

Patrick Leahy Burlington International Airport



BTV Noise Exposure Map Update

Technical Advisory Committee Meeting #1

October 12, 2023



- Introductions
- Public Comment
- Part 150 Overview
- Existing Noise Exposure Map (NEM)
- Land Use Compatibility Guidelines
- Existing Noise Compatibility Program (NCP)





Diane Carter | Principal-in-Charge
Brianna Whiteman | Assistant 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

- Vermont National Army Guard
- Burlington Airport Commission
- 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



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

The Federal Aviation Administration (FAA) developed the Part 150 Program in response to the federal Aviation Safety and Noise Abatement Act of 1979 (“ASNA”)

- Codified under Title 14 of the Code of Federal Regulations (CFR) Part 150
- Formal citation is “14 CFR Part 150,” informal is “Part 150”
- Formal title is “Airport Noise Compatibility Planning”

Voluntary FAA-defined process for airport noise studies

- 250+ airports have participated

***Why do airports participate?* Primary reasons include:**

- Access to FAA funding of some approved measures
- Process is comprehensive, well-established, and understood

Part 150 prescribes standards and systems for:

- Measuring noise
- Estimating cumulative noise exposure using computer modeling
- Describing noise exposure
- Coordinating with local land use agencies
- Documenting the analytical process
- Submitting the documentation to FAA
- FAA and public review processes
- FAA approval or disapproval process

Consultation required with:

- All local, state, and federal entities with control over land use
- FAA regional officials
- Regular aeronautical users of the airport
- All parties interested in reviewing and commenting on the draft reports

Two primary elements:

- Noise Exposure Map (NEM)
 - *Focus of this study*
- Noise Compatibility Program (NCP)
 - Current NCP approved in 2020
 - *Not updating as part of this study*

Detailed FAA guidance at:

www.faa.gov/airports/environmental/airport_noise/

FAA “accepts” NEM as compliant with Part 150 standards

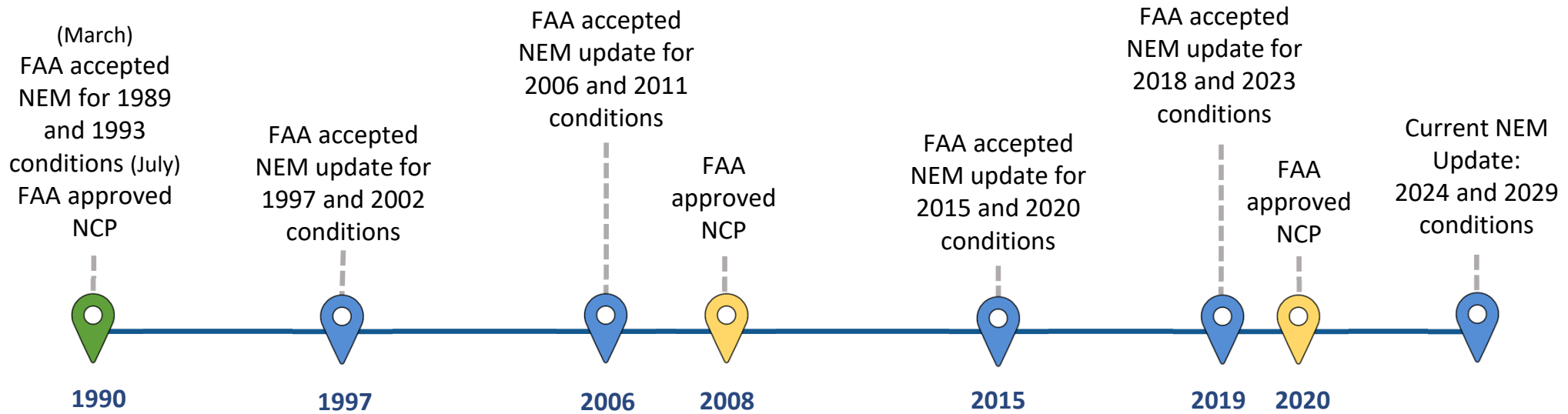
NEM must include detailed description of:

