

Appendix E

FORECAST SUPPLEMENTAL

Airport Master Plan
Georgetown Municipal Airport

In January 2018, the FAA requested the opportunity to review the forecasts of aviation demand provided in Chapter Two of this master plan. While the selected forecasts for based aircraft and operations were acceptable to FAA, they requested more detailed information related to the regression analysis component for each forecast. Specifically, they requested the detailed input data for the regression analysis. The following data is included:

- Regression Analysis – Registered Aircraft
- Regression Analysis – Based Aircraft
- Regression Analysis – Local Operations
- Terminal Area Forecast Worksheets – FAA Comparison to the TAF
- 2018 Terminal Area Forecast

**Georgetown Municipal Airport
Registered Aircraft Regression Analysis**

<i>Regression Statistics</i>	
Multiple R	0.975400685
R Square	0.951406496
Adjusted R Square	0.92931854
Standard Error	19.3947636
Observations	17

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	81012.0393	16202.40786	43.07354138	7.38602E-07
Residual	11	4137.725405	376.156855		
Total	16	85149.76471			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	98200.82432	30701.99929	3.19851562	0.008477043	30626.17949	165775.4691
X1 - Year	-49.72791312	15.54380237	-3.199211618	0.008466547	-83.93959145	-15.51623478
X2 - Active Aircraft	0.004675261	0.000644901	7.249574321	1.64502E-05	0.003255842	0.006094679
X3 - Population	0.002139782	0.000452385	4.729998997	0.000619359	0.001144089	0.003135476
X4 - Employment	-0.000740504	0.000434169	-1.705566195	0.1161298	-0.001696105	0.000215096
X5 - Income	-0.008489264	0.006678238	-1.271183273	0.229886073	-0.023187966	0.006209438

Y1 - Registered Aircraft	X1 - Year	X2 - Active Aircraft	X3 - Population	X4 - Employment	X5 - Income
1,323	2021	203,225	1,909,317	1,326,950	50,755
1,394	2026	204,030	2,127,274	1,487,886	54,391
1,662	2036	210,695	2,618,924	1,837,119	61,359

Regression Inputs

Y1 - Registered Aircraft	X1 - Year	X2 - Active Aircraft	X3 - Population	X4 - Employment	X5 - Income
1,121	2000	217,533	1,075,071	769,597	\$42,009
1,176	2001	211,446	1,121,817	779,267	\$40,787
1,172	2002	211,244	1,138,202	769,836	\$38,600
1,169	2003	209,606	1,159,210	773,213	\$38,429
1,202	2004	219,319	1,187,341	793,775	\$38,859
1,192	2005	224,257	1,223,435	833,997	\$40,515
1,196	2006	221,942	1,277,121	874,574	\$41,704
1,295	2007	231,606	1,329,122	924,846	\$41,791
1,300	2008	228,664	1,376,136	955,139	\$43,219
1,310	2009	223,876	1,417,303	948,260	\$40,683
1,341	2010	223,370	1,456,984	959,527	\$41,210
1,375	2011	220,453	1,505,091	994,002	\$42,678
1,302	2012	209,034	1,553,697	1,026,899	\$45,074
1,267	2013	199,927	1,593,973	1,076,871	\$44,524
1,269	2014	204,408	1,640,395	1,117,231	\$45,470
1,294	2015	203,880	1,675,333	1,146,746	\$46,506
1,318	2016	203,425	1,712,292	1,176,271	\$47,216

**Georgetown Municipal Airport
Based Aircraft Regression Analysis**

<i>Regression Statistics</i>	
Multiple R	0.981705904
R Square	0.963746482
Adjusted R Square	0.94726761
Standard Error	4.769955491
Observations	17

