CLT Noise Exposure Map Update
Public Information Meeting

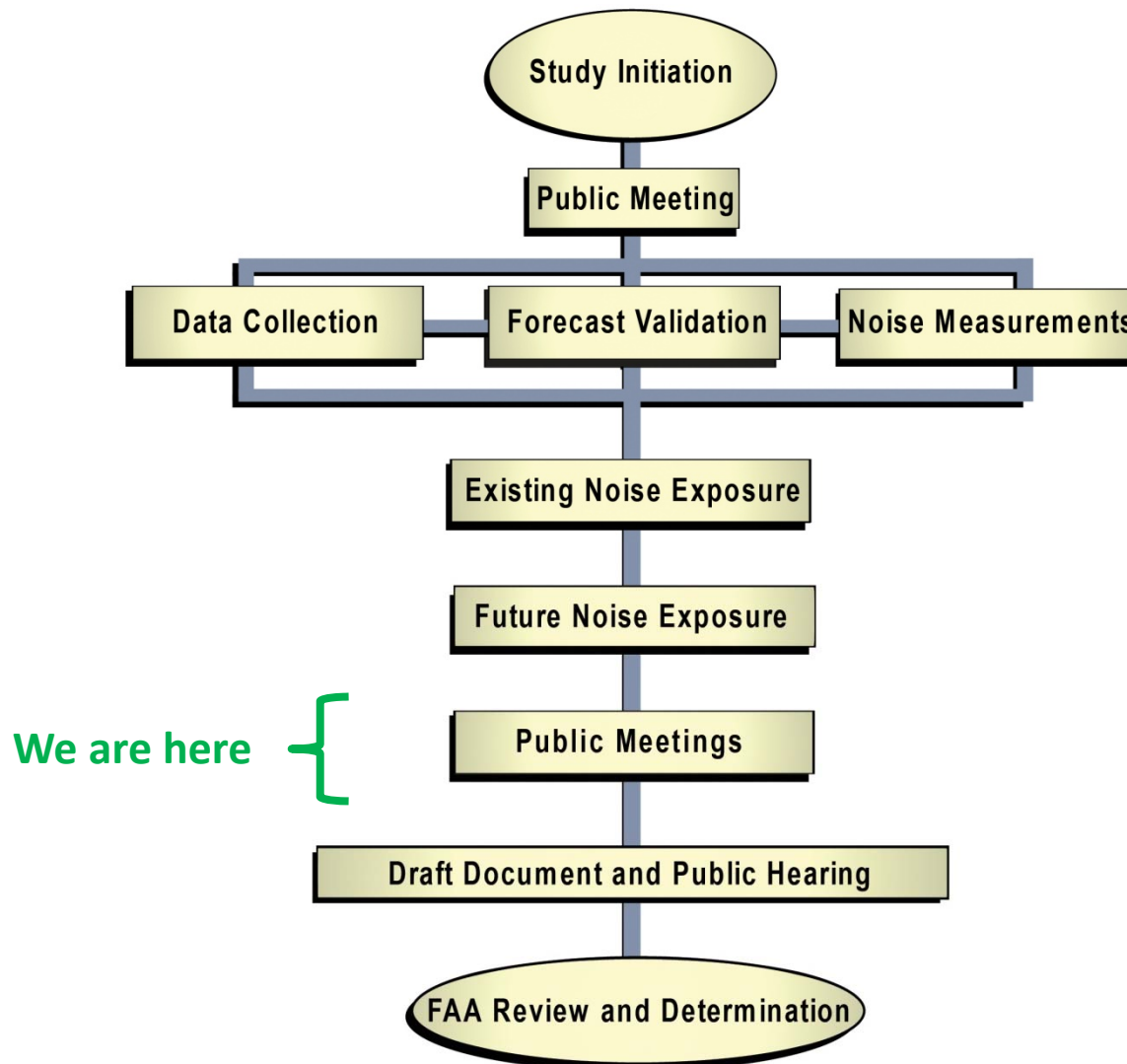February 5, 2015

Noise Exposure Map (NEM) Update

Welcome and Introductions

- **Charlotte Douglas International Airport**
  - Sponsor of the Noise Exposure Map (NEM) Update
  - Certify the NEMs are accurate
  - NEM Team: Jack Christine, Katherine Dennis, Lauren Scott, Kevin Hennessey

- **Consultant Team**
  - Landrum & Brown is the lead consultant for the NEM Update
  - 60 years of aviation planning
  - Experts in aircraft noise and land use planning
  - Rob Adams, Principal-in-Charge

- **Federal Aviation Administration**
  - Developed guidelines for NEMs that must be followed
  - Review NEMs for accuracy and determination that guidelines were met
  - Provide technical support for noise modeling

Noise Exposure Map (NEM) Update

NEM Update Process

Study Initiation

Public Meeting

Data Collection — Forecast Validation — Noise Measurements

Existing Noise Exposure

Future Noise Exposure

We are here {

Public Meetings

Draft Document and Public Hearing

FAA Review and Determination

NEM Update General Overview

- **NEM Updates Document Noise Levels**
  - The focus of the NEM Update is to quantify noise and identify land use incompatibilities that exist today and in the future

- **NEM Updates must Follow FAA Guidelines**

- **NEM Updates do not:**
  - Recommend changes to airport or runway, or implementing mandatory restrictions on aircraft
  - Recommend levying fines for not following procedures
  - Limit access to the airport based on size, type, or noise created by aircraft
  - Alter the noise compatibility measures already in place at the airport

Previous NEMs at CLT

- **1990 - Part 150 Noise Compatibility Study**

- **1996 - Part 150 Study Update**
  - Prepared NEMs for 1996 and 2001 conditions
  - 2001 NEM included construction of the third parallel runway

