Technical Report

PRELIMINARY ATCT BENEFIT/COST ANALYSIS

in Support of the Sponsor's Application to Enter the FEDERAL CONTRACT TOWER PROGRAM

Lee's Summit Municipal Airport
Lee's Summit, Missouri

December 2022

prepared for:

The City of Lee's Summit

prepared by:

Quadrex Aviation, LLC
Airport Development Services

in association with:

CMT

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I. EXECUTIVE SUMMARY

The City of Lee's Summit, as owner and operator of the Lee's Summit Municipal Airport (LXT) Intends to submit an application to the Federal Aviation Administration (FAA) for acceptance into its Federal Contract Tower (FCT) program to enhance the airspace and airfield safety and efficiency for users of the airport. The City commissioned this *Air Traffic Control Tower Feasibility Study* to investigate operational, physical, and financial feasibility of achieving acceptance into the FCT program.

The FAA uses the methodology outlined in FAA APO 90-7, "*Establishment and Discontinuance Criteria for Air Traffic Control Towers"* as the principal guidance for determining the eligibility for the development and operational funding of new ATCTs under the FCT program. The APO 90-7 report presents the process for conducting a Benefit/Cost (B/C) analysis in which benefits are measured in the cumulative econometric value of lives and property saved by air traffic control services compared to the labor and other operational costs to provide the service. In order to be eligible for entry into the FCT, the B/C ratio must be 1.0 or greater.

The FAA typically uses their Terminal Area Forecast (TAF) aviation forecasts as the primary input data to develop preliminary B/C calculations. However, after reviewing the TAF for LXT, it was apparent that FAA did not project any increase of aviation activity over the next 25 years. As a result, the City elected to provide the recently approved master plan forecasts which were included as an element of the study.

The preliminary and unofficial assessment of the Airport's B/C ratio included the application of the TAF and Master Plan forecasts to calculate the safety and efficiency benefits that would result from establishing controlled airspace around the Airport. The Base Case scenario used the FAA's TAF which yielded a B/C ratio of **0.65.** The Alternate Scenario used the Master Plan forecast and a B/C ratio of **1.08** was calculated. While the Base Case scenario fell short of the FAA's requisite 1.0 B/C, the Alternate Case scenario suggests that FAA could potentially determine that LXT would be considered a candidate for the FCT program.

The following report presents detailed background information, assumptions, and the B/C calculations that were used in the analysis to determine these results. The FAA's official Benefit/Cost determination may differ significantly from the analyses in this report since they may use proprietary data that has not been shared publically. **The observations, comments, opinions, and recommendations expressed in this report are exclusively those of Quadrex Aviation and do not reflect the position the FAA, or any other federal, state, local agency, or organization.**

II. AIRPORT CHARACTERISTICS

A. General

The Lee's Summit Municipal Airport (LXT) is located 3 miles north of the City of Lee's Summit and 25 miles southeast of the central business district of Kansas City, Missouri. LXT is classified by the FAA as a general aviation airport with regional[1] significance in addition to being a designated reliever for the Kansas City region. The Airport can be characterized as supporting a diverse range of general aviation aircraft activity that according the FAA's data on record generates an estimated 52,500 operations annually. A substantial number of the aircraft operations are by jet aircraft both based at the Airport and by visitors to the area.

B. Area Airspace

The Airport is situated 3 miles outside the Class B airspace of Kansas City International Airport (MCI) located 26 nautical miles to the northwest. The area airspace is illustrated in **Figure A**. The closest public use airport to LXT is East Kansas City Airport (3GV) located 8 nautical miles northeast and which is non-towered and has a 4,507-foot runway. Other neighboring airports include Charles Wheeler Downtown (MKC) located 14 miles northwest which has a control tower and a 6,827 foot runway. Located 18 miles southwest is Johnson County Executive Airport (OJC) which also has tower and a runway length of 4,097 feet.

C. Airport Facilities

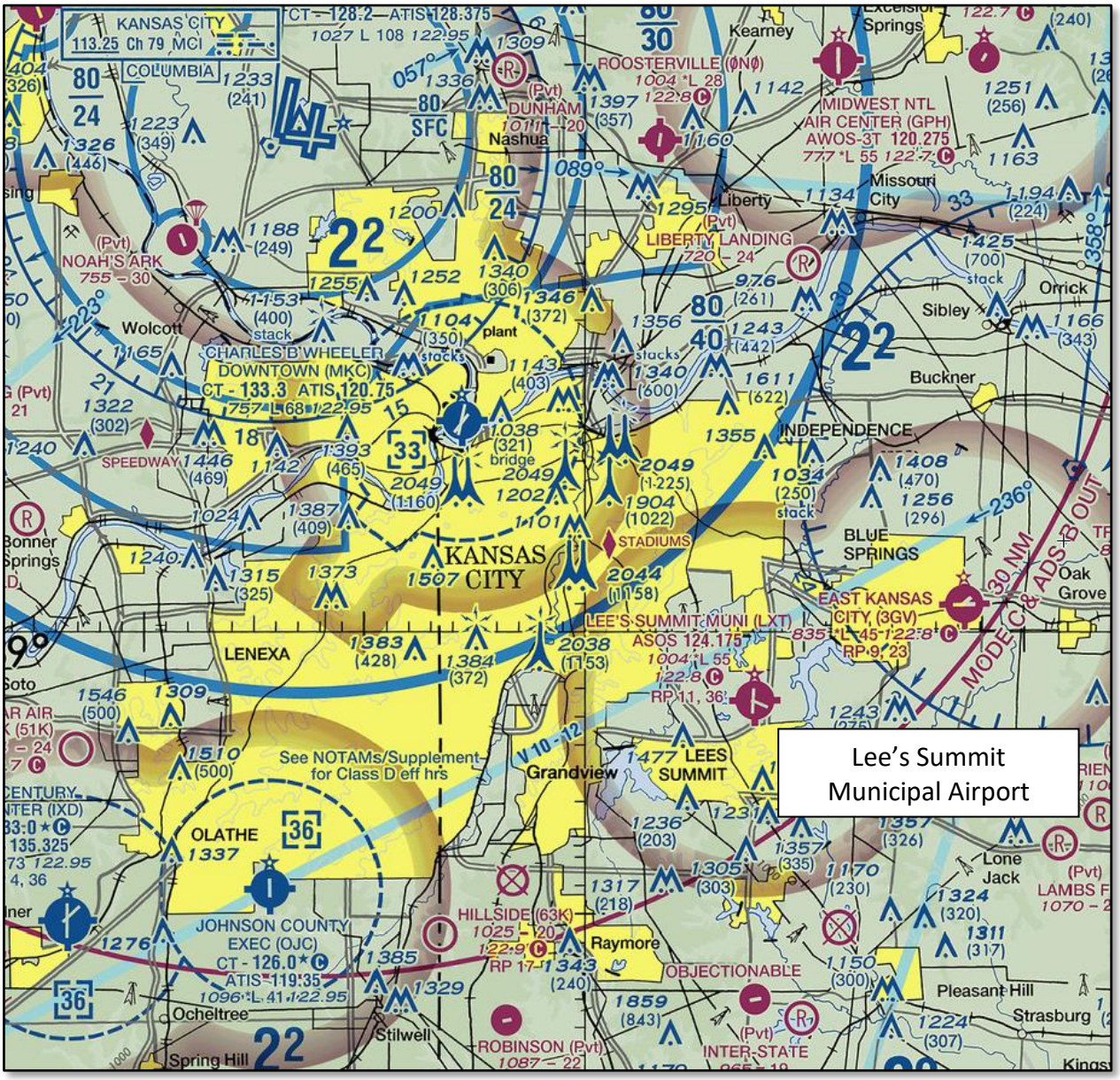
LXT has two runways. Runway 18/36 is the Airport's longest runway which is 5,501 feet long and 100 feet wide. Runway 11/29 is 4,000 feet long and 75 feet wide. **Figure B** presents a current aerial view of the Airport's facilities. All four runway ends have instrument approaches that provide vertical guidance for GPS-equipped aircraft. Three of these approaches provide a minimum descent altitude of 250 feet AGL with a minimum visibility of ¾ mile. **Attachment A** contains more detailed information on airport facilities, airspace, and instrument approach procedures.

D. Aircraft Activity

According to the most recent National Based Aircraft Inventory, there are currently 135 aircraft based at the Airport. **Table 1** provides a breakdown of based aircraft by general categories. As the table shows, small single engine airplanes comprise the broad majority (86 percent) of total based aircraft which account for most of the mix of aircraft regularly using LXT. The City operates the sole full-service fixed base operator (FBO) on the field offering both Jet A and AvGas (100LL) fuel sales and aircraft handling.

[1] *Regional GA airports are characterized by FAA as supporting regional economies by connecting communities to statewide and interstate markets*

Figure A
AREA AIRSPACE
Lee's Summit Municipal Airport



Source: Skyvector.com

Figure B
AIRPORT FACILITIES
Lee's Summit Municipal Airport

Source: Google Earth

Table 1
Based Aircraft (FY 2021)
Lee's Summit Municipal Airport (LXT)

Aircraft Type	No. of Aircraft	Percent of Total Aircraft
Single Engine	120	86.7%
Multi-Engine	10	7.4%
Jet	8	4.4%
Helicopter	2	1.5%
Total	**140**	**100.0%**

Source: National Based Aircraft Inventory for LXT (see Attachment A)

Aircraft activity data (e.g., number of operations[2], aircraft mix, etc.) at airports without an operational air traffic control tower is generally not recorded on a regular basis. The estimated operations data that appears in the FAA Form 5010-1, Airport Master Record for the Airport (See Attachment A) shows an estimated total of 54,500 annual operations which also appears in the Airport's Terminal Area Forecast (TAF). The Airport's Master Plan was updated in 2021 and established a baseline estimate of 49,600 total operations.

Table 2
ESTIMATED AIRCRAFT OPERATIONS
Lee's Summit Municipal Airport

Operations Type	Total Operations	Percent of Total Operations
Itinerant Operations *[1]*		
Air Carrier	–	0.0%
Air Taxi/Charter	235	0.5%
General Aviation	29,169	58.8%
Military	750	1.5%
Subtotal Itinerant Operations	**30,154**	**60.8%**
Local Operations *[2]*		
General Aviation	19,446	39.2%
Military	–	0.0%
Subtotal Local Operations	**19,446**	**39.2%**
Total Operations	**49,600**	**100.00%**

Notes:
[1] itinerant operation - aircraft arriving from or departing to another airport
[2] local operation - aircraft staying within traffic pattern or within 20-miles
Source: LXT Airport Master Plan, April 2021

As the table shows, itinerant operations represent nearly 61 percent of total traffic with local operations comprising the balance of 39 percent of the aircraft activity which is generated primarily by flight training, personal, and recreational flights.

[2] *An operation is counted as either an aircraft take-off or landing.*

Other data sources were explored to substantiate the aircraft operations data. Fuel sales at LXT is a strong indicator of aviation activity as shown in **Table 3.** The table presents a 4-year record of AvGas and Jet A sales. Even though jet aircraft only comprise 4.4 percent of aircraft based at LXT, Jet A fuel sales have increased considerably, representing over 76 percent of total fuel sales in FY 2022. This factor can be attributed to a significant number of visiting jet aircraft operators using LXT as a destination airport. More detailed information regarding fuel sales can be found in **Attachment B**.

