

APPENDIX A

NOISE MODELING ASSUMPTIONS

Appendix A

Noise Modeling Assumptions

Air Carrier and Commuter:

The air carrier and commuter aircraft operations fleet mix for Piedmont Triad International Airport (PTIA) for existing and future conditions were based on the airport's Landing Fee Reports submitted by the signatory airlines and airline schedules published in the Official Airline Guide for the period May 2003 through April 2004. Projected aircraft fleet mix changes at the airport developed for this aviation activity forecast were based on the most recent changes of airline services at the airport that included the cessation of services by AirTran and Midway airlines and the entry of Independence Air. Throughout the forecast period it was assumed any changes to the airline's overall aircraft fleet would not affect the fleet mix operating into and out of PTIA.

Cargo Aircraft:

Since cargo aircraft perform fewer pressurization cycles, the turnover or attrition of older aircraft within the respective all-cargo fleets is not as significant as with aircraft serving the commercial passenger transport market. Therefore, it was assumed that 1) the fleet mix for non-FedEx cargo operations would remain static throughout the forecast period and 2) changes in the FedEx aircraft fleet mix within the first two years of the Mid-Atlantic Sort Hub operations would be limited only to the gauge (size or aircraft lift capacity) of aircraft. For the purpose of modeling the anticipated change in FedEx fleet mix between the years 2009 and 2011 without increasing the number operations, the relative percentile share of each make and model of aircraft was adjusted. Accordingly, the utilization of the larger aircraft was forecasted with similar decreases in the operations by the smaller gauge aircraft.

General Aviation:

Any change in the fleet mix for general aviation aircraft operating at PTIA, as with any airport, is relatively slight unless there is a major change in operational conditions at the airport. These changes can include a loss or addition of flight training or flight service facility or a major increase in commercial operational levels, forcing the general aviation activity to relocate.

The fleet mix of general aviation jet aircraft operating at PTIA was obtained from information provided by the Air Traffic Control Tower and the Cessna Aircraft Maintenance facility. It is anticipated that throughout the entire forecast period, there will only slight changes to the general aviation fleet mix that operate at PTIA. For noise modeling purposes, the single-engine piston, multi-engine piston and turbo-prop aircraft are typically modeled as a single "composite" aircraft type. With the exception of Lear 25's and Lear 35's, the over-all percent of general aviation operations were held constant. Due to the age of these two specific Lear jets, it was assumed the relative mix of these aircraft would diminish at a constant rate throughout the forecast period to approximately 50 percent of their current level. It was further assumed that the relative share of transient Cessna (CNA) 500's and CNA 750's utilizing the Cessna maintenance facility would reverse with a steady decrease in the relative share of the CNA 500's. Currently, the ratio of CNA 500's to CNA 750's is approximately 70:30; it was assumed this would reverse in the future years at PTIA.

Military Aircraft:

Without any known plans to change the operational conditions at PTIA of military aircraft, the fleet mix was held static throughout the forecast period.

The average daily operations for 2003, 2006 and 2011 are presented in the following tables. The tables provide aircraft fleet mix, arrival operations, departure operations by stage length during day-time and night-time for noise modeling purposes using the FAA's Integrated Noise Model (INM).