Noise Exposure Map (NEM) Update

Important Facts About NEM Updates

- Developing Noise Exposure Maps
  - FAA has established land use compatibility guidelines for identifying aircraft noise impacts
  - Based on Day-Night Average Sound Level (DNL)
  - Required to use Integrated Noise Model (INM)
  - Noise-sensitive uses are considered non-compatible at or above 65 DNL
    - Residential
    - Schools
    - Places of worship
    - Hospitals
    - Nursing homes
    - Daycare facilities where licensed education occurs
    - Libraries
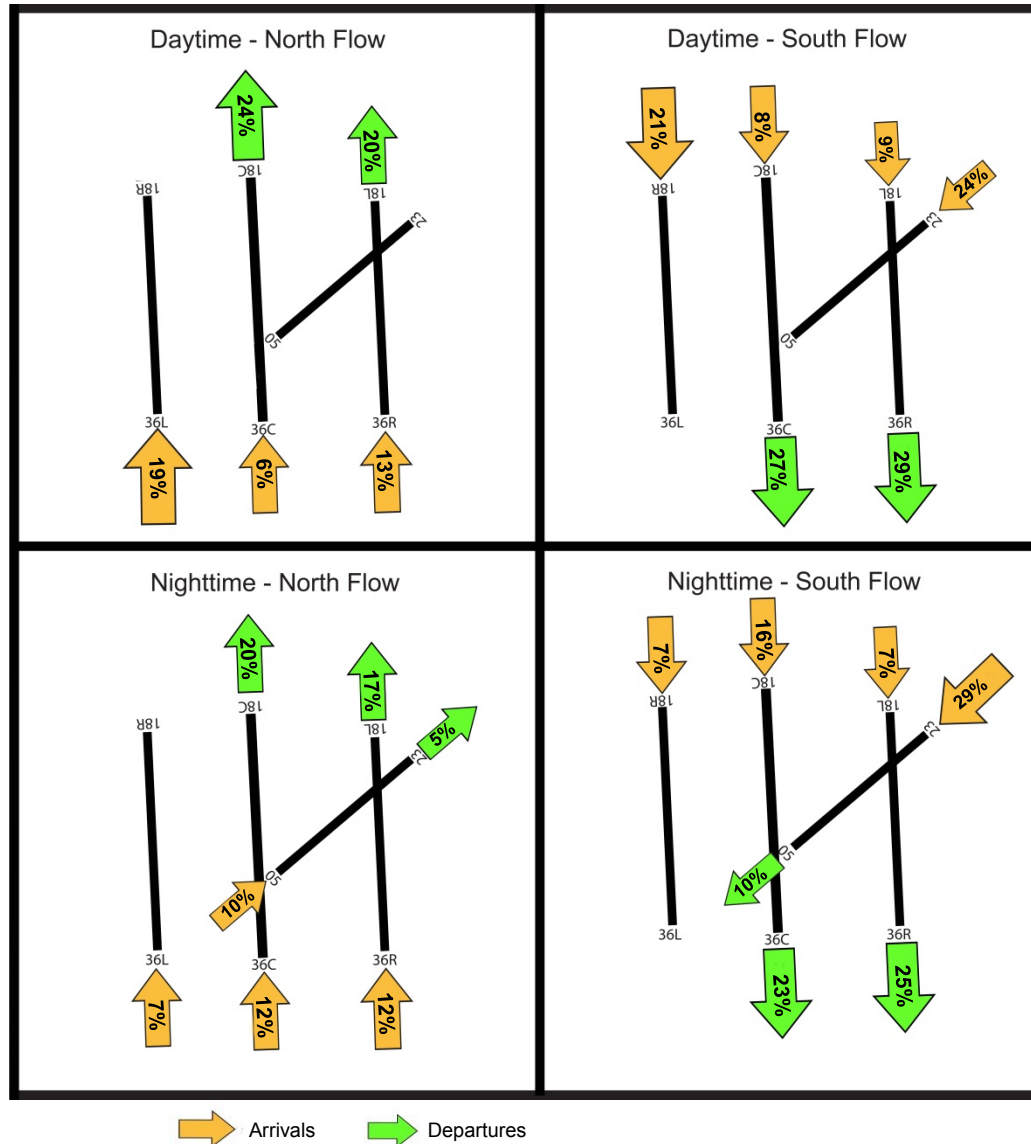
Noise Exposure Map (NEM) Update

Operating Levels and Fleet Mix

Aircraft Type	INM ID	2015 Average-Annual Daily Operations	2020 Average-Annual Daily Operations
Heavy Passenger Jets			
Boeing 767-300	767300	0.1	3.0
Airbus A330-300	A330-301	6.0	7.5
Airbus A330-300	A330-343	5.7	7.4
Airbus A340-200	A340-211	0.2	0.3
Airbus A340-600	A340-642	0.9	1.2
Airbus A350	7773ER	0.0	6.2
Subtotal		*12.9*	*25.6*
Heavy / Large Cargo Jets			
Boeing 727-200 (hushkitted)	727EM2	0.9	<0.1
Boeing 767-200	767CF6	8.8	3.7
Airbus A300-600	A300-622R	5.3	5.2
Airbus A310-300	A310-304	0.1	<0.1
Douglas DC10-10	DC1010	0.5	<0.1
Douglas DC10-30	DC1030	<0.1	<0.1
Subtotal		*15.5*	*8.8*
Large Passenger Jets			
Boeing 717-200	717200	1.5	3.4
Boeing 737-300	737300	1.7	0.6
Boeing 737-400	737400	76.2	<0.1
Boeing 737-700	737700	9.1	10.6
Boeing 737-800	737800	1.1	10.5
Boeing 737-900	737900	0.2	0.2
Boeing 757-200	757PW	0.3	12.6
Boeing 757-200	757RR	18.4	8.3
Boeing 757-300	757300	0.0	0.1
Airbus A319-100	A319-131	171.7	207.1
Airbus A320-200	A320-211	21.6	27.6
Airbus A320-200	A320-232	64.8	82.7
Airbus A321-200	A321-232	189.2	348.2
Canadair CRJ701	CRJ701	129.5	169.8
Canadair CRJ900	CRJ9-ER	165.3	276.5
Douglas DC9-30 (hushkitted)	DC93LW	0.1	<0.1
Douglas DC9-50 (hushkitted)	DC95HW	1.4	0.8
Embraer EMB-170	EMB170	9.8	6.1
Embraer EMB-175	EMB175	50.8	92.3
Embraer EMB-190	EMB190	10.3	11.9
McDonnell-Douglas MD82	MD82	7.4	<0.1
McDonnell-Douglas MD83	MD83	2.3	0.4
McDonnell-Douglas MD88	MD88	11.0	4.4
McDonnell-Douglas MD90	MD9025	7.1	15.4
Subtotal		*950.7*	*1,289.3*