Table 3
Fuel Sales (FY 2019-2022)
Lee's Summit Municipal Airport (LXT)

Year	Jet A	AvGas	Total	% Jet A
FY 2019	101,317	96,580	197,897	51.2%
FY 2020	173,069	93,411	266,480	64.9%
FY 2021	212,414	84,671	297,085	71.5%
FY 2022	277,599	87,275	364,874	76.1%

Source: Airport Management Records

Another source of activity data that was assessed is the record of IFR flight plan operations into and out of LXT. **Table 4** presents a record of the Airport's IFR flights during the FY 2018-2022 period. The table clearly demonstrates that the number of IFR jet operations have increased over the past 5 years but also shows that the percentage of IFR jet operations has increased as well. The number of IFR flights represent a subset of total itinerant operations and when considered with respect to the amount of Jet A fuel sold during the same period, the relationship of IFR flights to aviation fuel sales infers a significant level of itinerant operations by jet aircraft. Detailed IFR flight operations including a representative mix of aircraft is presented in **Attachment B.**

Table 4
IFR Operations (FY 2018-2022)
Lee's Summit Municipal Airport (LXT)

Year	Jet	Non-Jet	Total	% Jet
FY 2018	389	2,151	2,540	15.3%
FY 2019	695	2,318	3,013	23.1%
FY 2020	777	2,165	2,942	26.4%
FY 2021	1,191	2,444	3,635	32.8%
FY 2022	1,342	2,933	4,275	31.4%

Source: FAA TFMSC for LXT

Supported by the fuel sales and IFR operations data, the estimated annual aircraft operations from the 2021 Master Plan Update (49,600) was used to represent FY 2021 operations as a baseline for forecasting future aviation activity.

III. PREFERRED FORECAST

Typically, the standard source of forecast data used by the FAA in the Benefit/Cost analysis process comes from their Terminal Area Forecast (TAF) which is updated annually for all airports in the NPIAS. LXT does have a TAF however, FAA shows no growth in aviation operations throughout the 25-year forecast period. Despite the significantly higher baseline operations (52,500), the flat-line forecast appears to be unrealistic given the population and economic growth in the southeast region of the Kansas City metropolitan area. For comparison purposes, the FAA's TAF baseline data and no-growth forecast was used to establish a "Base Case" scenario and is presented in **Attachment B, Table B-1.**

A recent update of the Airport's master plan included a forecast of aviation activity to represent the future demand on the Airport's facilities as a result of the anticipated growth of aircraft operations. Baseline operations estimates were established using a multivariate model[3] that incorporated several factors including:

- Based aircraft projections
- Market share of regional based aircraft
- Flight training schools certified under 14 CFR Part 141
- Service area population

The forecast methodology applied the baseline operations estimates to low, medium and high compounded annual growth rates (CAGR). The low CAGR was selected for forecasting future activity. The resultant baseline operations for annual aircraft operations (49,600) was projected to grow at a rate of 1.6 percent per year. The master plan forecast was further refined to reflect a 60/40 split between itinerant and local operations which is expected to remain constant throughout the forecast period. The aviation forecast for LXT was reviewed and approved by the Missouri Department of Transportation acting as an agent of the FAA. The master plan forecast serves as the "preferred forecast" for FAA's consideration in the benefit/cost analysis and is presented in **Attachment B, Table B-2**.

IV. ATCT BENEFIT/COST DETERMINATION ANALYSIS

A. General

The FAA's Air Traffic Office (ATO) administers the funding for the operation of low activity VFR air traffic control towers through contract agreements with qualified ATC contractors on a regional basis. It is generally accepted by the airport community and others that the FCT program has proven itself to be very effective in providing equivalent safety benefits at greatly reduced costs compared to FAA-staffed ATCT facilities. The US DOT's Office of Inspector General (OIG) has consistently validated these observations, most recently in 2020 with a report entitled "*Contract Towers Are More Cost Effective Than Comparable FAA Towers and Have Similar Safety Records*"[4]

Since the beginning of the Federal Contract Tower program in 1995, more than 100 new ATCT facilities have been added to the FCT program, primarily by demonstrating that the safety and efficiency benefits of having a tower outweigh the cost of providing ATC services. In FY 2022, FCTs handled one-third of the nation's total air traffic operations.

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[3] *Model for Estimating General Aviation Operations at Non-Towered Airports Using Towered and Non-Towered Airport Data (GRA, Inc. 2001)*

[4] *US DOT OIG Report (2020)*

The decision process for the accepting new contract tower locations is primarily determined by using a Benefit/Cost analysis similar to a classic return on investment (ROI) methodology. FAA Report APO 90-7, "Establishment and Discontinuance Criteria for Airport Traffic Control Towers" outlines the procedures for calculating Benefit/Cost (B/C) ratios. The cost side of the equation is represented by those associated with ATC operations including controller labor, insurance, telecommunications, and other direct expenses. Benefits are measured in terms of the econometric of lives and property saved by the prevention of midair collisions, other avoidable accidents, and the savings in flight time by managing the traffic pattern and other controlled airspace around the Airport. The FAA requires the benefit of the proposed control tower be greater than the cost (i.e., Benefit/Cost ratio must be equal to or greater than 1.0) in order for a Sponsor to qualify for acceptance as a candidate for the FCT program.

B. Critical Values and Other FAA Assumptions

The FAA in the B/C analysis process uses various "critical values" that represent an econometric measure of specific items such as the value of a life, serious injury, or delay time. The value of life and injuries is set by the federal Office of Management and Budget (OMB) while the FAA establishes other values used in the B/C calculations such as average occupancies, aircraft values, and hourly operating costs. The current critical values for items used in the B/C Analysis are presented in **Table 5**.

Table 5
FAA CRITICAL VALUES & ASSUMPTIONS

Statistical Life	$ 11,800,000
Serious Injury	2,985,400
Minor Medical Injury	35,840
Traveler's Delayed Time (*per hour*)	48.05
Discount Rate (*for net present value*)	7%

Source: Office of Management & Budget, FAA Office of Policy and Plans

These values are applied to the projected numbers of aircraft operations for each aircraft category for each forecast year. The cumulative benefit values for a full 15-year period is used to derive an total benefit. An annual 7 percent discount rate is also applied to the total values for both benefits and costs for each successive year to develop a net present value for the cumulative value of each.

C. B/C Evaluation Criteria

FAA policy evaluates applicants for the FCT Program initially using the establishment criteria of APO 90-7 which considers the statistical risk of a mid-air collision or other preventable accident (e.g., runway incursion) as a primary factor in the B/C calculations. For potential new FCT entrants, it is assumed that the operations estimates are for a complete 24 hour period. Therefore, forecasted aircraft operations are discounted by 7.5 percent to account for the number of operations that would not be handled when the ATCT facility is closed[5] which reduces the net benefit values even further.

While aircraft activity is associated with the benefit side of the equation, costs are primarily represented by the FAA's annual cost to operate the ATC as charged by the regional FAA contractor.

[5] *FAA APO Report 90-7 assumes an initial 12-hour daily operational period*

Under the federal program, the estimated average annual cost for an entry-level FCT facility generally ranges from $400,000 to $750,000. For LXT's B/C calculations, $650,000 was used to represent annual ATC operational costs (primarily for controllers' wage and benefits) for both the Base Case and Alternate Case scenarios. Another $75,000 is added to consider the initial annual FAA communications and other expenses associated with a new start ATCT. The total annual ATCT costs ($725,000) are held constant throughout the 15-year period with the 7 percent discount rate applied to determine the cumulative net present value.

In the 2018 FAA Reauthorization Act, Congress included a provision that FAA shall add a 10 percentage point margin to the "raw" B/C ratio determination[6]. For example, a raw B/C ratio of 0.93 would be adjusted to 1.03. The purpose of the additional 10 basis points is to acknowledge and account for indirect economic and other benefits that are not easily quantifiable and not otherwise included in the data FAA uses in calculating the B/C ratio.

D. Preliminary Benefit/Cost Calculations

LXT's Terminal Area and Master Plan forecasts were applied to the B/C model to determine the resulting B/C ratios. The first 15 years of TAF data was used as a Base Case scenario for determining a baseline Benefit/Cost ratio. The discounted cumulative cost which includes the controller operations, communications, and other expenses at $725,000 per year over the 15-year period was **$6,603,238**. The calculated discounted ATC tower operational benefits at LXT (measured in accidents prevented and flight efficiencies) was **$3,658,529**. Dividing benefits by costs yields a raw B/C ratio of **0.55** and by adding the 0.10 margin yields a final B/C of **0.65**. **Attachment C, Table C-1** presents the detailed annual benefit/cost calculations for the Base Case scenario including the cumulative and discounted operational costs and benefits of the ATCT over the FY 2022–2036 period. Since FAA policy requires a minimum 1.0 benefit-to-cost ratio to qualify as a candidate for FCT program, the Base Case scenario does not succeed to provide the necessary support for entering the program.

As an Alternate Case scenario, the master plan forecast demonstrated a growing number of aircraft operations compared to the TAF data. While the ATCT costs remain the same **($6,603,238**) for both scenarios, the discounted benefit value for the Alternate Case increased significantly to **$6,462,011**. The raw benefit-to-cost ratio in this case is 0.98 which would not exceed the requisite 1.0, however, by adding the 0.10 factor, the final B/C would be **1.08**, which would be adequate to qualify LXT as a candidate for the FCT program. Detailed B/C calculations for the Alternate Case scenario are included in **Attachment C, Table C-2**.

V. CONCLUSIONS AND RECOMMENDATIONS

The preliminary Benefit/Cost calculations for the Alternate Case scenario indicate that the minimum 1.0 ratio is exceeded and suggests that Lee's Summit Municipal Airport would potentially be accepted as a candidate for the FAA's Federal Contract Tower program. **It is therefore recommended that the City submit a formal application for entry into the FAA's Federal Contract Tower Program.** Once the application is submitted, the FAA will review the information and using the Master Plan forecasts as the preferred forecast to prepare an official Benefit/Cost determination.

[6] *H.R. 302, Sec 133(d)(2)(E)*

If the official B/C determination falls short of the 1.0 ratio, the FAA will notify the City and allow 90 days for responding with additional data or other material for consideration. Upon a favorable determination (i.e., B/C 1.0 or greater), the FAA will provide the City with a letter confirming the Airport's status as a candidate for the FCT program. The candidate status allows the City to begin seeking and using federal funds under the Airport Improvement Program (AIP) for subsequent ATCT development tasks. Attaining candidate status allows the Airport to use federal funds toward the development of a control tower with the understanding that federal procurement requirements will be followed and the finished facility will meet the FAA's minimum standards for ATCT siting, design, and equipment.

The FAA also stipulates several conditions that must be met by the City before the Tower can be commissioned.