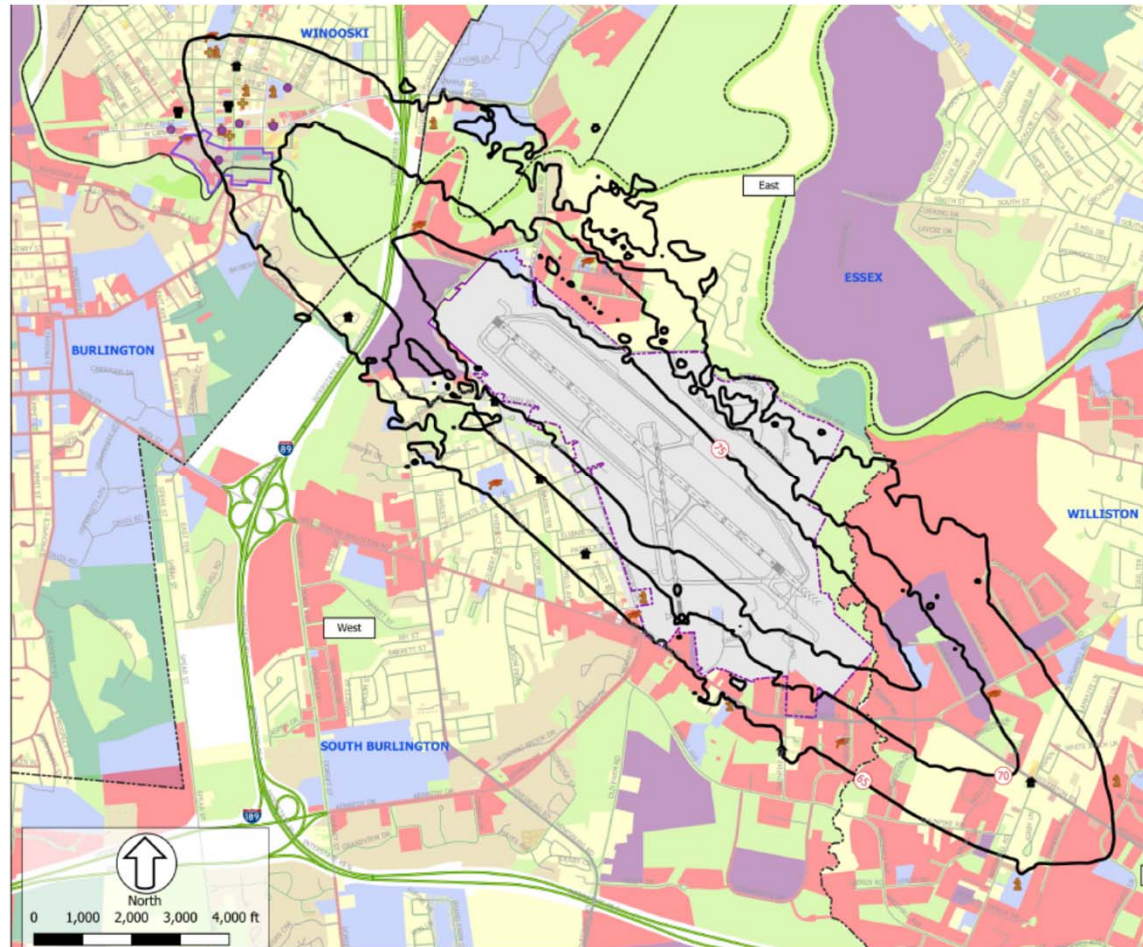
- Airport layout, aircraft operations, and other inputs to noise model
- Aircraft noise exposure in terms of Day-Night Average Sound Level (DNL)
- Land use compatibility assessment