**Table A-1
Air Carrier Operations Forecast
Average Daily Operations
Piedmont Triad International Airport**

Airline	Aircraft Type	Arrival						Departures												
		2003		2006		2011		2003				2006				2011				
		Day	Night	Day	Night	Day	Night	Stage Length 1		Stage Length 2		Stage Length 1		Stage Length 2		Stage Length 1		Stage Length 2		
Airtran	DC9	0.93291	0.586315	0	0	0	0	1.336572	0.494812	0	0	0	0	0	0	0	0	0	0	0
Continental	737500	0.366501	0	0	0	0	0	0.51867	0	0	0	0	0	0	0	0	0	0	0	0
Delta	737800	3.114588	0.299021	3.361142	0.361192	3.288452	0.353381	4.024078	0.25218	0	0	4.470506	0.305836	0	0	4.373824	0.299222	0	0	0
	MD88	4.481968	1.124888	4.836765	1.35877	4.732163	1.329385	5.790747	0.948678	0	0	6.433167	1.150526	0	0	6.29404	1.125644	0	0	0
Northwest	DC9	2.099048	0.293158	2.265211	0.35411	2.216223	0.346452	3.331455	0	0	0	0	3.694799	0	0	3.614893	0	0	0	0
United	737300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	737500	2.789402	0.293158	3.010214	0.35411	2.945114	0.346452	0.995646	0.245959	2.986939	0	1.103821	0.30001	3.311463	0	1.079949	0.293522	3.239848	0	0
	A320	0.242557	0	0.261758	0	0.256097	0	0.346312	0	0	0	0.383938	0	0	0	0.375635	0	0	0	0
US Airways	737300	0	0.681801	0	0.823558	0	0.805748	0	0.704484	0	0	0	0.8557	0	0	0	0.837194	0	0	0
	737400	5.297599	0.239552	5.716962	0.289358	5.593324	0.283101	0.618414	0.247521	0	0	0.682735	0.300651	0	0	0.667969	0.294149	0	0	0
TOTAL		19.32457	3.517892	19.45205	3.541099	19.03137	3.464517	16.96189	2.893635	2.986939	0	16.76896	2.912723	3.311463	0	16.40631	2.849731	3.239848	0	0

Source: URS, 2004. Error due to rounding.

Year	2003	2006	2011
Annual Op:	16675	16785	16422
Ave Day	45.68493	45.9863	44.99178
Arr	22.84247	22.99315	22.49589
Dep	22.84247	22.99315	22.49589