1. Select a site that meets the FAA's criteria for assuring it is suitable for conducting ATC operations.

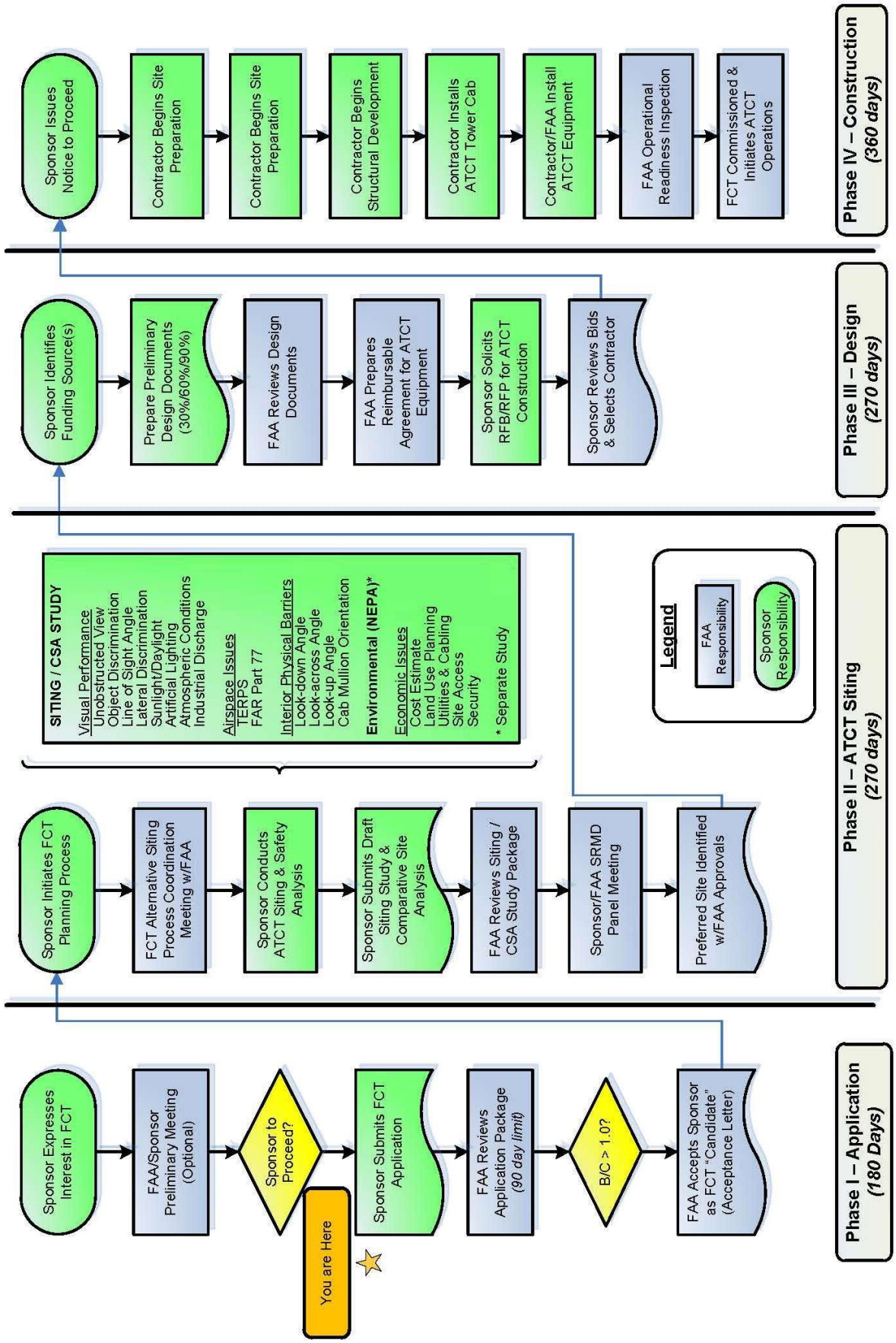
2. Design and construct the ATCT facility meeting FAA design criteria.

3. Provide ATCT equipment according to a prescribed Minimum Equipment List (MEL).

4. Enter into a Tower Operating Agreement (TOA) with FAA for the operations and maintenance of the ATCT facility.

The FAA currently requires the Airport Sponsor to meet these conditions within 5 years of the FCT candidacy notification without have to recalculate the Benefit/Cost ratio and requalify as a candidate. **Figure C** provides additional information regarding specific steps and an estimated timeline toward the development and commissioning of an Air Traffic Control Tower at the Lee's Summit Municipal Airport. **Attachment D** contains additional FAA guidance on specific requirements that must be met prior to entry into the FCT program.

Figure C
AIR TRAFFIC CONTROL TOWER DEVELOPMENT PROCESS
Lee's Summit Municipal Airport



Appendix A
Supporting Documentation

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIRPORT MASTER RECORD

PRINT DATE: 12/05/2022
AFD EFF 12/01/2022
FORM APPROVED OMB 2120-0015

> 1 ASSOC CITY: LEE'S SUMMIT
> 2 AIRPORT NAME: LEE'S SUMMIT MUNI
3 CBD TO AIRPORT (NM): 3 N
4 STATE: MO
6 REGION/ADO: ACE /
LOC ID: LXT
5 COUNTY: JACKSON, MO
7 SECT AERO CHT: KANSAS CITY
FAA SITE NR: 11861.6*A

GENERAL

10 OWNERSHIP: PUBLIC
> 11 OWNER: CITY OF LEE'S SUMMIT
> 12 ADDRESS: 220 SE GREEN, P.O. BOX 1600
LEES SUMMIT, MO 64063
> 13 PHONE NR: 816-969-1000
> 14 MANAGER: JOEL ARRINGTON
> 15 ADDRESS: 2751 NE DOUGLAS RD
LEES SUMMIT, MO 64064
> 16 PHONE NR: 816-969-1186
> 17 ATTENDANCE SCHEDULE:

MONTHS	DAYS	HOURS
ALL	ALL	0600-2000

18 AIRPORT USE: PUBLIC
19 ARPT LAT: 38-57-32.752N ESTIMATED
20 ARPT LONG: 94-22-18.822W
21 ARPT ELEV: 1004.3 SURVEYED
22 ACREAGE: 486
> 23 RIGHT TRAFFIC: 36 11
> 24 NON-COMM LANDING: NO
25 NPIAS/FED AGREEMENTS: YES / NGY
> 26 FAR 139 INDEX: /

SERVICES

> 70 FUEL: 100LL A MOGAS
> 71 AIRFRAME RPRS: MAJOR
> 72 PWR PLANT RPRS: MAJOR
> 73 BOTTLE OXYGEN: LOW
> 74 BULK OXYGEN: NONE
75 TSNT STORAGE: HGR TIE
76 OTHER SERVICES: INSTR,RNTL,SURV

FACILITIES

> 80 ARPT BCN: WG
> 81 ARPT LGT SKED: SEE RMK
BCN LGT SKED: SS-SR
> 82 UNICOM: 122.800
> 83 WIND INDICATOR: YES-L
84 SEGMENTED CIRCLE: YES
85 CONTROL TWR: NO
86 FSS: COLUMBIA
87 FSS ON ARPT: NO
88 FSS PHONE NR:
89 TOLL FREE NR: 1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG:	120
91 MULTI ENG:	10
92 JET:	8
93 HELICOPTERS:	2
TOTAL:	140
94 GLIDERS:	0
95 MILITARY:	0
96 ULTRA-LIGHT:	0

OPERATIONS

100 AIR CARRIER:	0
102 AIR TAXI:	1,750
103 G A LOCAL:	34,850
104 G A ITNRNT:	15,150
105 MILITARY:	750
TOTAL:	52,500

OPERATIONS FOR 12 MONTHS ENDING 12/31/2020

RUNWAY DATA

		18/36	11/29
> 30 RUNWAY IDENT:			
> 31 LENGTH:		5,501	4,000
> 32 WIDTH:		100	75
> 33 SURF TYPE-COND:		CONC-E	CONC-G
> 34 SURF TREATMENT:		GRVD	
35 GROSS WT:	S	40.0	30.0
36 (IN THSDS)	D	60.0	30.0
37	2D		
38	2D/2DS		
> 39 PCN / PCR:		22/R/C/W/T (PCN)	

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:	MED	MED
> 42 RWY MARK TYPE-COND:	NPI- G / NPI- G	NPI- G / NPI- G
> 43 VGSI:	P4L / P4L	P4L / P4R
44 THR CROSSING HGT:	44 / 45	45 / 40
45 VISUAL GLIDE ANGLE:	3.00 / 3.00	3.00 / 3.00
> 46 CNTRLN-TDZ:	- / -	- / -
> 47 RVR-RVV:	- / -	- / -
> 48 REIL:	Y / Y	Y / Y
> 49 APCH LIGHTS:	/	/

OBSTRUCTION DATA

50 FAR 77 CATEGORY:	D / C	C / C
> 51 DISPLACED THR:	/	/
> 52 CTLG OBSTN:	/	/
> 53 OBSTN MARKED/LGTD:	/	/
> 54 HGT ABOVE RWY END:	/	/
> 55 DIST FROM RWY END:	0 / 0	0 / 0
> 56 CNTRLN OFFSET:	/	/
57 OBSTN CLNC SLOPE:	34:1 / 34:1	34:1 / 34:1
58 CLOSE-IN OBSTN:	N / N	N / N

DECLARED DISTANCES

> 60 TAKE OFF RUN AVBL (TORA):	/	/
> 61 TAKE OFF DIST AVBL (TODA):	/	/
> 62 ACLT STOP DIST AVBL (ASDA):	/	/
> 63 LNDG DIST AVBL (LDA):	/	/

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS:

A 070 24 HR SELF SERVICE FUEL 100LL & MOGAS. MOBILE FUEL JET A AND 100LL. AFTER HRS FUEL CALL 816-969-1186. CALL OUT FEE.
A 075 CTC AMGR FOR RAMP FEES.
A 081 ACTVT REIL RWY 18 & 36, 11 & 29; MIRL RWY 11 & 29, 18 & 36 - CTAF. PAPI RWY 11 & 29, 18 & 36 OPR CONSLY.
A 110-001 NO RIGHT TURNS UNDER 2500 FT MSL OR WITHIN 3 MI OF ARPT WHEN DEPARTING ON RWY 29.
A 110-002 NO LEFT TURNS WITHIN 1/2 MI OF END OF RWY WHEN DEPARTING ON RWY 18.
A 110-003 NO LEFT TURNS UNDER 2500 FT MSL OR WITHIN 3 MI OF THE ARPT DEPARTING ON RWY 36.
A 110-004 WILDLIFE ON & INVOF ARPT.