Aircraft Type	INM ID	2015 Average-Annual Daily Operations	2020 Average-Annual Daily Operations
Regional / Business Jets			
Business Jet	CIT3	0.6	0.9
Business Jet	CL600	3.9	5.7
Business Jet	CL601	2.6	3.9
Canadair Regional Jet CRJ-200	CLREGJ	258.6	263.5
Business Jet	CNA500	2.3	3.4
Business Jet	CNA510	1.3	1.8
Business Jet	CNA55B	1.6	2.4
Business Jet	CNA750	1.3	1.9
Dornier 328 Jet	D328J	0.0	1.1
Embraer EMB-140	EMB140	1.0	21.9
Embraer EMB-145	EMB145	57.2	41.8
Embraer EMB-145	EMB14L	21.6	<0.1
Business Jet	FAL20	3.9	5.7
Business Jet	GIV	4.0	6.0
Business Jet	GV	2.6	3.9
Business Jet	LEAR35	13.0	20.0
Business Jet	MU3001	12.0	16.9
Subtotal		*387.8*	*400.9*
Propeller Aircraft			
Twin-Engine Piston	BEC58P	4.8	4.7
Single-Engine Piston	CNA172	0.4	0.3
Single-Engine Piston	CNA206	0.5	0.3
Single-Engine Piston	CNA208	1.9	0.9
Single-Engine Piston	CNA210	0.8	1.3
Twin-Engine Turboprop	CNA441	2.7	2.6
DASH 6	DHC6	4.2	4.1
DASH 8-100	DHC8	40.5	42.0
DASH 8-300/400	DHC830	77.8	85.2
Single-Engine Piston	GASEPF	6.6	4.1
Single-Engine Piston	GASEPV	4.6	2.9
Twin-Engine Piston	PA31	1.1	0.6
Subtotal		*145.9*	*149.0*
Military Aircraft			
Lockheed C130 Hercules	C130HP	2.5	3.8
Subtotal		*2.5*	*3.8*
Helicopters			
Augusta A-109	A109	1.7	1.7
Bell 407 Jet Ranger	B407	0.3	0.3
Subtotal		*2.0*	*2.0*
Grand Total		**1,517.4**	**1,879.5**

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Noise Exposure Map (NEM) Update

Existing Runway Use Patterns

Arrivals   Departures

Flight Tracks

Charlotte·Douglas
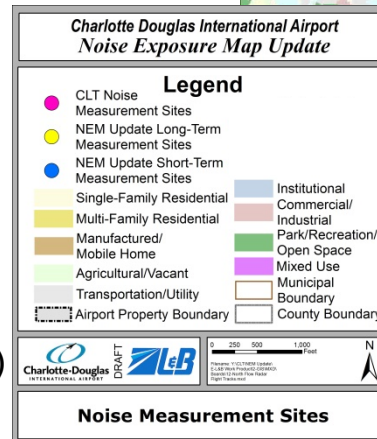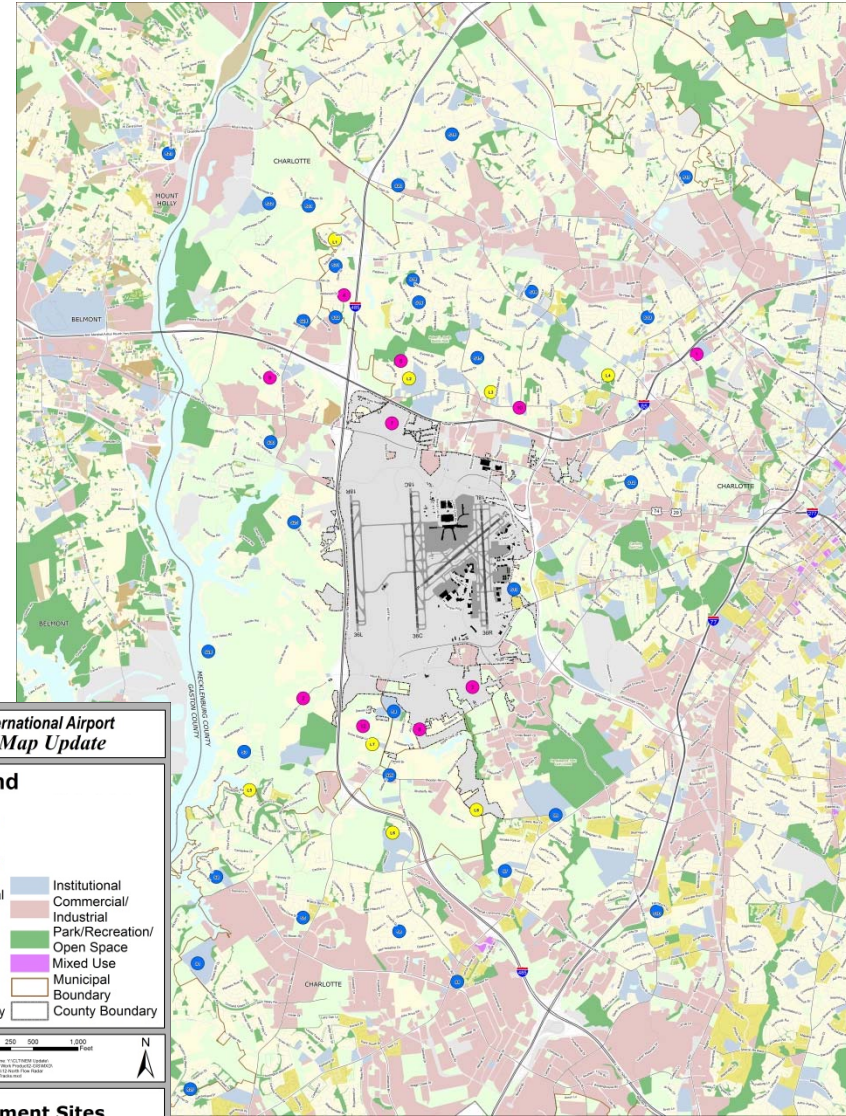INTERNATIONAL AIRPORT