**Table A-2
Commuter Operations Forecast
Average Daily Operations
Piedmont Triad International Airport**

Airline	Aircraft Type	Arrival						Departures												
		2003		2006		2011		2003			2006			2011						
		Day	Night	Day	Night	Day	Night	Stage Length 1 Day	Stage Length 1 Night	Stage Length 2 Day	Stage Length 2 Night	Stage Length 1 Day	Stage Length 1 Night	Stage Length 2 Day	Stage Length 2 Night	Stage Length 1 Day	Stage Length 1 Night	Stage Length 2 Day	Stage Length 2 Night	
Airtran	CRJ	2.074274	0.312756	0	0	0	0	2.417078	0.165563	0	0	0	0	0	0	0	0	0	0	0
	RJ	1.068565	0.161117	0	0	0	0	1.245161	0.08529	0	0	0	0	0	0	0	0	0	0	0
Alleghany (US)	DHC810	0.698409	0	0.850602	0	1.031073	0	0	0	0.508644	0	0	0	0.577338	1.172423	0	0	0.69983	1.421173	
American Eagle	ER4	1.955544	0	2.381687	0	2.887004	0	1.83112	0.996034	0	0	2.193883	0	0	2.659354	0	0	0	0	
Atlantic Coast (DL)	FRJ	0.488886	0	0	0	0	0	0.712102	0	0	0	0	0	0	0	0	0	0	0	
Atlantic Coast (UA)	CRJ	1.451992	0.255891	0	0	0	0	0	0.135461	1.579341	0	0	0	0	0	0	0	0	0	
	FRJ	1.720879	0.303278	0	0	0	0	0.804879	0.160546	1.066932	0	0	0	0	0	0	0	0	0	
	J41	2.204876	0.388575	0	0	0	0	2.398258	0.205699	0	0	0	0	0	0	0	0	0	0	
Independence Air	CRJ	0	0	1.932841	0.307877	2.342927	0.373198	0	0	0	0	0	0.158277	2.15116	0	0	0.191858	2.607567	0	
	FRJ	0	0	2.290775	0.364891	2.776803	0.442309	0	0	0	0	1.096295	0.187588	1.453228	0	1.328893	0.227388	1.761556	0	
	J41	0	0	2.935055	0.467516	3.557779	0.566708	0	0	0	0	3.266577	0.240347	0	0	3.959639	0.29134	0	0	
Atlantic Southeast (DL)	CRJ	1.361897	0	1.658675	0	2.010592	0	1.181072	0.206585	0.192268	0.206585	1.489531	0.251233	0.242482	0.251233	1.805562	0.304537	0.293929	0.304537	
Chautauqua (DL)	EMB145	0.488886	0	0.595422	0	0.721751	0	0.508644	0	0	0	0.635071	0	0	0	0.769813	0	0	0	
Chautauqua (US)	EMB145	6.844406	0.846201	8.335904	1.014055	10.10451	1.229204	0	1.283777	1.983713	0	0	1.507401	2.367085	0	0	1.827222	2.869304	0	
COMAIR	CRJ	6.599963	0.710809	2.679398	0.851806	3.247879	1.032531	2.899273	0.250853	0	0	3.52176	0.293106	0	0	4.268964	0.355293	0	0	
COMAIR (DL)	CRJ	2.199988	2.132426	8.038193	2.555417	9.743638	3.097594	8.189174	0.501706	0	0	9.987943	0.586211	0	0	12.10706	0.710586	0	0	
Continental Express	ER4	1.222215	0	1.488554	0	1.804377	0	1.097134	0.195175	0	0	1.456771	0.230054	0	0	1.76585	0.278864	0	0	
	ERJ	4.7841	0	5.826627	0	7.062849	0	3.220872	0.763969	1.073624	0	4.276663	0.900497	1.425554	0	5.184032	1.091553	1.728011	0	
Delta	CRJ	0.244443	0	0.297711	0	0.360875	0	0.254322	0	0	0	0.346403	0	0	0	0.419898	0	0	0	
MESA	CRJ	0.195554	0	0.08506	0	0.103107	0	0.074601	0	0	0	0.092374	0.005583	0	0	0.111973	0.006767	0	0	
	EJZ	1.271104	0	0.552892	0	0.670197	0	0.484908	0	0	0	0.600431	0.036289	0	0	0.727823	0.043989	0	0	
MESA (US)	CRJ	0.187074	0.072531	0.637952	0.086919	0.773305	0.10536	0.817464	0.013175	0	0	1.010341	0	0	0	1.224703	0	0	0	
	EJZ	0.205781	0.079785	0.701747	0.095611	0.850635	0.115896	0.899211	0.014493	0	0	1.111375	0	0	0	1.347173	0	0	0	
	ERJ	0.130952	0.050772	0.446566	0.060843	0.541313	0.073752	0.572225	0.009223	0	0	0.707239	0	0	0	0.857292	0	0	0	
Midway (USAir)	CRJ200	0.209523	0	0	0	0	0	0.203458	0	0	0	0	0	0	0	0	0	0	0	
Northwest	ARJ	0.488886	1.218529	0.595422	1.460238	0.721751	1.770054	0.445572	0.483999	1.039669	0	0.540388	0.569462	1.260906	0	0.655041	0.690284	1.528429	0	
	CRJ	0.733329	1.827794	0.893133	2.190358	1.082626	2.655081	1.559504	0.725998	0.668359	0	1.891358	0.854194	0.810582	0	2.292643	1.035426	0.982561	0	
Piedmont	DHC810	0.698409	0	0.850602	0	1.031073	0	0.775077	0	0	0	0.934737	0	0	0	1.133058	0	0	0	
	DHC830	0.03492	0	0.04253	0	0.051554	0	0.038754	0	0	0	0.046737	0	0	0	0.056653	0	0	0	
Piedmont (USAir)	DHC810	1.536499	0	1.871325	0	2.26836	0	2.014232	0.188287	0	0	2.438675	0.221085	0	0	2.956082	0.267993	0	0	
	DHC830	0.209523	0	0.255181	0	0.309322	0	0.274668	0.025676	0	0	0.332547	0.030148	0	0	0.403102	0.036544	0	0	
PSA (US)	FRJ	1.187295	0.406176	1.446024	0.486746	1.752824	0.590018	1.576797	0.177073	0	0	1.905214	0.209361	0	0	2.309439	0.253781	0	0	
Shuttle America	SF340	0.279363	0.203088	0.340241	0.243373	0.412429	0.295009	0.305187	0.250853	0	0	0.346403	0.293106	0	0	0.419898	0.355293	0	0	
Skywest (DL)	CRJ200	1.815863	0	2.211566	0	2.680789	0	0	0.91556	0.501706	0	0	1.096942	0.586211	0	0	1.329677	0.710586	0	
Trans State	J41	2.479351	0	2.679398	0	3.247879	0	2.390628	0	0	0	2.886689	0	0	0	3.499151	0	0	0	
Trans State (US)	J41	1.983087	0	2.721928	0	3.299433	0	2.384181	0.033253	0	0	2.914336	0.037744	0	0	3.532664	0.045752	0	0	
	RJS	0.2169	0	0.297711	0	0.360875	0	0.26077	0.003637	0	0	0.318755	0.004128	0	0	0.386385	0.005004	0	0	
TOTAL		49.27274	8.969729	55.94072	10.18565	67.80953	12.34672	41.83633	6.876324	9.02811	0.708291	46.3485	6.615813	11.38528	2.009867	56.18215	8.019475	13.80086	2.436296	