111 INSPECTOR: (S) 112 LAST INSP: 08/18/2021 113 LAST INFO RES:

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIRPORT MASTER RECORD

PRINT DATE: 12/05/2022
AFD EFF 12/01/2022
FORM APPROVED OMB 2120-0015

> 1 ASSOC CITY:	LEE'S SUMMIT	4 STATE: MO	LOC ID: LXT	FAA SITE NR: 11861.6*A
> 2 AIRPORT NAME:	LEE'S SUMMIT MUNI		5 COUNTY: JACKSON, MO	
3 CBD TO AIRPORT (NM): 3 N		6 REGION/ADO: ACE /	7 SECT AERO CHT: KANSAS CITY	

GENERAL

10 OWNERSHIP:	PUBLIC
> 11 OWNER:	CITY OF LEE'S SUMMIT
> 12 ADDRESS:	220 SE GREEN, P.O. BOX 1600 LEES SUMMIT, MO 64063
> 13 PHONE NR:	816-969-1000
> 14 MANAGER:	JOEL ARRINGTON
> 15 ADDRESS:	2751 NE DOUGLAS RD LEES SUMMIT, MO 64064
> 16 PHONE NR:	816-969-1186

> 17 ATTENDANCE SCHEDULE:

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22 ACREAGE:	486
> 23 RIGHT TRAFFIC:	36 11
> 24 NON-COMM LANDING:	NO
25 NPIAS/FED AGREEMENTS:	YES / NGY
> 26 FAR 139 INDEX:	/

SERVICES

> 70 FUEL:	100LL A MOGAS
> 71 AIRFRAME RPRS:	MAJOR
> 72 PWR PLANT RPRS:	MAJOR
> 73 BOTTLE OXYGEN:	LOW
> 74 BULK OXYGEN:	NONE
75 TSNT STORAGE:	HGR TIE
76 OTHER SERVICES:	INSTR,RNTL,SURV

FACILITIES

> 80 ARPT BCN:	WG
> 81 ARPT LGT SKED:	SEE RMK
BCN LGT SKED:	SS-SR
> 82 UNICOM:	122.800
> 83 WIND INDICATOR:	YES-L
84 SEGMENTED CIRCLE:	YES
85 CONTROL TWR:	NO
86 FSS:	COLUMBIA
87 FSS ON ARPT:	NO
88 FSS PHONE NR:	
89 TOLL FREE NR:	1-800-WX-BRIEF

BASED AIRCRAFT

90 SINGLE ENG:	120
91 MULTI ENG:	10
92 JET:	8
93 HELICOPTERS:	2
TOTAL:	140
94 GLIDERS:	0
95 MILITARY:	0
96 ULTRA-LIGHT:	0

OPERATIONS

100 AIR CARRIER:	0
102 AIR TAXI:	1,750
103 G A LOCAL:	34,850
104 G A ITNRNT:	15,150
105 MILITARY:	750
TOTAL:	52,500

OPERATIONS FOR 12 MONTHS ENDING 12/31/2020

RUNWAY DATA

> 30 RUNWAY IDENT:
> 31 LENGTH:
> 32 WIDTH:
> 33 SURF TYPE-COND:
> 34 SURF TREATMENT:

35 GROSS WT:	S
36 (IN THSDS)	D
37	2D
38	2D/2DS

> 39 PCN / PCR:

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:
> 42 RWY MARK TYPE-COND:
> 43 VGSI:
44 THR CROSSING HGT:
45 VISUAL GLIDE ANGLE:
> 46 CNTRLN-TDZ:
> 47 RVR-RVV:
> 48 REIL:
> 49 APCH LIGHTS:

OBSTRUCTION DATA

50 FAR 77 CATEGORY:
> 51 DISPLACED THR:
> 52 CTLG OBSTN:
> 53 OBSTN MARKED/LGTD:
> 54 HGT ABOVE RWY END:
> 55 DIST FROM RWY END:
> 56 CNTRLN OFFSET:
57 OBSTN CLNC SLOPE:
58 CLOSE-IN OBSTN:

DECLARED DISTANCES

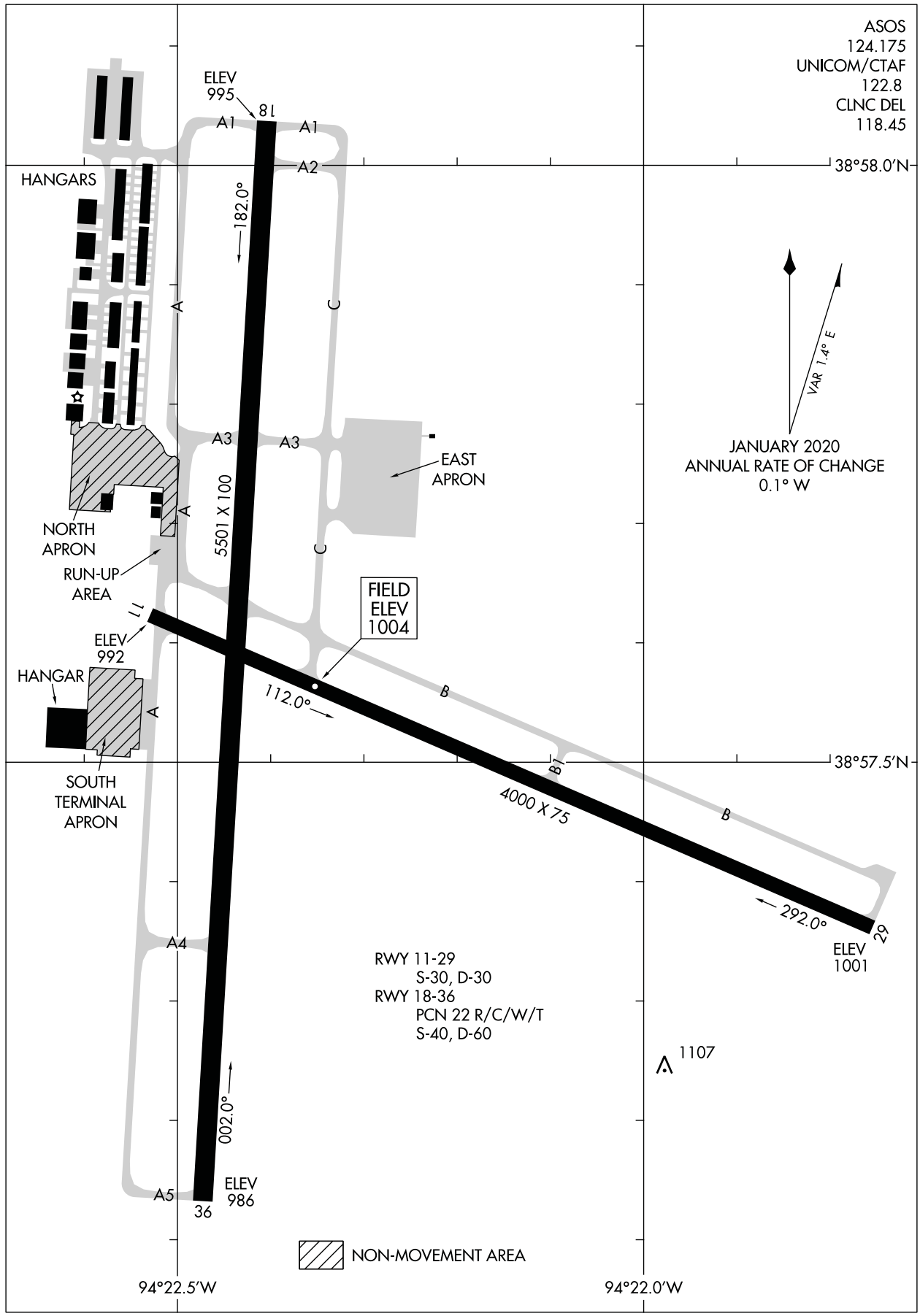
> 60 TAKE OFF RUN AVBL (TORA):
> 61 TAKE OFF DIST AVBL (TODA):
> 62 ACLT STOP DIST AVBL (ASDA):
> 63 LNDG DIST AVBL (LDA):

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

> 110 REMARKS:

A 110-006 WHEN WINDS ARE LESS THAN 5 KNOTS USE RWY 18.
A 110-007 AER 18,36 & 29 ARE NOT MUTUALLY VSB DUE TO TRRN.
A 110-008 ARPT TRML BLDG OPEN 24 HRS.
A 110-009 RWY 18/36 GRAD 0.16%, RWY 11/29 GRAD 0.24%
A 110-010 FOR CD CTC KANSAS CITY APCH AT 816-329-2710.

111 INSPECTOR: (S) 112 LAST INSP: 08/18/2021 113 LAST INFO RES:



NC-3, 19 MAY 2022 to 16 JUN 2022

NC-3, 19 MAY 2022 to 16 JUN 2022

Federal Aviation Administration

National Based Aircraft Inventory Program

LEE'S SUMMIT MUNI (LXT) LEE'S SUMMIT, MO

1. Airport Inventory

Single Engine 130 + Multi Engine 12 + Jet 6 + Helicopter 2 + N-Numbers Not Found 0	=	150

2. Review to Improve Your Validated Aircraft Count

Last Edit: 05/17/2022 by LeesSummit

Review '*' Commented N-Numbers	6	Find These	How to Resolve	Report
Review N-Numbers Reported by Other Airports (Duplicates)	9	Find These	How to Resolve	Report
Review N-Numbers Not Found in FAA Registration Database	0	Find These	How to Resolve	
Total # of Aircraft	- 15			

Refresh

COUNT DATA

?

Aircraft Type	Airport Inventory	Commented Aircraft	Duplicates Other Airports	N-Numbers Not Found	Not Validated Total	Validated Inventory
Single Engine	130	5	8	0	13	117
Multi Engine	12	1	1	0	2	10
Jet	6	0	0	0	0	6
Helicopter	2	0	0	0	0	2
N-Numbers Not Found	0	0	0	0	0	Not Counted
Total Single, Multi, Jet, and Heli	***150***	***6***	***9***	***0***	***15***	***135***
Glider	0					
Military	0					
Ultra-light	0					
Non 5010 aircraft types	0					
Total Found in FAA Acft. Reg. Data	**150**					

Preferred Contact

John Ohrazda — John.Ohrazda@cityofls.net
Manager — 816-969-1180

Comments Edit

Airport n/a

That Are Not Validated

3. Validated Inventory

Single Engine 117 + Multi Engine 10 + Jet 6 + Helicopter 2	=	135	Report

4. Confirm Aircraft Data — Last Confirmed: 12/22/2021 by John Ohrazda

*** Click Here to Confirm Aircraft Da

Further Aircraft Review **(Optional)** These items Do Not Impact Your Currently Validated Inventory

Review All Out Of State Registrations	45	Find These	Why is this relevant?
Review all Updated Certs (Certs Updated Since Aircraft Was Entered Into Inventory)	46	Find These	Why is this relevant?