Noise Monitoring Program

- Collected Data from 10 Existing Sites

  1. 601 Dewolfe Street

  2. 10300 Garrison Road

  3. Whippoorwill Drive

  4. 1924 Wildwood Drive

  6. 2900 Westerwood Drive

  7. Moores Lake

  8. McAlpine Drive

  9. 3515 Farhill Drive

  10. 6101 Tuckaseegee Road

  12. 9401 Markswood Road

- Conducted Monitoring from other sites

  - 8 Long-Term Sites (5 days)

  - 33 Short-Term Sites (~ 1 hour)

Charlotte Douglas International Airport
Noise Exposure Map Update

Legend

- ● CLT Noise Measurement Sites
- ● NEM Update Long-Term Measurement Sites
- ● NEM Update Short-Term Measurement Sites

- Single-Family Residential
- Multi-Family Residential
- Manufactured/ Mobile Home
- Agricultural/Vacant
- Transportation/Utility
- Airport Property Boundary

- Institutional
- Commercial/ Industrial
- Park/Recreation/ Open Space
- Mixed Use
- Municipal Boundary
- County Boundary

Charlotte·Douglas INTERNATIONAL AIRPORT   DRAFT   L&B

0 250 500 1,000 Feet   N

Noise Measurement Sites

L&B

Noise Exposure Map (NEM) Update

Noise Monitoring Results

- The monitoring was conducted from July 31, 2014 through August 13, 2014

- Long-term noise monitoring was conducted at 8 sites for over five days at each site

  - DNL noise levels ranged from 59.1 to 64.9 DNL and were consistent with INM predictions

- Short-term noise monitoring was conducted at 33 sites for approximately on hour per site