Source: URS, 2004. Error due to rounding.

Year	2003	2006	2011
Annual Op	42517	48259	58498
Ave Day	116.4849	132.2164	160.2685
Arr	58.24247	66.10822	80.13425
Dep	58.24247	66.10822	80.13425

**Table A-3
Cargo Operations Forecast
Average Daily Operations
Piedmont Triad International Airport**

Non-FedEx Cargo Operations																		
	Arrival Operations						Departure Operations											
	2003		2006		2011		2003				2006				2011			
Aircraft							Stage Length 1		Stage Length 3		Stage Length 1		Stage Length 3		Stage Length 1		Stage Length 3	
Type	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
A300B4	0.51757	0	0.587254	0	0.708309	0	0	0	0.529072	0	0	0	0.600304	0	0	0	0.724049	0
B757	0.51757	0.51757	0.587254	0.587254	0.708309	0.708309	0	1.058143	0	0	0	1.200609	0	0	0	1.448097	0	0
C208	1.03514	0	1.174509	0	1.416617	0	0	1.058143	0	0	0	1.200609	0	0	0	1.448097	0	0
DC930	0.51757	0.621084	0.587254	0.704705	0.708309	0.84997	0	1.058143	0	0	0	1.200609	0	0	0	1.448097	0	0
F27	1.03514	0	1.174509	0	1.416617	0	1.05814	0	0	0	1.200609	0	0	0	1.448097	0	0	0
TOTAL	3.62299	1.138654	4.11078	1.291959	4.95816	1.558279	1.058143	3.174429	0.529072	0	1.200609	3.601826	0.600304	0	1.448097	4.344292	0.724049	0

FedEx Cargo Operations																		
	Arrival Operations						Departure Operations											
	2003		2006		2011		2003				2006				2011			
							Stage Length 1		Stage Length 2		Stage Length 1		Stage Length 2		Stage Length 1		Stage Length 2	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
A300	0.408611	0.743388	0.463601	0.843432	0.637483	4.876742	0	0	0.034387	0.855409	0	0	0.039015	0.970529	0.579738	3.51005	0	1.422993
A310-Pratt	0.051076	0.424793	0.05795	0.481961	0.573734	1.87567	0.209226	0	0.016047	0	0.237383	0	0.018207	0	0.521764	1.350019	0	0.547305
B727-200	0	0.743388	0	0.843432	0.063748	4.876742	0	0	0.022925	1.283114	0	0	0.02601	1.455793	0.057974	3.51005	0	1.422993
C208	0.255382	0.02124	0.28975	0.024098	0	0	0	0	0.005731	0	0	0	0.006502	0	0	0	0	0
DC10-10	0	0.212397	0	0.240981	0.063748	2.025724	0	0	0.005731	0.427705	0	0	0.006502	0.485264	0.057974	1.458021	0	0.591089
ATR 72	0	0	0	0	0.573734	1.350482	0	0	0	0	0	0	0	0	0.521764	0.972014	0	0.39406
TOTAL	0.715068	2.145205	0.811301	2.433904	1.912448	15.00536	0.209226	0	0.084821	2.566227	0.237383	0	0.096236	2.911586	1.739214	10.80015	0	4.378441