NEM must address two calendar years

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

History of Noise Program Efforts





Estimated Residential Population for 2018 and 2023 Contours

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

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

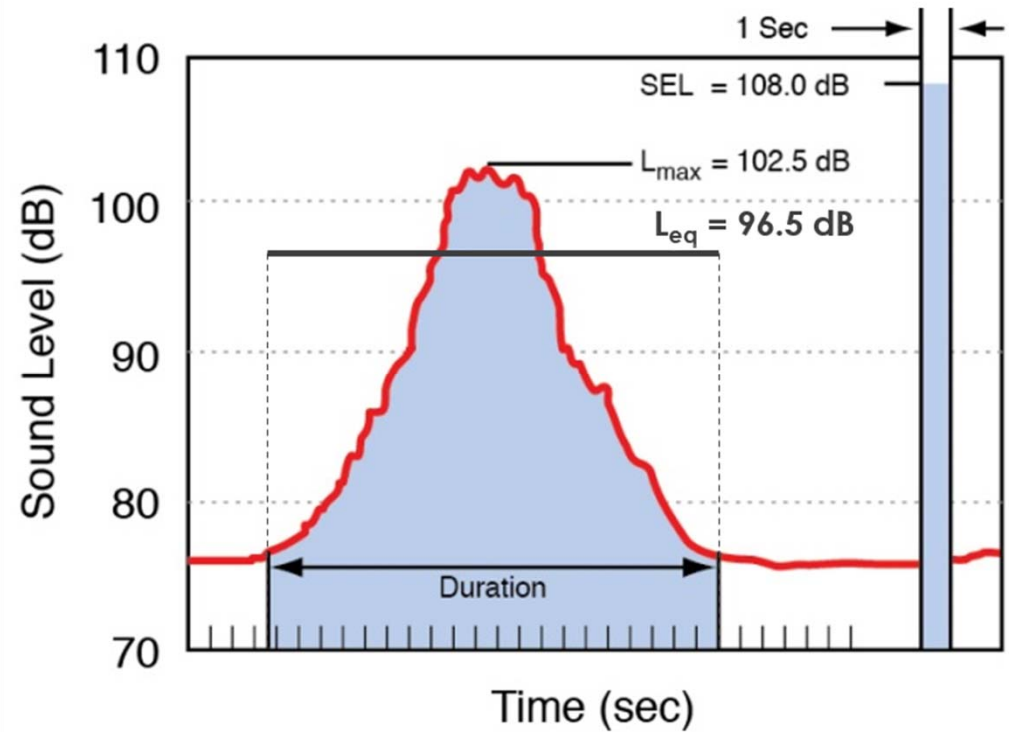
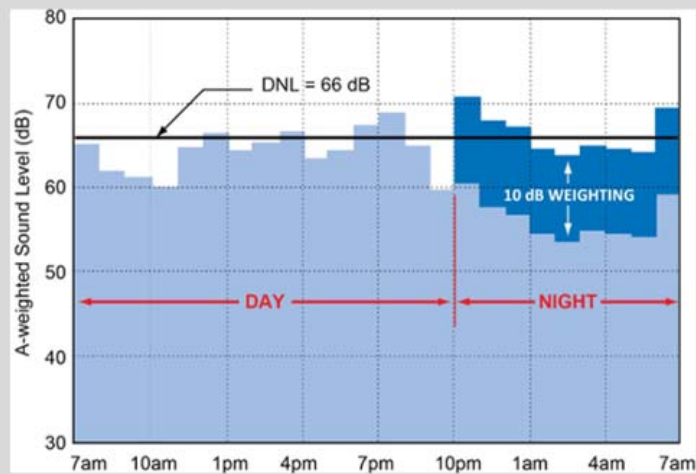
⁽¹⁾ Measures are required to achieve 25 to 30 dB of noise level reduction for aircraft noise from outside to inside.

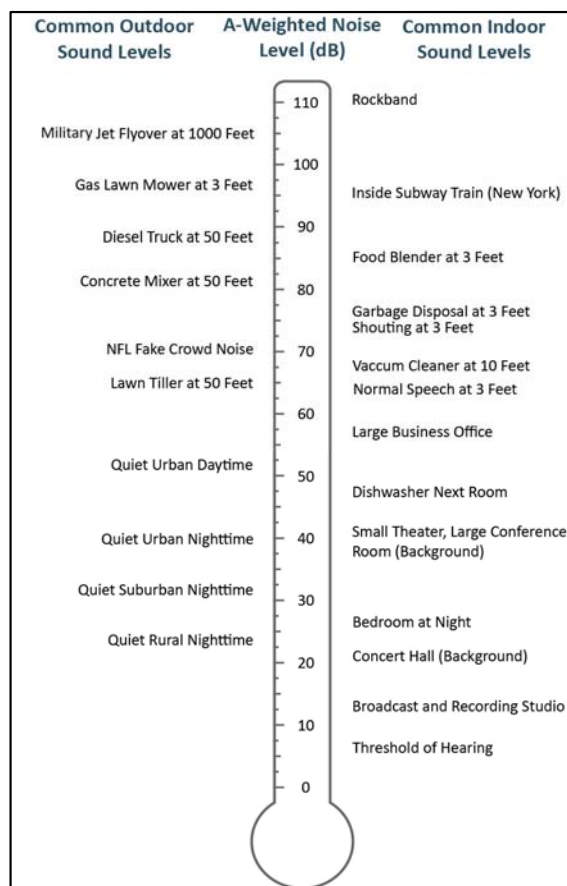
⁽²⁾ “Transient lodgings” include, but are not limited to, hotels and motels.

⁽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.

- Maximum Noise Level (L_{max})
- Sound Exposure Level (SEL)
- Equivalent Sound Level (L_{eq})
- Hourly Noise Level (HNL or L_{eq1h})
- Day Night Average Sound Level (DNL)