N-Number Search: Go Remove Filter

Show: All aircraft **Include deleted:** No

Based Aircraft at this Airport

Add aircraft

Use multiple pages for faster loading? ☐ = Edit = Delete ☐ IFR

N-Number	Make / Model	Type	Owner	Added	Type and City St from FAA Aircraft Registration	Reported by Other Apts	Actions	Comment
N102PG	Mooney M20R	Single Engine	Scott Wehner 2319 Castle Drive Independence, Missouri	10/23/2019	Single Engine AVA MO	Not found in Other Apts		
N102RH	HOMEBUILT	Single	RONALD HAYES	5/14/2007	Single Engine	Not found in		

WAAS	APP CRS	Rwy Idg 5501
CH 48805	001°	TDZE 997
W36A		Apt Elev 1004

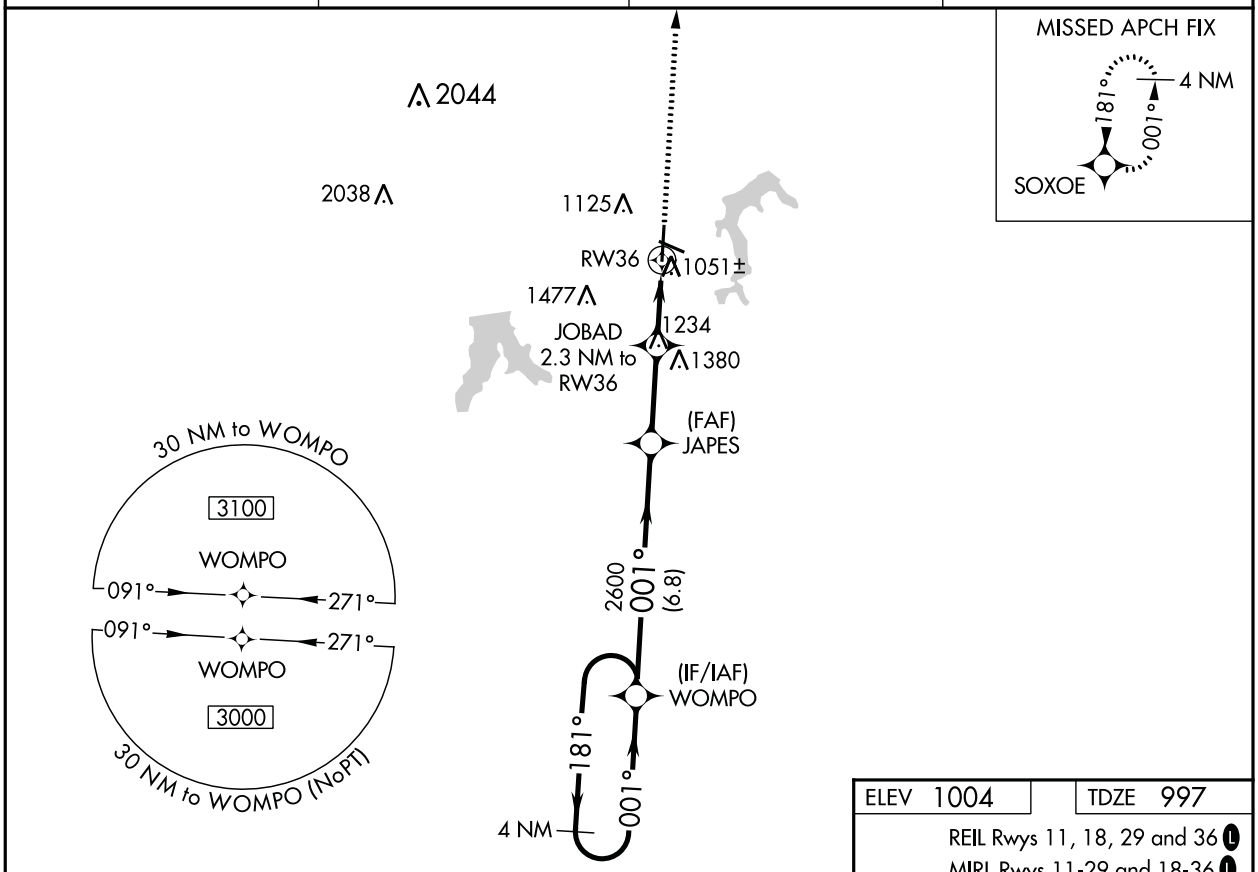
RNAV (GPS) RWY 36

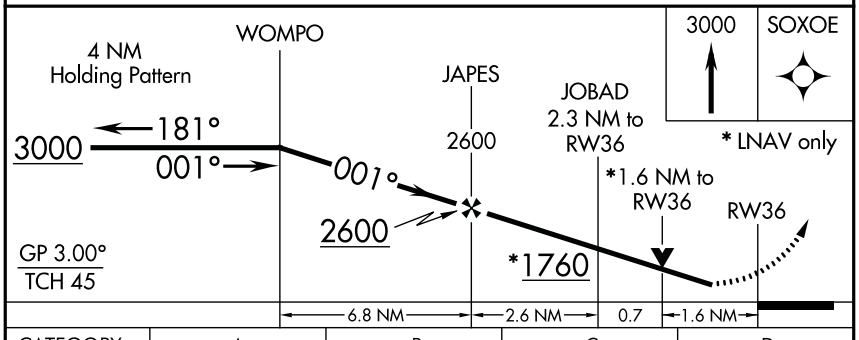
LEE'S SUMMIT MUNI (LXT)

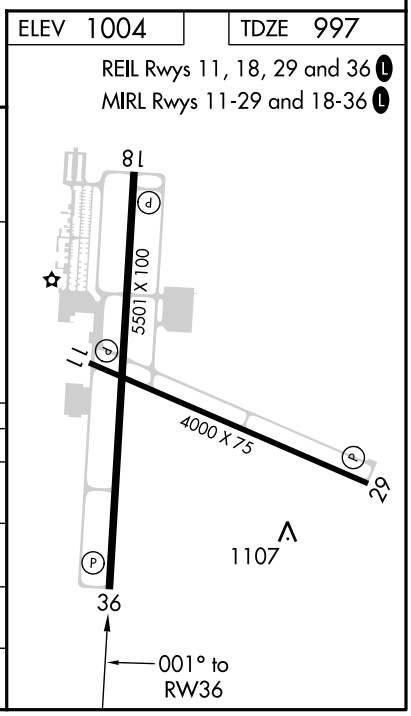
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 54°C (130°F). Rwy 36 helicopter visibility reduction below ¾ SM NA. DME/DME RNP-0.3 NA. VDP and Baro-VNAV NA when using Charles B. Wheeler Downtown altimeter setting. When local altimeter setting not received, use Charles B. Wheeler Downtown altimeter setting: increase LPV DA to 1374 feet and all visibilities ⅛ SM; increase LNAV/VNAV to 1367 feet and all visibilities ⅛ SM; increase all MDA 80 feet and LNAV visibility Cats C and D ⅛ SM, Circling Cats C and D ¼ SM.

MISSED APPROACH: Climb to 3000 direct SOXOE and hold.

ASOS	KANSAS CITY APP CON	CLNC DEL	UNICOM
124.175	118.4 307.35	118.45	122.8 (CTAF) L







CATEGORY	A	B	C	D
LPV DA	1306-⅞ 309 (400-⅞)			
LNAV/VNAV DA	1299-⅞ 302 (300-⅞)			
LNAV MDA	1540-1 543 (600-1)		1540-1⅝ 543 (600-1⅝)	
C CIRCLING	1540-1 536 (600-1)		1780-2¼ 776 (800-2¼)	1780-2½ 776 (800-2½)

NC-3, 19 MAY 2022 to 16 JUN 2022

WAAS	APP CRS		
CH **48905**	**291°**	Rwy Idg	**4000**
W29A		TDZE	**1004**
		Apt Elev	**1004**

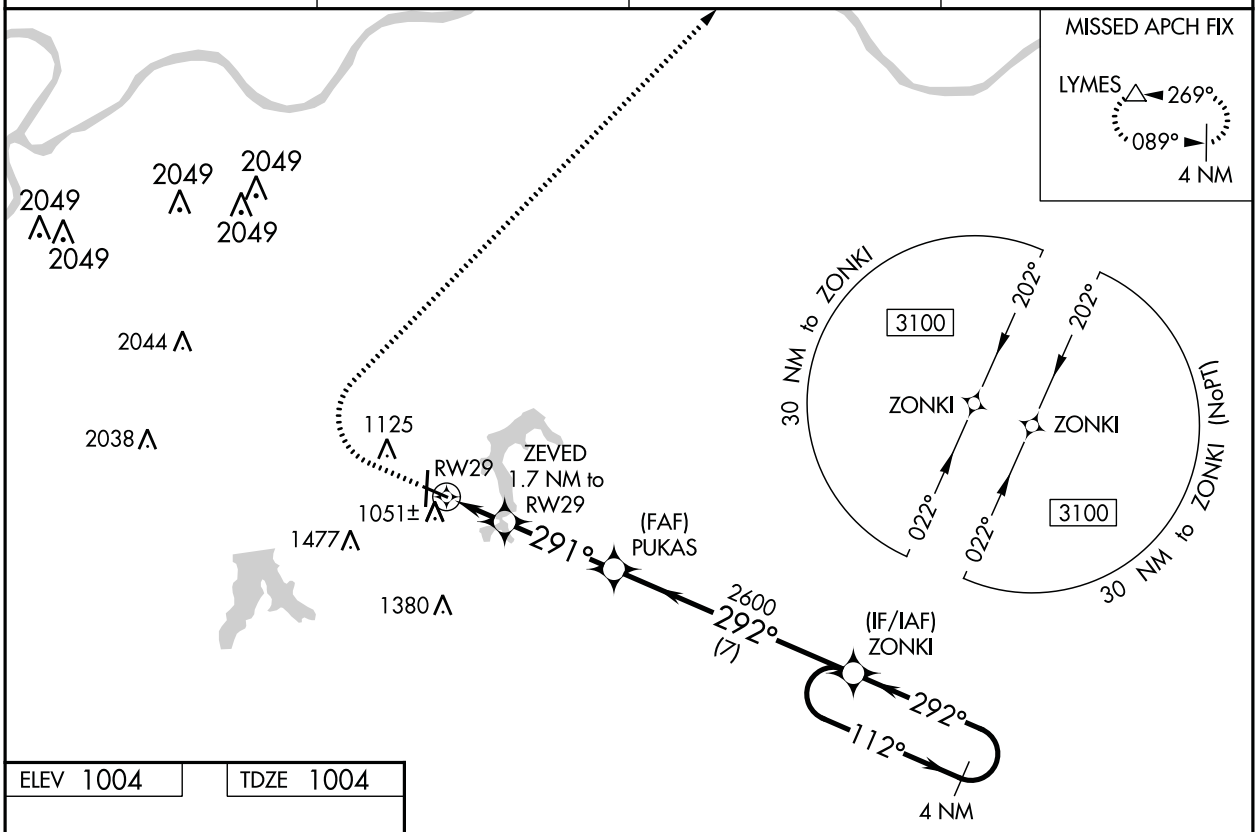
RNAV (GPS) RWY 29

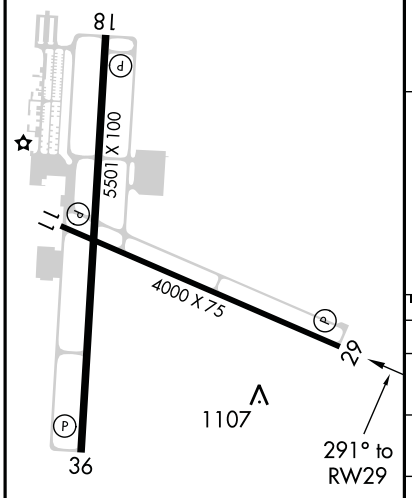
LEE'S SUMMIT MUNI (LXT)

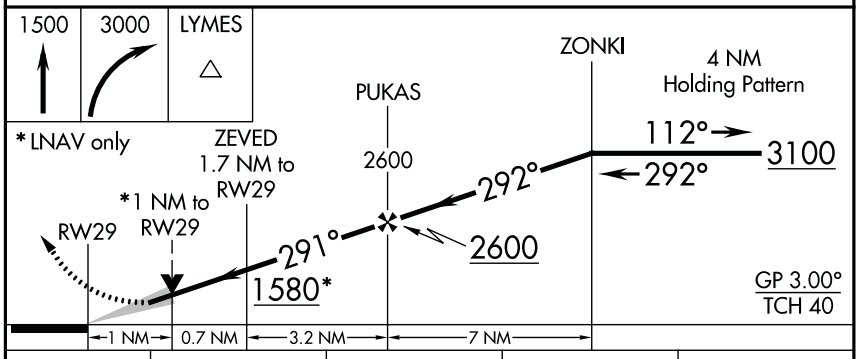
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. VDP and Baro-VNAV NA when using Charles B. Wheeler Downtown altimeter setting. When local altimeter setting not received, use Charles B. Wheeler Downtown altimeter setting: increase LPV DA to 1322 feet and all visibilities ⅛ SM; increase LNAV/VNAV DA to 1359 feet and all visibilities ⅛ SM; increase all MDA 80 feet and visibility Cats C and D ¼ SM.