Source: URS, 2004. Error due to rounding.

Other	2003	2006	2011	FedEx	2003	2006	2011
Annual	3476	3944	4757	Annual	2088	2369	12350
Ave Daily	9.523288	10.80548	13.03288	Ave Daily	5.720548	6.490411	33.83562
Arr	4.761644	5.40274	6.516438	Arr	2.860274	3.245205	16.91781
Dep	4.761644	5.40274	6.516438	Dep	2.860274	3.245205	16.91781

**Table A-4
General Aviation Forecast
Average Daily Operations
Piedmont Triad International Airport**

	Itinerant Operations												Local Operations					
	Arrival Operations						Departure Operations						2003		2006		2011	
	2003		2006		2011		2003		2006		2011		Day	Night	Day	Night	Day	Night
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Single Engine Piston	24.279	2.698	24.956	2.773	26.619	2.958	24.279	2.698	24.956	2.773	26.619	2.958	17.037		17.457		18.662	
Twin Engine Piston	4.856	0.540	4.991	0.555	5.324	0.592	4.856	0.540	4.991	0.555	5.324	0.592	3.407		3.491		3.732	
Turbo Prop	6.243	0.694	6.417	0.713	6.845	0.761	6.243	0.694	6.417	0.713	6.845	0.761						
Jet																		
737300	0.173	0.022	0.201	0.022	0.214	0.024	0.173	0.019	0.201	0.022	0.214	0.024						
A300	0.029	0.004	0.034	0.004	0.036	0.004	0.029	0.003	0.034	0.004	0.036	0.004						
CIT3	0.925	0.116	1.072	0.119	1.144	0.127	0.925	0.103	1.072	0.119	1.144	0.127						
CL601	0.809	0.101	0.938	0.104	1.001	0.111	0.809	0.090	0.938	0.104	1.001	0.111						
CNA500	2.081	0.080	0.737	0.082	0.786	0.087	2.081	0.231	0.737	0.082	0.786	0.087						
CNA750	0.636	0.261	2.412	0.268	2.573	0.286	0.636	0.071	2.412	0.268	2.573	0.286						
EMB145	0.058	0.007	0.067	0.007	0.071	0.008	0.058	0.006	0.067	0.007	0.071	0.008						
FAL20	0.809	0.101	0.938	0.104	1.001	0.111	0.809	0.090	0.938	0.104	1.001	0.111						
GII	0.058	0.007	0.067	0.007	0.071	0.008	0.058	0.006	0.067	0.007	0.071	0.008						
GIIB	0.116	0.014	0.134	0.015	0.143	0.016	0.116	0.013	0.134	0.015	0.143	0.016						
GIV	0.173	0.022	0.201	0.022	0.214	0.024	0.173	0.019	0.201	0.022	0.214	0.024						
GV	0.058	0.007	0.067	0.007	0.071	0.008	0.058	0.006	0.067	0.007	0.071	0.008						
IA1125	0.202	0.025	0.235	0.026	0.250	0.028	0.202	0.022	0.235	0.026	0.250	0.028						
LEAR25	0.983	0.062	0.570	0.063	0.608	0.068	0.983	0.109	0.570	0.063	0.608	0.068						
LEAR35	2.370	0.148	1.374	0.153	1.465	0.163	2.370	0.263	1.374	0.153	1.465	0.163						
MD81	0.029	0.004	0.034	0.004	0.036	0.004	0.029	0.003	0.034	0.004	0.036	0.004						
MU3001	5.289	0.663	6.131	0.681	6.540	0.727	5.289	0.588	6.131	0.681	6.540	0.727						
TOTAL	50.177	5.575	51.576	5.731	55.012	6.112	50.177	5.575	51.576	5.731	55.012		20.444		20.948		22.395	

Source: URS, 2004 Error due to rounding.