Noise Exposure Map (NEM) Update
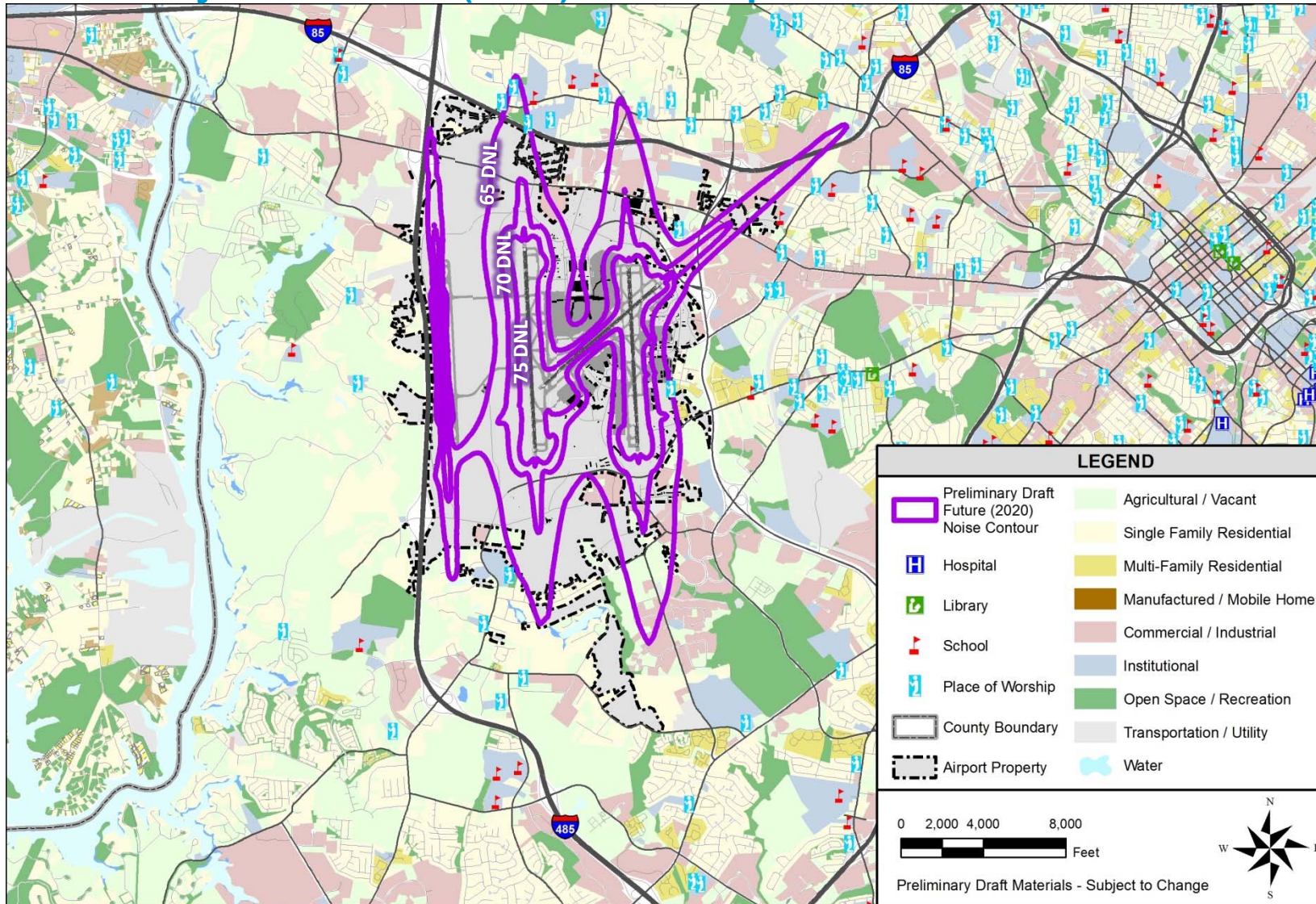
Preliminary Draft Existing (2015) Noise Exposure Contour
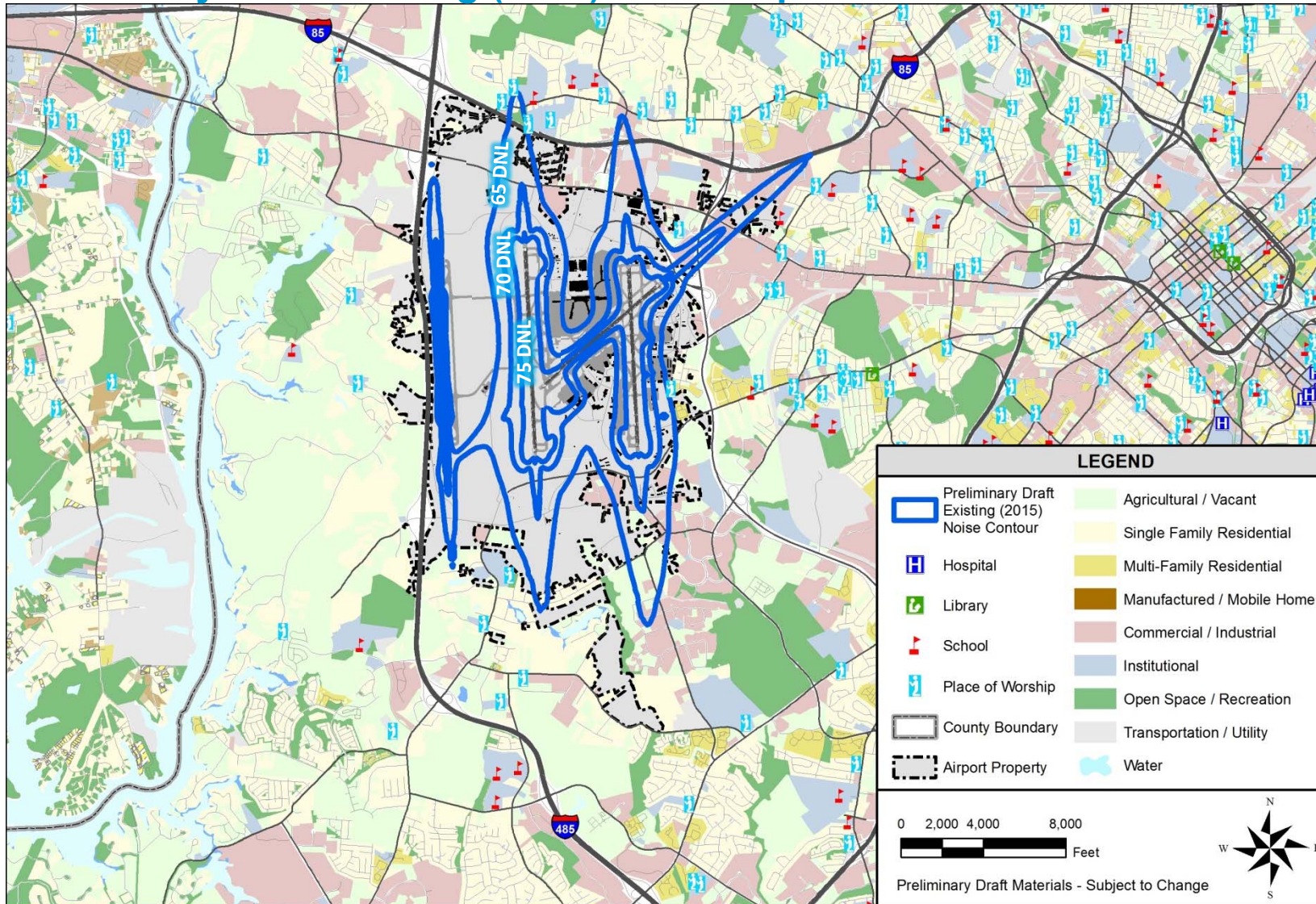
Noise Exposure Map (NEM) Update

Preliminary Draft Noise Contour / Land Use Incompatibilities
Existing (2015) Noise Exposure Contour

Properties by Mitigation Area	65+ DNL
Housing Units	
Unmitigated	0
Previously Eligible for Sound Insulation	41
Sound Insulated	3
Total Housing Units	**44**
Population	
Total Population	**113**
Noise-Sensitive Facilities	
Schools	0
Churches	0
Libraries	0
Hospitals	0
Nursing Homes	0
Total Noise-Sensitive Facilities	**0**

Charlotte·Douglas
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Preliminary Draft Future (2020) Noise Exposure Contour