MISSED APPROACH: Climb to 1500 then climbing right turn to 3000 direct LYMES and hold.

ASOS	KANSAS CITY APP CON	CLNC DEL	UNICOM
124.175	**118.4 307.35**	**118.45**	**122.8** (CTAF) L







CATEGORY	A	B	C	D
LPV DA	1254-¾	250 (300-¾)		
LNAV/VNAV DA	1291-⅞	287 (300-⅞)		
LNAV MDA	1360-1	356 (400-1)		
C CIRCLING	1440-1 436 (500-1)	1540-1 536 (600-1)	1780-2¼ 776 (800-2¼)	1780-2½ 776 (800-2½)

REIL Rwys 11, 18, 29 and 36 L
MIRL Rwys 11-29 and 18-36 L

NC-3, 19 MAY 2022 to 16 JUN 2022

WAAS	APP CRS	Rwy Idg	5501
CH 82204	181°	TDZE	999
W18A		Apt Elev	1004

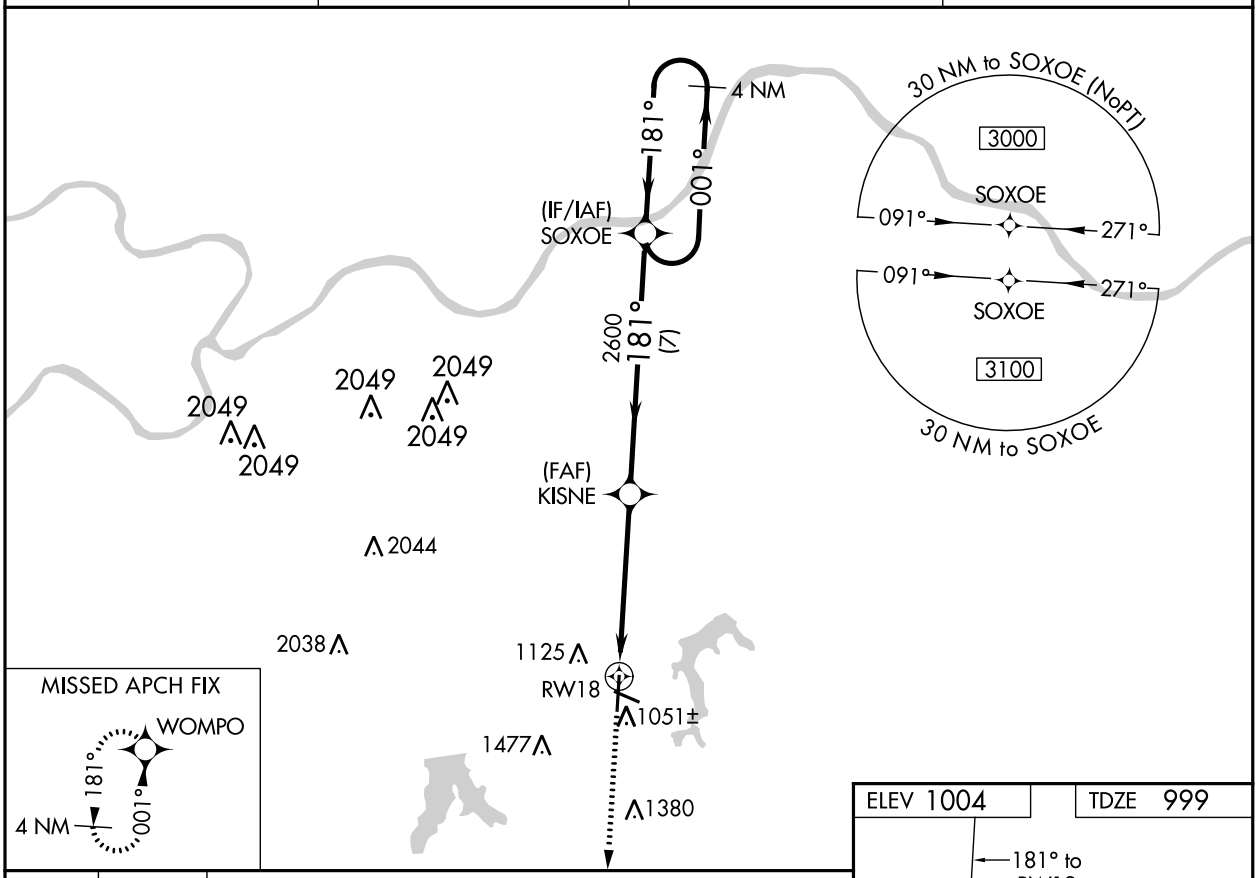
RNAV (GPS) RWY 18

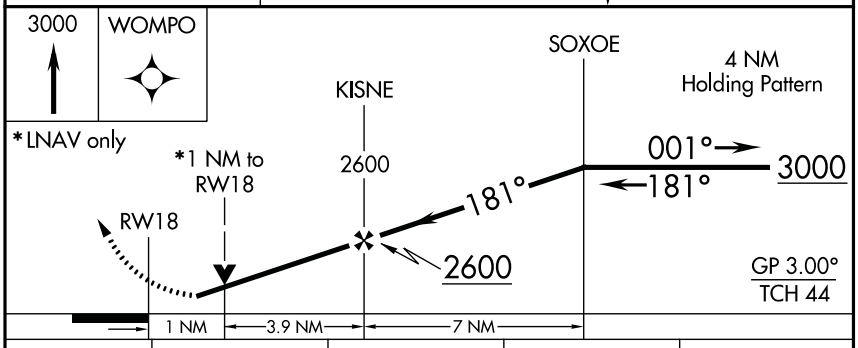
LEE'S SUMMIT MUNI (LXT)

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 54°C (130°F). Rwy 18 helicopter visibility reduction below ¾ SM NA. DME/DME RNP-0.3 NA. Baro-VNAV and VDP NA when using Charles B. Wheeler Downtown altimeter setting. When local altimeter setting not received, use Charles B. Wheeler Downtown altimeter setting: increase LPV DA to 1317 feet and all visibilities ⅛ SM; increase LNAV/VNAV DA to 1434 feet and all visibilities ¼ SM; increase all MDA 80 feet and LNAV visibility Cat C and D ⅜ SM, Circling Cats C and D ¼ SM.

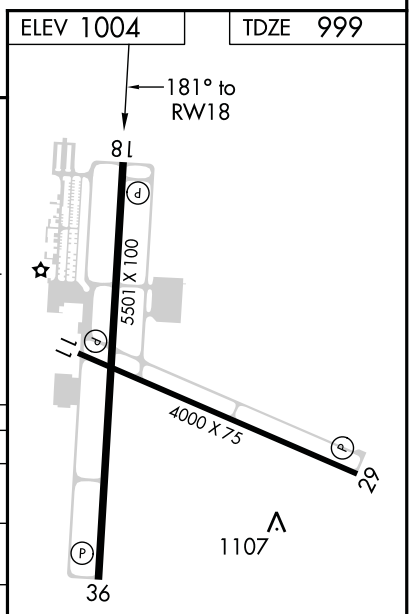
MISSED APPROACH: Climb to 3000 direct WOMPO and hold.

ASOS	KANSAS CITY APP CON	CLNC DEL	UNICOM
124.175	118.4 307.35	118.45	122.8 (CTAF) L





CATEGORY	A	B	C	D
LPV DA	1249-¾	250 (300-¾)		
LNAV/VNAV DA	1366-1	367 (400-1)		
LNAV MDA	1360-1	361 (400-1)		
C CIRCLING	1440-1 436 (500-1)	1540-1 536 (600-1)	1780-2¼ 776 (800-2¼)	1780-2½ 776 (800-2½)



