Chittenden County Regional Planning Commission (CCRPC)
- City of South Burlington
- City of Winooski
- Community College of Vermont
- FAA (Air Traffic Manager)
- FAA (New England Regional Office) Advisory
- Heritage Aviation (FBO)
- South Burlington School District
- Town of Williston
- Vermont National Air Guard (VTANG)
- Williston School District
- Winooski School District







PART 150 OVERVIEW





City of Burlington

- As airport owner and operator, the City is responsible for conducting the Noise Exposure Map (NEM) analysis and submitting the study for acceptance
- Consulting team is retained to conduct technical work and prepare documentation related to the NEM process

Federal Aviation Administration (FAA)

• Determines whether the NEM process has met Part 150 requirements and approves individual noise mitigation measures

Technical Advisory Committee (TAC)

 Provides representation for stakeholder organizations, including local jurisdictions, airlines, local business interests





FAA "accepts" NEM as compliant with Part 150 standards NEM must include detailed description of:

- Airport layout, aircraft operations, and other inputs to noise model
- Aircraft noise exposure in terms of Day-Night Average Sound Level (DNL)
- Land use compatibility assessment

NEM must address two calendar years

- Year of submission
- Forecast year (at least five years from year of submission)





Review of NOISE MODELING PROCESS





- FAA requires use of their Aviation Environmental Design Tool (AEDT) for civilian aircraft operations
 - Version 3e is the most current version (at study's commencement)
 - <u>https://aedt.faa.gov</u>
- Military aircraft operations will be modeled with the Department of Defense noise model, NOISEMAP Version 7.3
- Military noise model results will be combined with AEDT results of the civilian aircraft operations









Noise Modeling Inputs

Model Input Category	Typical Data Source
Airport Layout	FAA 5010 data and airport
Aircraft noise and performance	Standard AEDT database, pilot interviews (NOISEMAP)
Aircraft operations	FAA ATADS, airport forecasts, FAA TAF, BTV NOMS, operator interviews
Aircraft runup operations	Airport staff/log
Runway use rates	BTV NOMS, ATCT personnel, Airport staff
Flight track geometry and use rates	BTV NOMS, ATCT personnel, observations
Meteorological conditions	Standard AEDT database
Terrain data	USGS National Map Viewer, National Land Cover Database
Note: "BTV NOMS" is the noise and operation	s monitoring system currently installed at BTV.

ATADS = Air Traffic Activity Data System ATCT = Air Traffic Control Tower NOMS = Noise and Operations Monitoring System TAF = Terminal Area Forecast USGS = United States Geological Survey





Physical Input Requirements



Sources: FAA 5010 and BTV staff

Airport layout

Runways:

- Runway 15/33 primary
- Runway 1/19 crosswind

Helipads:

- Civilian "helipads" at H1, H3, H6
- VTARNG uses 4 locations as "helipads"
 - H2, H3, H4 (taxiways E, C, and L)
 - H5 (VTARNG ramp)

Runups:

- Military Runup Pads at R1, R2, R3
- Civilian Runup Pads at VW_1 & Txy_G
- Pre-flight Runups (GA Props) at HS-01, HS-15, HS-19, HS-33





Airport elevation & surrounding terrain

 Data obtained from the United States Geological Survey (USGS) National Elevation Dataset

Airport weather

- The AEDT database includes recent 10-year averages:
 - Temperature* 47.0°F
 - Station pressure* 1002.6 mb
 - Relative humidity* 65.9%
 - Dew point 36.2°F
 - Wind speed 6.7 knots
- *Applied to NOISEMAP modeling



Source: USGS; Nov 2023





Annual-Average Day Operations
Existing year 2024
Forecast year 2029
Aircraft Type
Jet, Turboprop, Helicopter, Piston
AEDT or NOISEMAP Equipment Type
EMB175, CNA172, F-35A, etc.
for access to standard AEDT noise and performance database

Day-Night Split Day: 7 AM – 10 PM Night: 10 PM – 7 AM Stage length Surrogate for aircraft weight; determined by distance from departure to destination airport

Year	Air Carrier	Air Taxi	General Aviation	Military	Total
2024	16,720	6,013	87,015	5,480	115,228
2029	18,233	6 <i>,</i> 358	89,327	5,460	119,378





2024 Annual Aircraft Operations

Category			Itinerant	Operations		Local Op	perations			
		Arri	vals	Depart	ures	Closed I	Patterns	Totals		
		Day	Night	Day	Night	Day	Night			
	Air Carrier	5,918	2,442	5,664	2,696	0	0	16,720		
Civilian	Air Taxi	2,804	203	2,898	109	0	0	6,013		
	GA	20,365	514	20,065	814	43,936	1,322	87,015		
	VTANG	2,075	0	2,075	0	60	0	4,210		
Military	VTARNG	500	31	491	40	0	0	1,062	Military	
	Transient	81	0	81	0	46	0	208	Helicopters	
Civilia	an Total	29,087	3,158	28,626	3,619	43,936	1,322	109,747	Military	Air Carrier
Milita	ry Total	2,656	31	2,647	40	106	0	5,480	Jets+	Jets 15% Air Taxi Je
Combin	ed Totals	31,743	3,189	31,273	3,659	44,042	1,322	115,227		2%

* Includes a small number of transient non-jet military aircraft







2029 Annual Aircraft Operations

Category			Itinerant	Operations		Local Op	erations					
		Arriv	/als	Depart	ures	Closed P	atterns	Totals				
		Day	Night	Day	Night	Day	Night					
	Air Carrier	6,453	2,663	6,177	2,940	0	0	18,233				
Civilian	Air Taxi	2,976	203	3,070	109	0	0	6,358				
	GA	20,868	514	20,868	814	44,909	1,354	89,327				
	VTANG	2,069	0	2,069	0	60	0	4,198				
Military	VTARNG	500	35	498	37	0	0	1,070				
	Transient	73	0	73	0	46	0	192	Military			
Civilia	an Total	30,298	3,379	30,115	3,862	44,909	1,354	113,917	Jets + other	Military Helicopters	Air Carrier	Air Ta
Milita	iry Total	2,642	35	2,640	37	106	0	5,460	4%	1%	14%	2
Combin	ned Totals	32,940	3,414	32,755	3,899	45,015	1,354	119,377				