Itinerant	2003	2006	2011	Local	2003	2006	2011
Annual	40699	41834	44621	Annual	7462	7646	8174
Ave Daily	111.5041	114.6137	122.2493	Ave Daily	20.44384	20.94795	22.39452
Arr	55.75205	57.30685	61.12466	Arr	10.22192	10.47397	11.19726
Dep	55.75205	57.30685	61.12466	Dep	10.22192	10.47397	11.19726

**Table A-5
Military Operations Forecast
Average Daily Operations
Piedmont Triad International Airport**

Aircraft Type	Itinerant Operations												Local Operations					
	Arrival Operations						Departure Operations						2003		2006		2011	
	2003		2006		2011		2003		2006		2011		Day	Night	Day	Night	Day	Night
BE20	0.05994	0.00666	0.06081	0.006757	0.06081	0.006757	0.05994	0.00666	0.06081	0.006757	0.06081	0.006757	0.193151	0	0.304795	0	0.304795	0
AH-1	0.139859	0.01554	0.14189	0.015766	0.14189	0.015766	0.139859	0.01554	0.14189	0.015766	0.14189	0.015766	0	0	0	0	0	0
CNA650	0.139859	0.01554	0.14189	0.015766	0.14189	0.015766	0.139859	0.01554	0.14189	0.015766	0.14189	0.015766	0	0	0	0	0	0
H60	0.03996	0.00444	0.04054	0.004504	0.04054	0.004504	0.03996	0.00444	0.04054	0.004504	0.04054	0.004504	0	0	0	0	0	0
AC95	0.03996	0.00444	0.04054	0.004504	0.04054	0.004504	0.03996	0.00444	0.04054	0.004504	0.04054	0.004504	0.193151	0	0.304795	0	0.304795	0
CNA210	0.03996	0.00444	0.04054	0.004504	0.04054	0.004504	0.03996	0.00444	0.04054	0.004504	0.04054	0.004504	0.193151	0	0.304795	0	0.304795	0
T34	0.05994	0.00666	0.06081	0.006757	0.06081	0.006757	0.05994	0.00666	0.06081	0.006757	0.06081	0.006757	0.193151	0	0.304795	0	0.304795	0
F15	0.079919	0.00888	0.08108	0.009009	0.08108	0.009009	0.079919	0.00888	0.08108	0.009009	0.08108	0.009009	0	0	0	0	0	0
UH60	0.05994	0.00666	0.06081	0.006757	0.06081	0.006757	0.05994	0.00666	0.06081	0.006757	0.06081	0.006757	0	0	0	0	0	0
CNA560	0.01998	0.00222	0.02027	0.002252	0.02027	0.002252	0.01998	0.00222	0.02027	0.002252	0.02027	0.002252	0	0	0	0	0	0
TOTAL	0.679315	0.075479	0.689178	0.076575	0.689178	0.076575	0.679315	0.075479	0.689178	0.076575	0.689178	0.076575	0.772603	0	1.219178	0	1.219178	0

Source: URS, 2004 Error due to rounding.

Itinerant	2003	2006	2011	Local	2003	2006	2011
Annual	551	559	559	Annual	282	445	445
Ave Daily	1.509589	1.531507	1.531507	Ave Daily	0.772603	1.219178	1.219178
Arr	0.754795	0.765753	0.765753	Arr	0.386301	0.609589	0.609589
Dep	0.754795	0.765753	0.765753	Dep	0.386301	0.609589	0.609589