LEGEND

Preliminary Draft Future (2020) Noise Contour

[H] Hospital

Library

School

Place of Worship

County Boundary

Airport Property

Agricultural / Vacant

Single Family Residential

Multi-Family Residential

Manufactured / Mobile Home

Commercial / Industrial

Institutional

Open Space / Recreation

Transportation / Utility

Water

0   2,000 4,000   8,000
Feet

N
W   E
S

Preliminary Draft Materials - Subject to Change
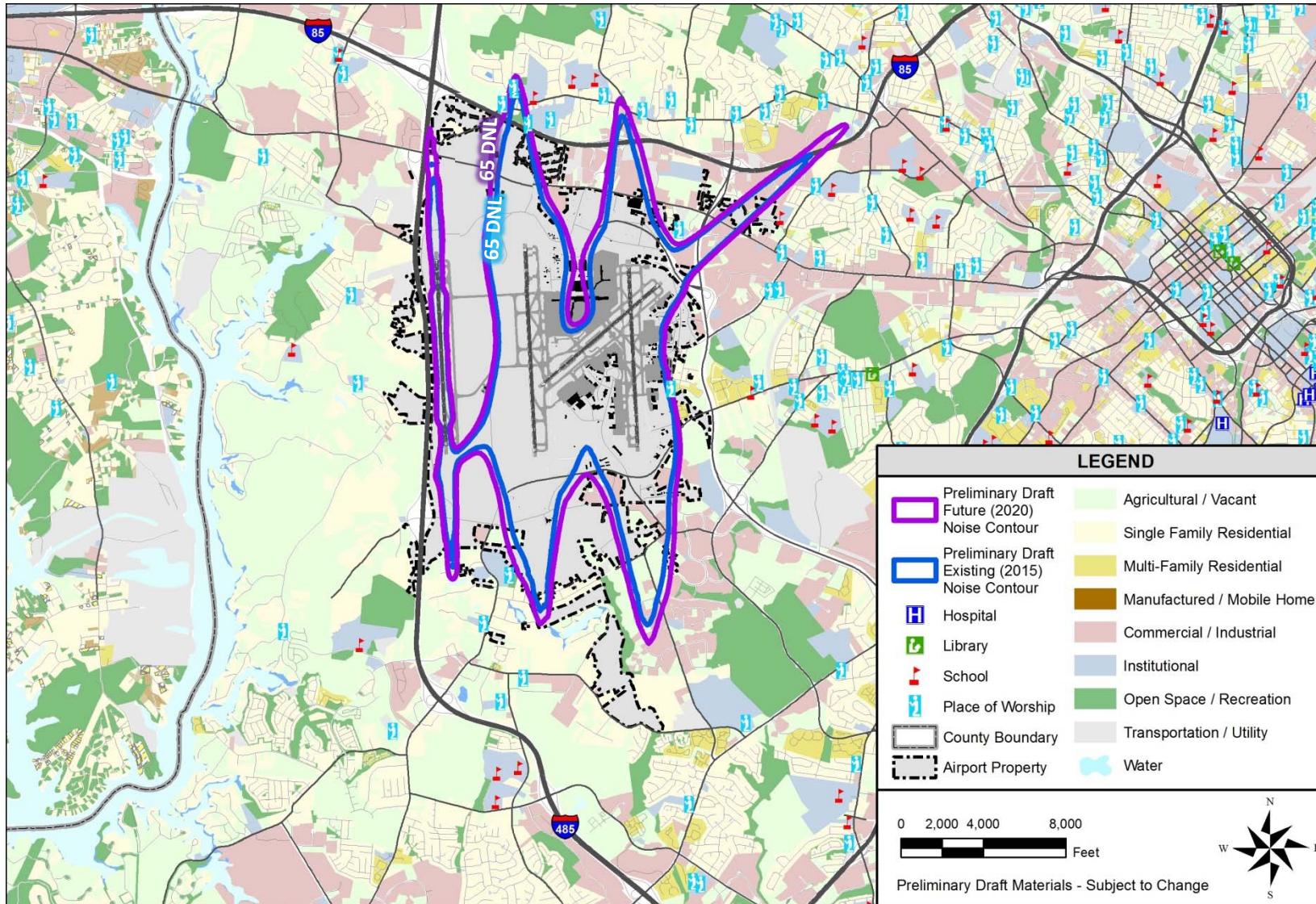
65 DNL
70 DNL
75 DNL

Noise Exposure Map (NEM) Update

Preliminary Draft Noise Contour / Land Use Incompatibilities
Future (2020) Noise Exposure Contour

Properties by Mitigation Area	65+ DNL
Housing Units	
Unmitigated	3
Previously Eligible for Sound Insulation	53
Sound Insulated	5
Total Housing Units	**61**
Population	
Total Population	**160**
Noise-Sensitive Facilities	
Schools	0
Churches	2
Libraries	0
Hospitals	0
Nursing Homes	0
Total Noise-Sensitive Facilities	**2**