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	6653.252183	1330.650437	58.48376557	1.49868E-07
Residual	11	250.2772292	22.75247539		
Total	16	6903.529412			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	5587.850584	6031.017474	0.926518719	0.374057885	-7686.329377	18862.03055
X1 - Year	-2.69202994	3.060852009	-0.879503463	0.397934885	-9.428919788	4.044859908
X2 - Registered Aircraft	0.088899791	0.056478366	1.574050335	0.14377834	-0.035408255	0.213207838
X3 - Active Aircraft	-0.000857282	0.000277443	-3.089941163	0.010287146	-0.001467929	-0.000246634
X4 - Population	-3.20467E-05	0.000121956	-0.262771806	0.797582958	-0.000300471	0.000236377
X5 - Employment	0.0002289	8.45444E-05	2.707450346	0.020383552	4.28188E-05	0.000414981

Y1 - Based Aircraft	X1 - Year	X2 - Registered Aircraft	X3 - Active Aircraft	X4 - Population	X5 - Employment	X6 - Income
336	2021	1360	203,225	1,909,317	1,326,950	50755
358	2026	1420	204,030	2,127,274	1,487,886	54391
403	2036	1580	210,695	2,618,924	1,837,119	61359

Regression Inputs

Y1 - Based Aircraft	X1 - Year	X2 - Registered Aircraft	X3 - Active Aircraft	X4 - Population	X5 - Employment	X6 - Income
268	2000	1,121	217,533	1,075,071	769,597	42,009
264	2001	1,176	211,446	1,121,817	779,267	40,787
261	2002	1,172	211,244	1,138,202	769,836	38,600
256	2003	1,169	209,606	1,159,210	773,213	38,429
256	2004	1,202	219,319	1,187,341	793,775	38,859
256	2005	1,192	224,257	1,223,435	833,997	40,515
261	2006	1,196	221,942	1,277,121	874,574	41,704
266	2007	1,295	231,606	1,329,122	924,846	41,791
272	2008	1,300	228,664	1,376,136	955,139	43,219
277	2009	1,310	223,876	1,417,303	948,260	40,683
283	2010	1,341	223,370	1,456,984	959,527	41,210
288	2011	1,375	220,453	1,505,091	994,002	42,678
294	2012	1,302	209,034	1,553,697	1,026,899	45,074
300	2013	1,267	199,927	1,593,973	1,076,871	44,524
306	2014	1,269	204,408	1,640,395	1,117,231	45,470
312	2015	1,294	203,880	1,675,333	1,146,746	46,506
318	2016	1,318	203,425	1,675,333	1,146,746	46,506

**Georgetown Municipal Airport
Local Operations Regression Analysis**

Regression Statistics	
Multiple R	0.9794
R Square	0.9593
Adjusted R Square	0.8914
Standard Error	2659.2353
Observations	9

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	499469981.4745	99893996.2949	14.1262	0.0269
Residual	3	21214596.7477	7071532.2492		
Total	8	520684578.2222			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-23548508.1287	20852624.0243	-1.1293	0.3409	-89910864.4102	42813848.1528	-89910864.4102	42813848.1528
X1 - Year	11746.2836	10597.1267	1.1084	0.3485	-21978.5031	45471.0703	-21978.5031	45471.0703
X2 - FAA Local GA Op	0.0134	0.0136	0.9858	0.3969	-0.0298	0.0566	-0.0298	0.0566
X3 - Population	0.0192	0.5143	0.0373	0.9726	-1.6176	1.6560	-1.6176	1.6560
X4 - Employment	-0.2710	0.3669	-0.7387	0.5136	-1.4385	0.8965	-1.4385	0.8965
X5 - Income	0.9592	2.8118	0.3411	0.7555	-7.9891	9.9076	-7.9891	9.9076

X2 - FAA Local GA					
Y1 - Operations	X1 - Year	Operations	X3 - Population	X4 - Employment	X5 - Income
77,343	2021	12,011,000	1,909,317	1,326,950	50,755
103,399	2026	12,255,000	2,127,274	1,487,886	54,391
149,266	2036	12,772,000	2,618,924	1,837,119	61,359