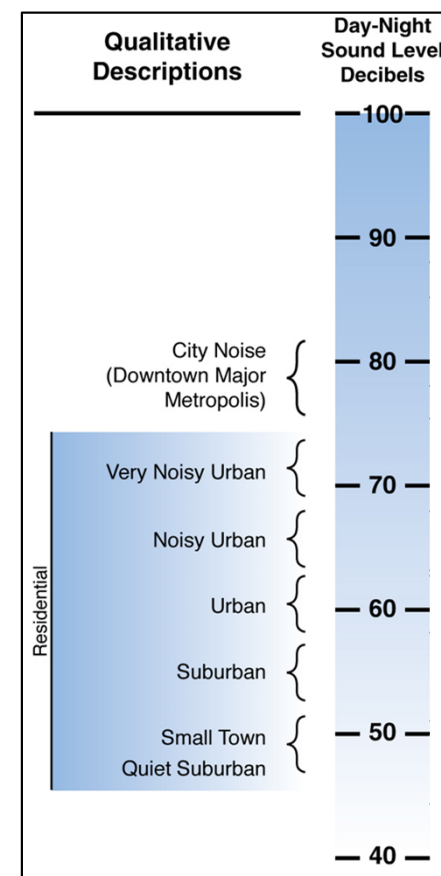


A-weighted decibel

- Reflects how we hear different pitches of sound in our normal environment
- Federal agencies have adopted use of A-weighted sound levels for environmental studies

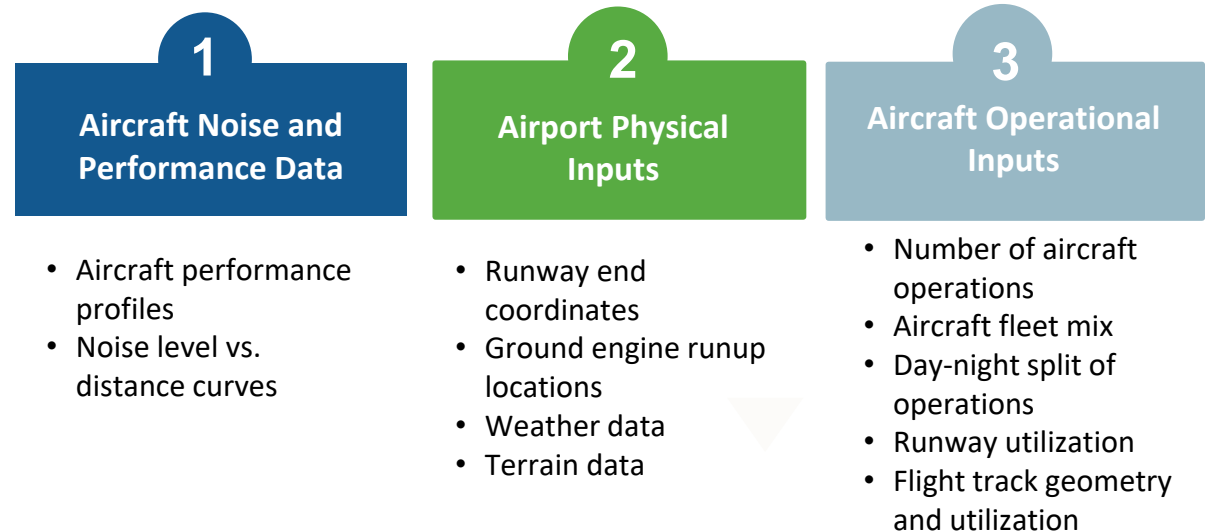
Day-Night Average Sound Level (DNL or Ldn)

- 24-hour cumulative sound level
- Applies a 10-fold weighting to nighttime noise (from 10pm to 7am) as humans perceive sound levels at night being twice as loud as the same sound level during the day
- Part 150 requires use of DNL for land use compatibility assessments



- 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)
 - <https://aedt.faa.gov>
- Military aircraft operations will be modeled with the Department of Defense noise model, NOISEMAP
- Military noise model results will be combined with AEDT results of the civilian aircraft operations

AEDT requires noise model input data in three categories:



1. Collect data and information
2. Develop five-year forecast of aircraft operations
3. Prepare noise model inputs
4. Run the noise model and assess land use compatibility
5. Prepare draft Noise Exposure Map (NEM) documentation
6. Publish NEM documentation for public review and hold public workshop
7. Submit NEM to the FAA for review and acceptance

Airport Operations Measures



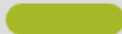




- Monitoring and Review of NEM and NCP Status
- Noise and Flight Track Monitoring



Land Use Measures:

- Land Acquisition & Relocation
- Sound Insulation of Residences
- Sound Insulation of Noise Sensitive Structures
- Purchase Assurance
- Sales Assistance



Project Phase	2023						2024							
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
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														
	 Consultant Task		 Stakeholder Involvement				 Agency Review							

TAC Preliminary Topics and Schedule

TAC Meeting 2

Thursday, November 30, 2023

- Forecasts, Military Operations, Noise Model Inputs

TAC Meeting 3

Thursday, January 18, 2024

- Noise Compatibility Program Review

TAC Meeting 4

Thursday, April 11, 2024

- Noise Modeling Results – Presentation of the Noise Exposure Maps

TAC MEMBER DISCUSSION