REIL Rwys 11, 18, 29 and 36 L
MIRL Rwys 11-29 and 18-36 L

WAAS	APP CRS	Rwy Idg	4000
CH 99405	111°	TDZE	1004
W11A		Apt Elev	1004

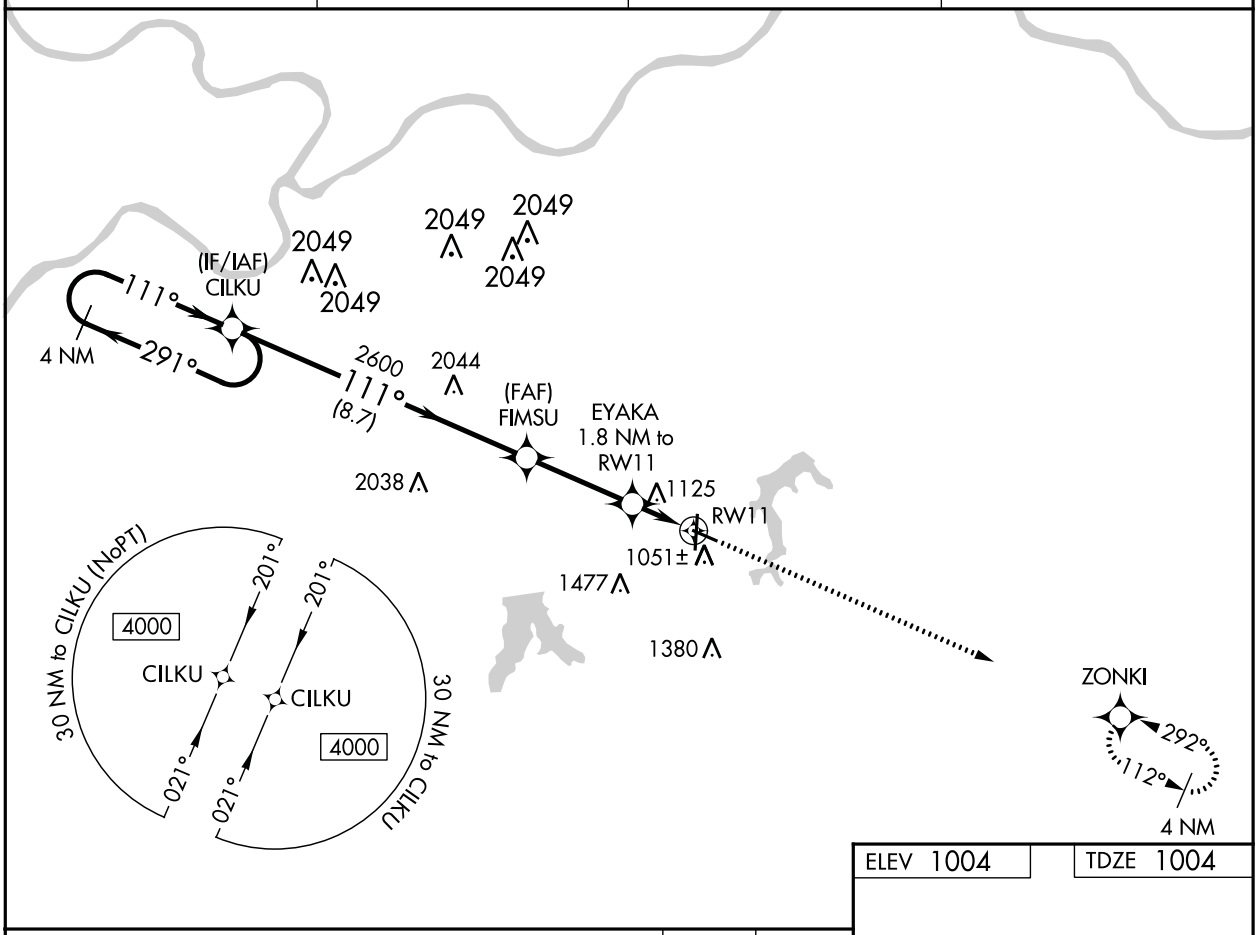
RNAV (GPS) RWY 11

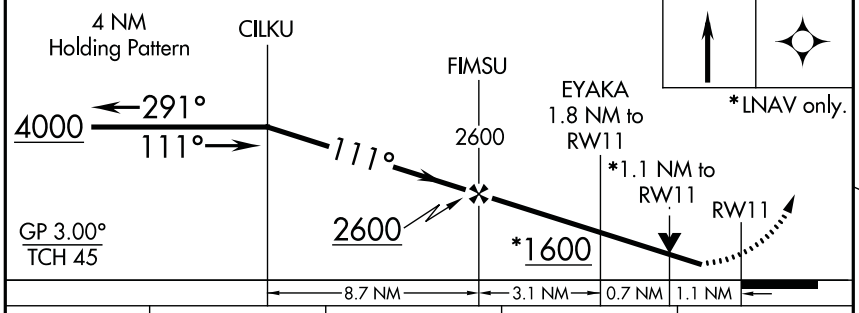
LEE'S SUMMIT MUNI (LXT)

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 54°C (130°F). Rwy 11 helicopter visibility reduction below ¾ SM NA. DME/DME RNP-0.3 NA.

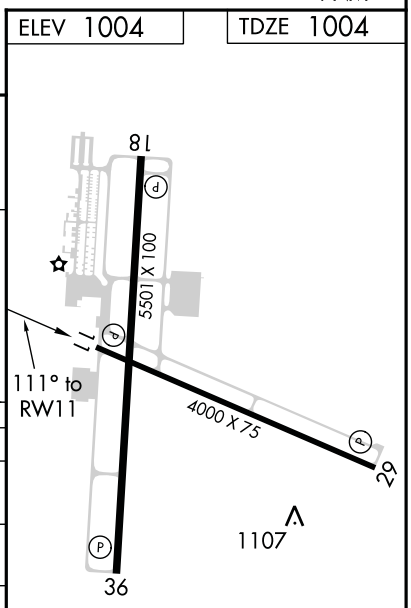
MISSED APPROACH: Climb to 3100 direct ZONKI and hold.

ASOS	KANSAS CITY APP CON	CLNC DEL	UNICOM
124.175	118.4 307.35	118.45	122.8 (CTAF) L





CATEGORY	A	B	C	D
LPV DA	1254-⅞ 250 (300-⅞)			
LNAV/VNAV DA	1381-1¼ 377 (400-1¼)			
LNAV MDA	1380-1 376 (400-1)			
C CIRCLING	1440-1 436 (500-1)	1540-1 536 (600-1)	1780-2¼ 776 (800-2¼)	1780-2½ 776 (800-2½)



NC-3, 19 MAY 2022 to 16 JUN 2022
NC-3, 19 MAY 2022 to 16 JUN 2022

Appendix B
Forecasts of Aviation Activity

Table B-1
AIRCRAFT OPERATIONS FORECAST
TERMINAL AREA FORECAST
Lee's Summit Municipal Airport

Forecast Year	Air Carrier	Air Taxi & Charter	GA Itinerant	Military Itinerant	Total Itinerant	GA Local	Military Local	Total Local	Total Operations
*2021**	-	*1,750*	*15,150*	*750*	*17,650*	*34,850*	-	*34,850*	*52,500*
2022	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2023	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2024	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2025	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2026	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2027	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2028	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2029	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2030	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2031	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2032	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2033	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2034	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2035	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2036	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2037	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2038	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2039	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2040	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2041	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2042	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2043	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2044	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500
2045	-	1,750	15,150	750	17,650	34,850	-	34,850	52,500

Notes:

** base year*

Shaded area = operations used in the B/C determination

Source: FAA Terminal Area Forecast (LXT - FY 2022-2045)

12/19/2022

Table B-2
AIRCRAFT OPERATIONS FORECAST
MASTER PLAN FORECAST
Lee's Summit Municipal Airport

Forecast Year	Air Carrier	Air Taxi & Charter	GA Itinerant	Military Itinerant	Total Itinerant	GA Local	Military Local	Total Local	Total Operations
*2021**	-	*235*	*29,169*	*750*	*30,154*	*19,446*	-	*19,446*	*49,600*
2022	-	224	29,777	750	30,751	19,835	-	19,835	50,585
2023	-	213	30,385	750	31,347	20,223	-	20,223	51,570
2024	-	201	30,992	750	31,944	20,612	-	20,612	52,555
2025	-	190	31,600	750	32,540	21,000	-	21,000	53,540
2026	-	198	32,200	750	33,148	21,420	-	21,420	54,568
2027	-	206	32,800	750	33,756	21,840	-	21,840	55,596
2028	-	214	33,400	750	34,364	22,260	-	22,260	56,624
2029	-	222	34,000	750	34,972	22,680	-	22,680	57,652
2030	-	230	34,600	750	35,580	23,100	-	23,100	58,680
2031	-	239	35,180	750	36,169	23,480	-	23,480	59,649
2032	-	248	35,760	750	36,758	23,860	-	23,860	60,618
2033	-	257	36,340	750	37,347	24,240	-	24,240	61,587
2034	-	266	36,920	750	37,936	24,620	-	24,620	62,556
2035	-	275	37,500	750	38,525	25,000	-	25,000	63,525
2036	-	284	38,080	750	39,114	25,380	-	25,380	64,494
2037	-	293	38,660	750	39,703	25,760	-	25,760	65,463
2038	-	302	39,240	750	40,292	26,140	-	26,140	66,432
2039	-	311	39,820	750	40,881	26,520	-	26,520	67,401
2040	-	320	40,400	750	41,470	26,900	-	26,900	68,370
2041	-	329	40,980	750	42,059	27,280	-	27,280	69,339
2042	-	338	41,560	750	42,648	27,660	-	27,660	70,308
2043	-	347	42,140	750	43,237	28,040	-	28,040	71,277
2044	-	356	42,720	750	43,826	28,420	-	28,420	72,246
2045	-	365	43,300	750	44,415	28,800	-	28,800	73,215

Notes:
** base year*
Shaded area = operations used in the B/C determination

Source: LXT Airport Master Plan Update (2021) *12/19/2022*

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, Missouri 65102

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

March 24, 2021

City of Lee's Summit
Attn: Mr. Michael Anderson, P.E.
Interim Public Works Director
220 SE Green
Lee's Summit, Missouri 64063

RE: Aviation Forecast Approval
Project 19-109A-1
Master Plan Phase 1
Lee's Summit Municipal Airport (LXT)

The Missouri Department of Transportation's Aviation Section (MoDOT) has reviewed the aviation forecast for the Lee's Summit Municipal Airport (LXT), Master Plan Phase 1 Demand Forecast, dated January 14, 2021. MoDOT concurs with and approves these forecasts for airport planning purposes, including the Airport Layout Plan (ALP) development. This approval is based on the following:

1. The difference between the FAA Terminal Area Forecast (TAF) and Lee's Summit Municipal Airport's forecast for total enplanements, based aircraft, and operations is within the 10 percent and 15 percent allowance for the 5 and 10-year planning horizons.

2. The forecast is based on current data and appropriate methodologies.

Based on the approved forecast, MoDOT also concurs with and approves the Cessna Citation V as the existing critical aircraft, and the Hawker 800 as the future critical aircraft.

The approval of the forecast and critical aircraft does not automatically constitute a commitment on the part of the United States to participate in any development recommended in the master plan or shown on the ALP. All future development will need to be justified by current activity levels at the time of proposed implementation. Further, the approved forecasts may be subject to additional analysis and approval by the FAA which may request a sensitivity analysis if this data is to be used for environmental or Part 150 noise planning purposes.

If you have any questions about this forecast approval, please call me at (573) 526-3619.

Sincerely,

BRIAN N. BOEHMER

Brian N. Boehmer
Aviation Operations Manager

CC: Andy Bodine, CMT (email)

Appendix C
Preliminary Benefit/Cost Calculations

Table C-1
PRELIMINARY BENEFIT/COST CALCULATION
TERMINAL AREA FORECAST
Lee's Summit Municipal Airport

Period	Year	Collision Benefit (B1)	Accident Benefit (B2)	Efficiency Benefit (B3)	Total Benefit	Benefit Adjustment [1]	Discount Factor (@7%)	Present Value (NPV)	ATC Cost	Present Value (NPV)
1	2022	204,099	57,841	172,316	434,256	92.5%	0.935	375,408	725,000	677,570
2	2023	204,099	57,841	172,316	434,256	92.5%	0.873	350,849	725,000	633,243
3	2024	204,099	57,841	172,316	434,256	92.5%	0.816	327,896	725,000	591,816
4	2025	204,099	57,841	172,316	434,256	92.5%	0.763	306,445	725,000	553,099
5	2026	204,099	57,841	172,316	434,256	92.5%	0.713	286,397	725,000	516,915
6	2027	204,099	57,841	172,316	434,256	92.5%	0.666	267,661	725,000	483,098
7	2028	204,099	57,841	172,316	434,256	92.5%	0.623	250,150	725,000	451,494
8	2029	204,099	57,841	172,316	434,256	92.5%	0.582	233,785	725,000	421,957
9	2030	204,099	57,841	172,316	434,256	92.5%	0.544	218,491	725,000	394,352
10	2031	204,099	57,841	172,316	434,256	92.5%	0.508	204,197	725,000	368,553
11	2032	204,099	57,841	172,316	434,256	92.5%	0.475	190,839	725,000	344,442
12	2033	204,099	57,841	172,316	434,256	92.5%	0.444	178,354	725,000	321,909
13	2034	204,099	57,841	172,316	434,256	92.5%	0.415	166,686	725,000	300,849
14	2035	204,099	57,841	172,316	434,256	92.5%	0.388	155,781	725,000	281,167
15	2036	204,099	57,841	172,316	434,256	92.5%	0.362	145,590	725,000	262,773
Total		3,061,485	867,615	2,584,740	6,513,840			3,658,529	10,875,000	6,603,238