Regression Inputs					
X2 - FAA Local GA					
Y1 - Operations	X1 - Year	Operations	X3 - Population	X4 - Employment	X5 - Income
35,961	2008	14,081,000	1,376,136	955,139	43,219
25,153	2009	12,448,000	1,417,303	948,260	40,683
25,066	2010	11,716,000	1,456,984	959,527	41,210
28,579	2011	11,437,000	1,505,091	994,002	42,678
34,632	2012	11,608,000	1,553,697	1,026,899	45,074
36,015	2013	11,688,000	1,593,973	1,076,871	44,524
37,697	2014	11,675,000	1,640,395	1,117,231	45,470
39,426	2015	11,691,000	1,675,333	1,146,746	46,506
50,972	2016	11,776,000	1,712,292	1,176,271	47,216

Template for Comparing Airport Planning and TAF Forecasts

(Sample data shown - replace with actuals)

AIRPORT NAME: Georgetown Municipal Airport (GTU)

	<u>Year</u>	<u>Airport Forecast</u>	<u>2017 TAF</u>	<u>AF/TAF (% Difference)</u>		
Passenger Enplanements						
Base yr.	2016	0	0	#DIV/0!		
Base yr. + 5yrs.	2021	0	0	#DIV/0!		
Base yr. + 10yrs.	2026	0	0	#DIV/0!		
Base yr. + 15yrs.	2031	0	0	#DIV/0!		
Commercial Operations						
					2018 TAF	
Base yr.	2016	811	639	26.9%	776	4.5%
Base yr. + 5yrs.	2021	800	639	25.2%	934	-14.3%
Base yr. + 10yrs.	2026	1,100	639	72.1%	934	17.8%
Base yr. + 15yrs.	2031	1,285	639	101.1%	934	37.6%
Total Operations						
Base yr.	2016	97,346	78,035	24.7%	92,742	5.0%
Base yr. + 5yrs.	2021	107,900	79,833	35.2%	109,424	-1.4%
Base yr. + 10yrs.	2026	122,100	81,674	49.5%	113,676	7.4%
Base yr. + 15yrs.	2031	127,615	83,559	52.7%	118,115	8.0%

**NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).
AF/TAF (% Difference) column has embedded formulas.**

Template for Summarizing and Documenting Airport Planning Forecasts
(Sample data shown - replace with actuals)

A. Forecast Levels and Growth Rates

AIRPORT NAME:	Georgetown Municipal Airport (GTU)					Specify base year: 2016				
	<u>Base Yr. Level</u>	<u>Base Yr. + 1yr.</u>	<u>Base Yr. + 5vrs.</u>	<u>Base Yr. + 10vrs.</u>	<u>Base Yr. + 15vrs.</u>	<u>Base yr. to +1</u>	<u>Base yr. to +5</u>	<u>Base yr. to +10</u>	<u>Base yr. to +15</u>	
Passenger Enplanements										
Air Carrier	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
Commuter	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
TOTAL	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
Operations										
<u>Itinerant</u>										
Air carrier	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
Commuter/air taxi	811	809	800	1,100	1,285	-0.2%	-0.3%	3.1%	3.1%	
Total Commercial Operations	811	809	800	1,100	1,285	-0.2%	-0.3%	3.1%	3.1%	
General aviation	45,006	45,722	48,700	53,400	55,412	1.6%	1.6%	1.7%	1.4%	
Military	207	200	200	200	200	-3.4%	-0.7%	-0.3%	-0.2%	
<u>Local</u>										
General aviation	50,972	52,306	58,000	67,200	70,518	2.6%	2.6%	2.8%	2.2%	
Military	350	200	200	200	200	-42.9%	-10.6%	-5.4%	-3.7%	
TOTAL OPERATIONS	97,346	99,237	107,900	122,100	127,615	1.9%	2.1%	2.3%	1.8%	
Instrument Operations	2,301	2,337	2,485	2,735	2,845	1.6%	1.6%	1.7%	1.4%	
Peak Hour Operations	34	36	47	54	56	5.9%	6.7%	4.7%	3.4%	
Cargo/mail (enplaned+deplaned tons)	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
Based Aircraft										
Single Engine (Nonjet)	251	254	267	290	300	1.2%	1.2%	1.5%	1.2%	
Multi Engine (Nonjet)	24	24	25	26	26	0.0%	0.8%	0.8%	0.5%	
Jet Engine	35	36	39	43	46	2.9%	2.2%	2.1%	1.8%	
Helicopter	8	8	9	11	12	0.0%	2.4%	3.2%	2.7%	
Other	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	
TOTAL	318	322	340	370	384	1.3%	1.3%	1.5%	1.3%	