Noise Exposure Map (NEM) Update

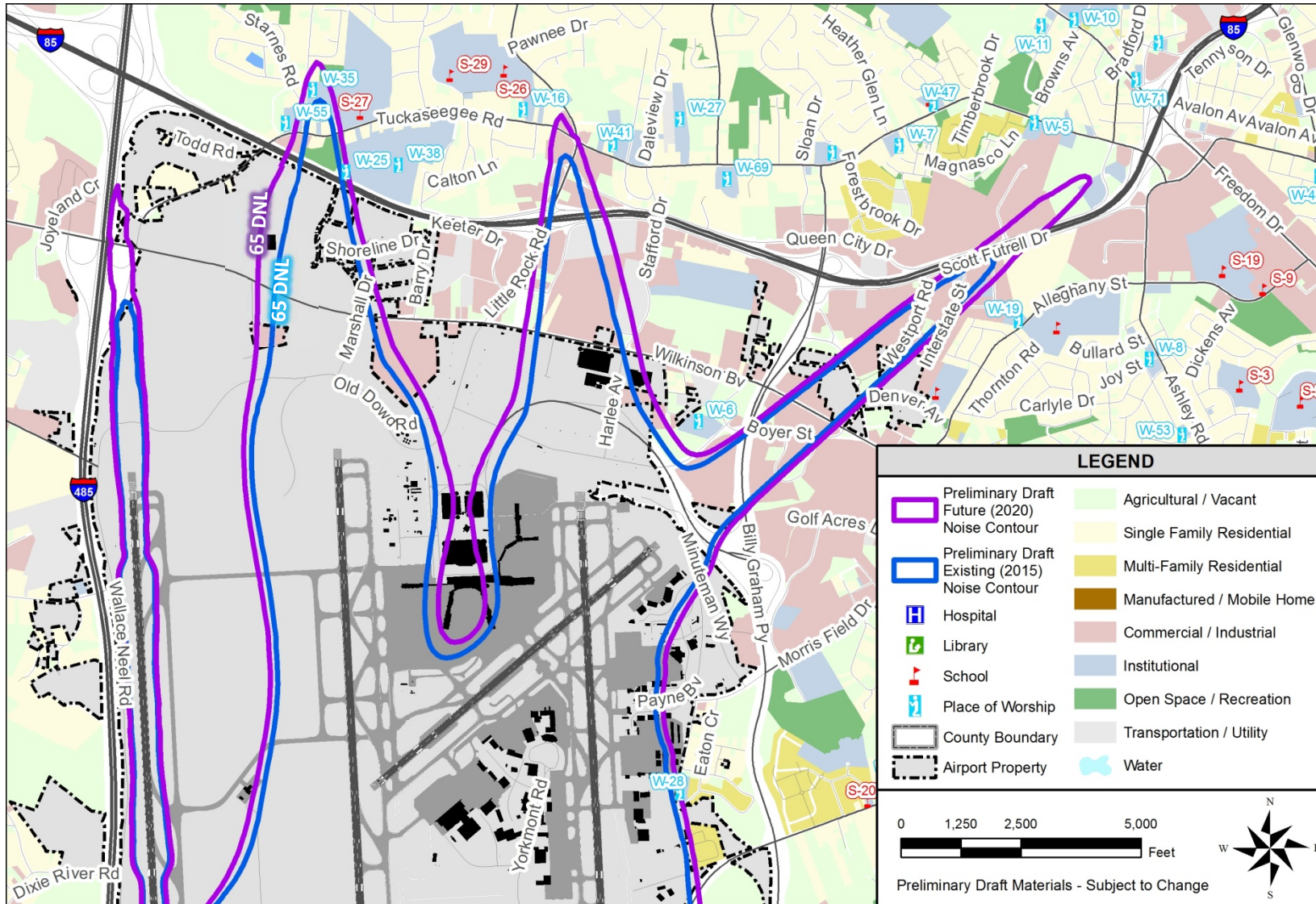## Preliminary Draft Existing (2015) Compared to Future (2020) Noise Exposure Contours