* Includes newly manufactured Beta electric aircraft

** Includes a small number of transient non-jet military aircraft







Runway Use





VTANG (day% / night%)

Civilian Jets (day% / night%)





Runway Use



Civilian Non-jet (day% / night%)

Closed Patterns (day% / night%)





Flight Tracks: Commercial Jet Arrivals & Departures





Departures



Arrivals

Flight Tracks: Commercial Non-Jet Arrivals & Departures





Departures



Arrivals



Flight Tracks: Closed Patterns





Fixed-wing Aircraft

Helicopters





Flight Tracks: Helicopter Arrivals & Departures





Departures



Arrivals

Flight Tracks: Helicopter Short Hops

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Helicopter flights between BTV and UVM medical center

Color indicates direction:

- Green = departures
- Orange = arrivals

Modeled tracks are the darker lines







Flight Tracks: Military Jet Arrivals & Departures





Departures



Arrivals



Flight Tracks: Military Circuits & Helicopters





Helicopters



Closed Patterns



Updated NOISE EXPOSURE MAPS





2024 Existing Conditions and 2029 Forecast Conditions



- The 2029 contours cover a slightly larger area
 - Overall increase of 3.6% in operations from 2024 to 2029

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 Many of the input categories do not change between the 2024 and 2029 scenarios





2024 Existing Conditions and Previous NEM 2023 Forecast



The 2023 forecast contours were prepared in 2019, before arrival of F-35As

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- 2024 NEM update modeling inputs reflect current VTANG flight procedures at BTV
- Fewer F-35A operations occur than had been previously forecast





NOISE/LAND USE COMPATIBILITY





Land Use Compatibility Guidelines

Land Use	DNL <65 dB	DNL 65-70 dB	DNL 70-75 dB	DNL > 75 dB
Residential	Compatible	Incompatible ⁽¹⁾	Incompatible ⁽¹⁾	Incompatible
Mobile home park	Compatible	Incompatible	Incompatible	Incompatible
Transient lodgings	Compatible	Incompatible ⁽²⁾	Incompatible ⁽²⁾	Incompatible ⁽²⁾
Schools	Compatible	Incompatible ⁽³⁾	Incompatible ⁽³⁾	Incompatible
Hospitals and nursing homes	Compatible	25 ⁽⁴⁾	30 ⁽⁴⁾	Incompatible
Churches, auditoriums and concert halls	Compatible	25 ⁽⁴⁾	30 ⁽⁴⁾	Incompatible

⁽¹⁾ Measures are required to achieve 25 to 30 dB of noise level reduction for aircraft noise from outside to inside.

⁽²⁾ "Transient lodgings" include, but are not limited to, hotels and motels.

⁽³⁾Measures are required to achieve 25 to 30 dB of noise level reduction for aircraft noise from outside to inside.

⁽⁴⁾ The measures to achieve NLR of 25 or 30 dB must be incorporated into design and construction of structure.





Noise Mitigation Program Status – April 2024







Existing (2024) and Forecast (2029) Land Use Compatibility

			-					
Contour	Potent Incomp	tially atible ¹	Compa	tible ²	Total			
Interval	2024	2029	2024	2029	2024	2029		
		Off-Airpor	rt Acreage ³					
65-70 DNL	249	261	1	1	250	262		
70-75 DNL	317	317	3	3	320	320		
>75 DNL	< 1	< 1	0	0	< 1	< 1		
Total	566	578	4	4 4		582		
		Housin	ng Units					
65-70 DNL	1,910	1,982	3	3	1,913	1,985		
70-75 DNL	443	443	11	11	454	454		
>75 DNL	1	1	0	0	1	1		
Total	2,354	2,426	14	14	2,368	2,440		
	Po	pulation (Census 20)20)				
65-70 DNL	4,449	4,621	7	7	4,456	4,628		
70-75 DNL	1,032	1,032 1,032		25	1,057	1,057		
>75 DNL	2	2	0	0	2	2		
Total	5,483	5,655	32	32	5,515	5,687		

Notes: Acreage is calculated using the GIS parcel data obtained from the cites which may differ from the deeded acres.

- 1. "Potentially Incompatible" includes residential and other noise-sensitive land uses; compatibility can depend on the building's outdoor-to-indoor Noise Level Reduction (NLR)
- 2. "Compatible" quantities in this table refer to residential units made compatible by sound insulation.
- 3. <u>Acreage</u> does not include airport owned property.

Contour Interval	Sch	ools	Place Wor	es of ship	Public Gathering			
	2024	2029	2024	2029	2024	2029		
65-70 DNL	5	5	5	5	1	1		
70-75 DNL	0	0	0	0	0	0		
>75 DNL	0	0	0	0	0	0		
Total	5	5	5	5	1	1		





	Project Phase			20	23			2024													
		JUL	AUG	SEP	ОСТ	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	JAN	FEB
1	Data Collection; approval of military aircraft modeling; development of operational forecasts			_																	
2	Development of draft contours; land use analysis																				
3	Draft NEM document for public review; public meeting; public comment period														(
4	Finalize and submit final NEM to FAA for approval																				
			Con	sultant	Task						Comm	unity In	put					Age	ncy Re	view	





TAC MEMBER DISCUSSION





PUBLIC COMMENT