B. Operational Factors

	<u>Base Yr. Level</u>	<u>Base Yr. + 1yr.</u>	<u>Base Yr. + 5vrs.</u>	<u>Base Yr. + 10vrs.</u>	<u>Base Yr. + 15vrs.</u>
Average aircraft size (seats)					
Air carrier	0.0	0.0	0.0	0.0	0.0
Commuter	0.0	0.0	0.0	0.0	0.0
Average enplaning load factor					
Air carrier	0.0%	0.0%	0.0%	0.0%	0.0%
Commuter	0.0%	0.0%	0.0%	0.0%	0.0%
GA operations per based aircraft	302	304	314	326	328

**Note: Show base plus one year if forecast was done.
If planning effort did not include all forecast years shown
interpolate years as needed, using average annual
compound growth rates.**

NOTE: Right hand side of worksheet has embedded formulas for average annual compound growth rate calculations

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued January 2018

GTU

AIRCRAFT OPERATIONS

Fiscal Year	Enplanements			Itinerant Operations				Local Operations			Total Tracon Ops	Based Aircraft		
	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military			Total	
REGION:ASW STATE:TX LOCID:GTU														
CITY:GEORGETOWN AIRPORT:GEORGETOWN MUNI														
1992	0	0	0	0	800	18,000	800	19,600	28,500	0	28,500	48,100	0	0
1993	0	0	0	0	800	18,000	800	19,600	28,500	0	28,500	48,100	0	0
1994	0	0	0	0	800	18,000	800	19,600	28,500	0	28,500	48,100	0	0
1995	0	0	0	0	800	18,000	800	19,600	28,500	0	28,500	48,100	0	0
1996	0	0	0	0	800	28,730	800	30,330	56,659	0	56,659	86,989	0	0
1997	0	0	0	0	800	28,730	800	30,330	56,659	0	56,659	86,989	0	0
1998	0	0	0	0	873	28,730	800	30,403	56,659	0	56,659	87,062	0	133
1999	0	0	0	0	873	35,259	800	36,932	78,053	0	78,053	114,985	0	201
2000	0	0	0	0	858	39,375	786	41,019	58,347	0	58,347	99,366	0	268
2001	0	0	0	0	873	43,035	800	44,708	63,771	0	63,771	108,479	0	278
2002	0	0	0	0	873	47,513	800	49,186	71,270	0	71,270	120,456	0	278
2003	0	0	0	0	907	49,176	800	50,883	74,665	0	74,665	125,548	0	287
2004	0	0	0	0	940	51,474	800	53,214	77,971	0	77,971	131,185	0	256
2005	0	0	0	0	974	53,276	800	55,050	81,362	0	81,362	136,412	0	256
2006	0	0	0	0	1,001	55,141	800	56,942	83,989	0	83,989	140,931	0	256
2007	0	0	0	0	1,029	57,071	800	58,900	86,700	0	86,700	145,600	0	256
2008	0	0	0	20	1,342	34,387	238	35,987	34,337	490	34,827	70,814	0	216
2009	0	0	0	0	928	34,550	143	35,621	27,853	212	28,065	63,686	0	216
2010	1	0	1	5	1,018	31,625	240	32,888	23,923	247	24,170	57,058	0	216
2011	0	0	0	6	665	34,698	315	35,684	27,921	252	28,173	63,857	0	193
2012	0	0	0	3	332	33,573	155	34,063	33,322	64	33,386	67,449	0	198
2013	0	0	0	0	396	33,333	77	33,806	35,271	111	35,382	69,188	0	198