Noise Exposure Map (NEM) Update

Preliminary Draft Existing (2015) Compared to Future (2020) Noise Exposure Contours
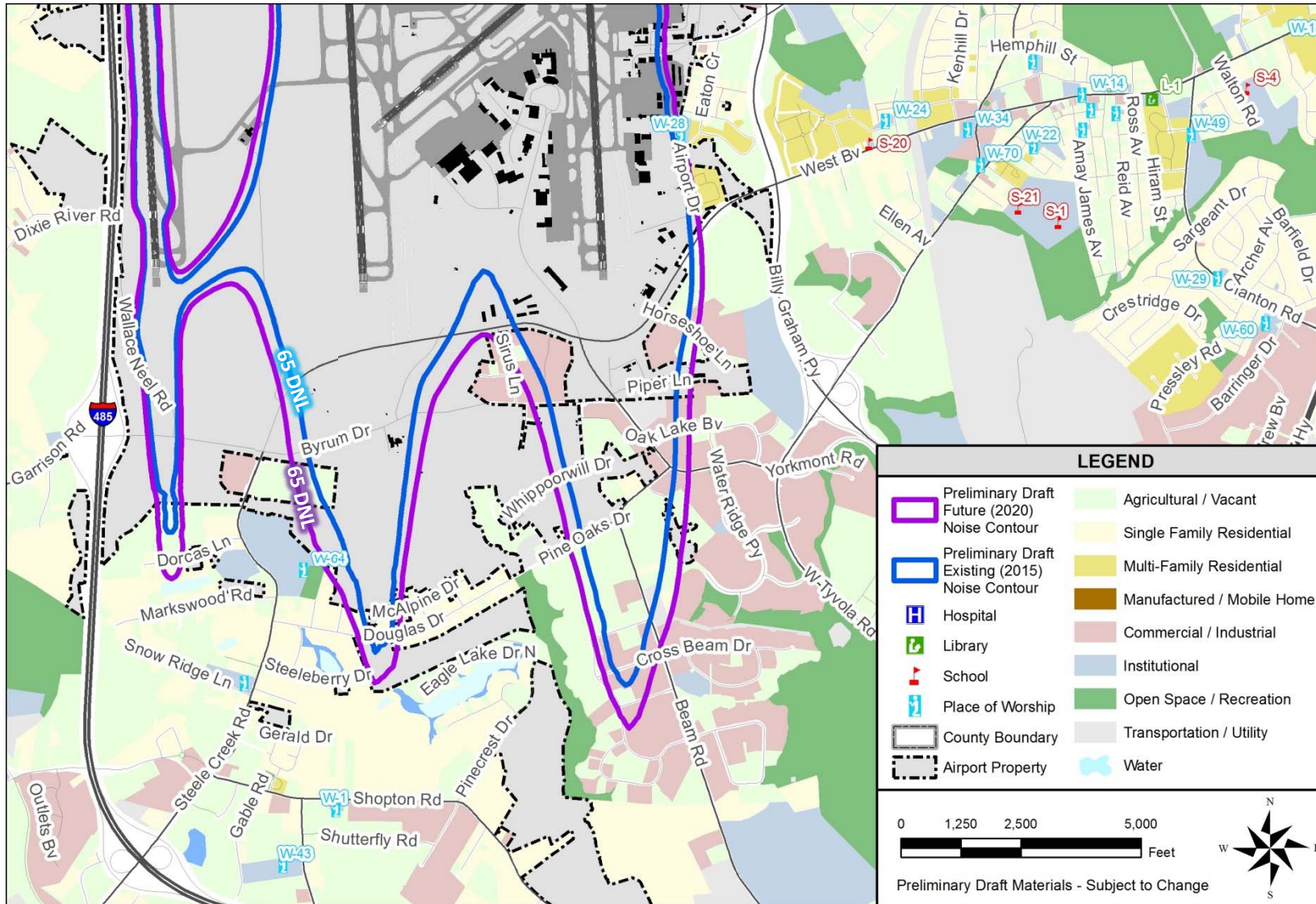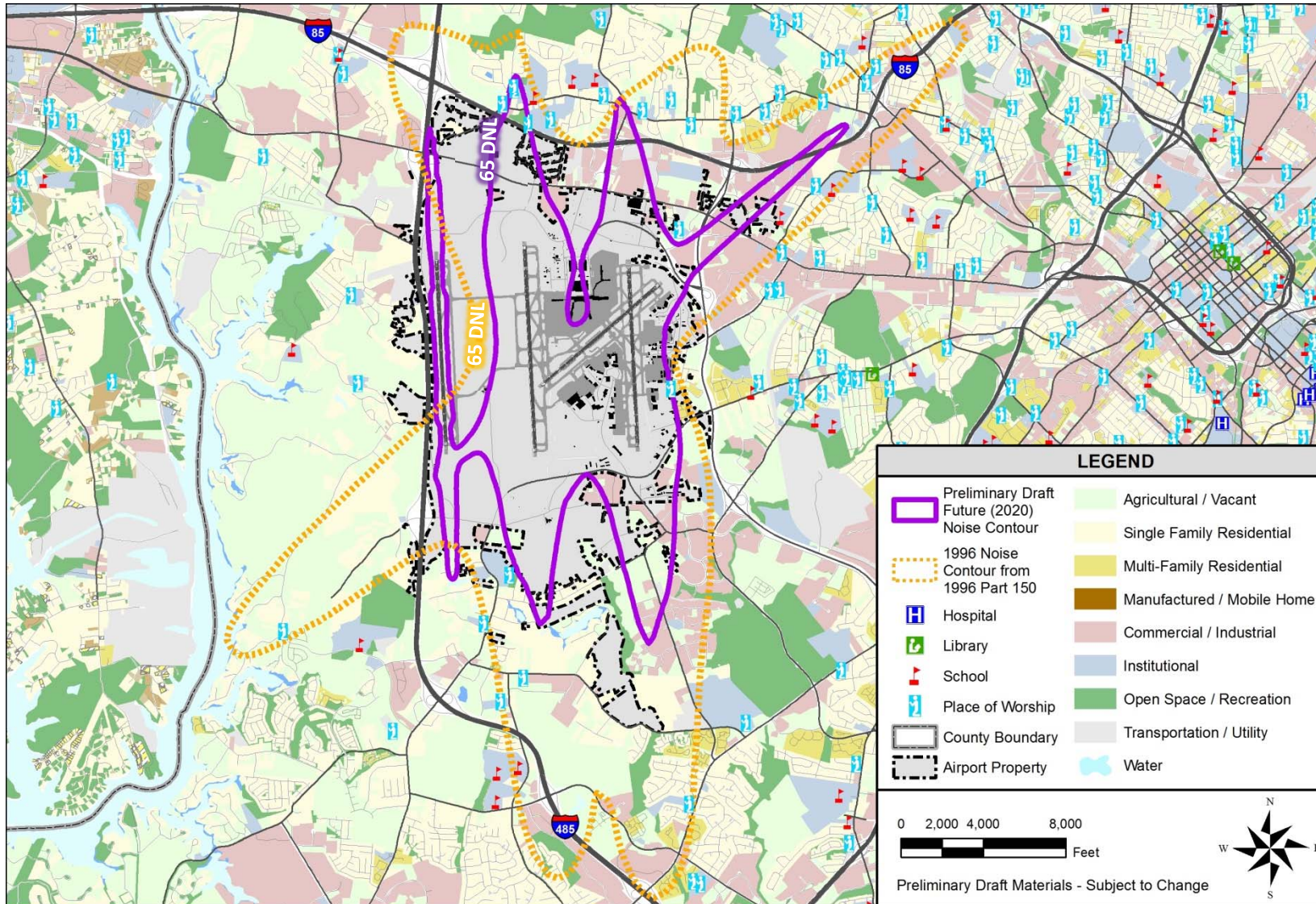
Noise Exposure Map (NEM) Update

Preliminary Draft Existing (2015) Compared to Future (2020) Noise Exposure Contours

Noise Exposure Map (NEM) Update

Preliminary Draft Future (2020) Noise Exposure Contours compared to 1996 Noise Contour

LEGEND

- Preliminary Draft Future (2020) Noise Contour
- 1996 Noise Contour from 1996 Part 150
- H Hospital
- Library
- School
- Place of Worship
- County Boundary
- Airport Property
- Agricultural / Vacant
- Single Family Residential
- Multi-Family Residential
- Manufactured / Mobile Home
- Commercial / Industrial
- Institutional
- Open Space / Recreation
- Transportation / Utility
- Water

0 2,000 4,000 8,000 Feet

Preliminary Draft Materials - Subject to Change

Noise Exposure Map (NEM) Update

Preliminary Draft Noise Contour / Land Use Incompatibilities

Properties by Mitigation Area	1996 Noise contour	2015 Noise Contour	2020 Noise Contour
	65+ DNL		
Housing Units			
Unmitigated	n/a	0	3
Previously Eligible for Sound Insulation	n/a	41	53
Sound Insulated	n/a	3	5
Total Housing Units	**2,773**	**44**	**61**
Population			
Total Population	**6,700**	**113**	**160**
Noise-Sensitive Facilities			
Schools	4	0	0
Churches	15	0	2
Libraries	0	0	0
Hospitals	0	0	0
Nursing Homes	0	0	0
Total Noise-Sensitive Facilities	**19**	**0**	**2**

Noise Exposure Map (NEM) Update

Next Meetings

- **Next Public Information Meetings**
  - Planned for Spring 2015