Fiscal Year	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil	Military	Total	Total Ops	Total Tracon Ops	Based Aircraft
2014	0	0	0	0	441	33,893	74	34,408	38,599	72	38,671	73,079	0	187
2015	0	0	0	0	639	35,380	131	36,150	38,582	207	38,789	74,939	0	292
2016	0	0	0	0	776	43,380	195	44,351	48,069	322	48,391	92,742	0	319
2017*	0	0	0	0	934	46,350	184	47,468	54,224	277	54,501	101,969	0	325
2018*	0	0	0	0	934	48,068	184	49,186	57,495	277	57,772	106,958	0	336
2019*	0	0	0	0	934	48,308	184	49,426	58,070	277	58,347	107,773	0	347
2020*	0	0	0	0	934	48,549	184	49,667	58,651	277	58,928	108,595	0	353
2021*	0	0	0	0	934	48,792	184	49,910	59,237	277	59,514	109,424	0	361

APO TERMINAL AREA FORECAST DETAIL REPORT
Forecast Issued January 2018

GTU

AIRCRAFT OPERATIONS

Fiscal Year	Enplanements			Itinerant Operations			Local Operations			Total Ops	Total Tracon Ops	Based Aircraft				
	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Total	Civil				Military	Total		
2022*	0	0	0	0	0	0	0	0	184	50,154	59,829	277	60,106	110,260	0	375
2023*	0	0	0	0	0	0	0	0	184	50,399	60,427	277	60,704	111,103	0	381
2024*	0	0	0	0	0	0	0	0	184	50,645	61,032	277	61,309	111,954	0	389
2025*	0	0	0	0	0	0	0	0	184	50,892	61,643	277	61,920	112,812	0	397
2026*	0	0	0	0	0	0	0	0	184	51,140	62,259	277	62,536	113,676	0	405
2027*	0	0	0	0	0	0	0	0	184	51,390	62,882	277	63,159	114,549	0	413
2028*	0	0	0	0	0	0	0	0	184	51,641	63,511	277	63,788	115,429	0	421
2029*	0	0	0	0	0	0	0	0	184	51,893	64,146	277	64,423	116,316	0	429
2030*	0	0	0	0	0	0	0	0	184	52,147	64,787	277	65,064	117,211	0	438
2031*	0	0	0	0	0	0	0	0	184	52,402	65,436	277	65,713	118,115	0	447
2032*	0	0	0	0	0	0	0	0	184	52,658	66,090	277	66,367	119,025	0	456
2033*	0	0	0	0	0	0	0	0	184	52,916	66,750	277	67,027	119,943	0	465
2034*	0	0	0	0	0	0	0	0	184	53,175	67,418	277	67,695	120,870	0	476
2035*	0	0	0	0	0	0	0	0	184	53,435	68,092	277	68,369	121,804	0	487
2036*	0	0	0	0	0	0	0	0	184	53,696	68,773	277	69,050	122,746	0	498

1/26/2018	https://taf.faa.gov/Home/RunReport														
2037*	0	0	0	0	0	934	52,840	184	53,958	69,461	277	69,738	123,696	0	509
2038*	0	0	0	0	0	934	53,104	184	54,222	70,155	277	70,432	124,654	0	520
2039*	0	0	0	0	0	934	53,369	184	54,487	70,856	277	71,133	125,620	0	531
2040*	0	0	0	0	0	934	53,635	184	54,753	71,565	277	71,842	126,595	0	542
2041*	0	0	0	0	0	934	53,902	184	55,020	72,281	277	72,558	127,578	0	553
2042*	0	0	0	0	0	934	54,171	184	55,289	73,003	277	73,280	128,569	0	564
2043*	0	0	0	0	0	934	54,441	184	55,559	73,733	277	74,010	129,569	0	576
2044*	0	0	0	0	0	934	54,712	184	55,830	74,470	277	74,747	130,577	0	588
2045*	0	0	0	0	0	934	54,984	184	56,102	75,215	277	75,492	131,594	0	600