Benefit/Cost Ratio = 3,658,529 / 6,603,238

B/C* = 0.65

Notes

A/C Type	*A/C Value*	*Occupants*
AC	*21,964,131*	*4.50*
AT	*3,259,701*	*4.50*
GA Itinerant	*1,384,660*	*2.77*
GA Local	*570,701*	*2.33*
Military	*78,330,000*	*4.05*

Calculation Basis
Establishment Criteria

Calculation Factors
Tower Count 92.5%

ATC Annual Cost: 725,000

** includes 0.10 added to B/C per H.R. 302, Sec 133(d)(2)(E)*

12/19/22

Table C-2
PRELIMINARY BENEFIT/COST CALCULATION
MASTER PLAN FORECAST
Lee's Summit Municipal Airport

Period	Year	Collision Benefit (B1)	Accident Benefit (B2)	Efficiency Benefit (B3)	Total Benefit	Benefit Adjustment [1]	Discount Factor (@7%)	Present Value (NPV)	ATC Cost	Present Value (NPV)
1	2022	410,899	67,550	209,717	688,166	92.5%	0.935	594,910	725,000	677,570
2	2023	418,900	68,866	213,825	701,590	92.5%	0.873	566,836	725,000	633,243
3	2024	426,901	70,181	217,933	715,015	92.5%	0.816	539,890	725,000	591,816
4	2025	434,902	71,496	222,040	728,439	92.5%	0.763	514,043	725,000	553,099
5	2026	443,252	72,869	226,481	742,603	92.5%	0.713	489,756	725,000	516,915
6	2027	451,603	74,242	230,922	756,767	92.5%	0.666	466,446	725,000	483,098
7	2028	459,953	75,615	235,363	770,931	92.5%	0.623	444,090	725,000	451,494
8	2029	468,303	76,987	239,804	785,095	92.5%	0.582	422,662	725,000	421,957
9	2030	476,654	78,360	244,244	799,258	92.5%	0.544	402,138	725,000	394,352
10	2031	484,525	79,654	248,262	812,441	92.5%	0.508	382,029	725,000	368,553
11	2032	492,396	80,948	252,280	825,624	92.5%	0.475	362,830	725,000	344,442
12	2033	500,267	82,242	256,298	838,807	92.5%	0.444	344,507	725,000	321,909
13	2034	508,138	83,536	260,316	851,990	92.5%	0.415	327,030	725,000	300,849
14	2035	516,009	84,830	264,334	865,173	92.5%	0.388	310,364	725,000	281,167
15	2036	523,881	86,124	268,352	878,356	92.5%	0.362	294,480	725,000	262,773
Total		7,016,583	1,153,502	3,590,171	11,760,256			6,462,011	10,875,000	6,603,238

Benefit/Cost Ratio = 6,462,011 / 6,603,238 **B/C* = 1.08**

Notes

A/C Type	*A/C Value*	*Occupants*
AC	*21,964,131*	*4.50*
AT	*3,259,701*	*4.50*
GA Itinerant	*1,384,660*	*2.77*
GA Local	*570,701*	*2.33*
Military	*78,330,000*	*4.05*

Calculation Basis
Establishment Criteria

Calculation Factors
Tower Count 92.5%

ATC Annual Cost: 725,000

* *includes 0.10 added to B/C per H.R. 302, Sec 133(d)(2)(E)*

12/19/22

Appendix D
FCT Program Guidance

Appendix A. FAA Contract Tower Minimum Equipment And Facilities List

The FAA Contract Tower (FCT) Minimum Equipment and Facilities List (MEL) identifies those items that are required for any "new start" or existing non-Federal tower seeking acceptance into the FCT program. Furthermore, the MEL applies to any new control tower that will replace an existing tower (replacement tower) that is already a participant in the FCT program. All FCTs are expected to be fully compliant with this MEL. Existing towers that are already participants in the FCT program and do not meet the requirements of this MEL must develop an action plan that addresses and resolves the deficiencies within 5 years. For those locations that do not have the structural capacity to meet the infrastructure requirements, a waiver request must be submitted.

Exclusion of any piece of equipment from the FCT MEL should not be considered as justification for removal, decommissioning, or failure to maintain/replace existing equipment. Installation or removal/decommissioning of equipment which interfaces with the National Airspace System requires a Safety Management System (SMS) review. Additional equipment may be required based upon actual or anticipated operations. All items on this list must be calibrated properly and maintained in good working condition.

1. Communications Equipment.

a. Voice switch communication equipment, with direct access line to controlling instrument flight rules facility, capable of radio and telephone ATC communication. This must include the capability of headset use and instructor/student override capabilities.

b. One headset per controller and one handset per position with appropriate spares.

c. Very High Frequency (VHF) radios, as required, to support level of traffic; i.e., Local Control, Ground Control, Automatic Terminal Information Service, Clearance Delivery, and Emergency; one transmitter and one receiver for each frequency. Handheld radios are not authorized as primary units.

d. Tunable emergency transceiver with backup power supply (to provide backup VHF communication).

e. A multi-channel, multi-line digital voice recorder system with a remote alarm, for continuous unattended recording of each position used for receiving/transmitting ATC clearances and ATIS. It must meet the requirements of FAA Orders JO 7210.3 and JO 8020.16.

f. An administrative telephone line with long distance capability and handsets in the operating and administrative quarters. To support a single person on duty, contingency plan and emergency operations, the administrative line must be available in both the office and tower cab environment.

g. Telecommunication requirements to sustain high speed internet communication, to include the following:

1) FTI Mission Support connection and Router;

2) Local Area Network consisting of a network switch, an Uninterruptible Power Supply (UPS), a rack with patch panel, and network cabling to the wall jacks.

Note: Requires reimbursable agreement with FAA.

h. Alert system to notify airport emergency equipment operator.

i. Automatic Terminal Information Service (ATIS), (for towers with 50,000 or more annual operations).

j. ASOS Automatic Terminal Information Service (ATIS) Interface Unit (AAIU).

Note: Facilities equipped with an ATIS and an automated weather system with broadcast capability must be equipped with an FAA-approved interface switch which inhibits the automated system from broadcasting the weather while the FCT is open.

2. Weather Equipment.

a. Manual Limited Aviation Weather Reporting Stations (LAWRS) stations must possess the following primary weather reporting equipment in accordance with FAA Order JO 7900.5, JO 7210.3, and JO 7230.8:

1) Wind Measuring Equipment (Speed and Azimuth), must be visible from each operational position.

2) Altimeter (in accordance with FAA JO 7210.3 paragraph 2-10-3), must be visible from each operational position.

3) Temperature

4) Dew Point

b. Automated LAWRS stations must possess the following equipment to provide augmentation/backup of the automated weather system with SPECI capability in accordance with FAA Order JO 7900.5, JO 7210.3 and JO 7230.8:

1) Operator Interface Device (OID) located in the tower cab.

2) Wind Measuring Equipment (Speed and Azimuth), independent of the automated weather system, must be visible from each operational position.

3) Altimeter, independent of the automated weather system, must be visible from each operational position.

4) Temperature Equipment, independent of the automated weather system.

5) Dew Point Equipment, independent of the automated weather system.

3. Operations Floor Equipment:

a. Two pair of operable binoculars (7x50 or greater).

b. Signal Light Gun with a back-up power source.

c. At least one digital 24-hour time source with hours-minutes-seconds display visible from operating positions.

d. Manual or automated traffic counting device.

e. Controller Chairs – safety issues within the controllers' work area require:

1) Chairs must be Electro Static Discharge (ESD) compliant.

2) Chairs must meet the high intensity use 24/7 standard.

3) Chairs must have fully adjustable mechanisms that are easy and safe to manipulate.

4. **Non-Operations Equipment.** Appropriate non-operational space, furniture, and equipment must be provided, including:

a. Lockable Air Traffic Manager's office with a locking file cabinet.

b. Training/break room with appropriate desk, chairs, and table.

c. Refrigerator.

d. Microwave.

e. Dish Sink.

5. Building Equipment/Specifications.

a. Generator for any ATCT with an elevator.

b. Airport lighting controls located in the tower cab, including on/off switch for rotating beacon.

c. FAA-approved window shades for all tower cab windows. (Must not have any imperfections that would obstruct vision.)

d. Position lighting with rheostat control for each operating position and tower cab administrative area.

e. Restroom one floor below the tower cab.

f. Floor covering must be ESD resistant.

FAA Contract Tower (FCT)
FAA Contract Operations Group
Operational Readiness Inspection Checklist
New Start and Replacement Towers

Federal Aviation Administration

FACILITY NAME & ID		☐ New Start Tower ☐ Replacement Tower
ATC VENDOR	☐ Midwest ☐ RVA ☐ Serco	
ATM NAME (If known)		
EVALUATORS		
INSPECTION DATE	**Estimated Start Date**	
FACILITY OWNER	☐ N/A – FAA-Owned ☐ Sponsor:	

Section 1: Deficiency Score Key
Use the Scoring Key below for the inspection items

0 – No Deficiency
1 – Minor Deficiency: A detectable problem which has only a minor effect on the facility
2 – Moderate Deficiency: An obvious problem which is affecting the facility and has an impact which is minor to significant.
3 – Significant Deficiency: A problem which is readily apparent and needs to be addressed through future action and has an adverse effect on the facility.
4 – Major Deficiency: Efforts to deal with this class of deficiency require actions which go beyond usual measures.

Section 2: Use drop-down menu for: "0" (Meets requirements) or "1" (Does not meet requirements)
Section 3: Use drop-down menu for: "Yes" or "No"
Explain all scores above 0 in the comments or additional comments section

Section 1

Facility Data & Status (FAA Order 6480.17, Chapter 6)

Inspection Item	Score	Comments	Action
a. What is the orientation of the tower in relation to the runway layout? (para 115)	--		--
b. What is the height of the tower cab? (Para 114)	--		--
c. Are the runways/helipads visible from the tower? (para 116)	--		--
d. Are the taxiways visible from the tower? (para 118)	--		--
e. Are there any depth perception problems identified from the tower? (para 120)	--		--
f. Is the facility accessible by non-authorized personnel? (para 130)	--		--
g. Is the physical condition and appearance acceptable? (para 123)	--	☐ Catwalk ☐ Stairs & Stairwell ☐ Elevator ☐ Restroom	--

h. Is the facility parking adequate for controllers? (para 121)	--		--
i. Is the stairwell lighting sufficient? (para 127)	--		--
j. Is the heating ventilation and air conditioning (HVAC) system adequate?	--	☐ Tower Cab ☐ ATM Office ☐ Training Room ☐ Rest Room	--
k. Fire Protection/Fire Life and Safety (para 124)	--	☐ Alarm Silence In Cab ☐ Current Inspection	--
l. Is the air quality satisfactory? (para 125)	--	☐ Musty Smell ☐ Sewer Odor ☐ Other	--
m. What are the tower cab dimensions? (para 141)	--		--
n. Are the main cab lights adequate? (para 143)	--		--
o. Do each of the control positions have position lights? (para 144)	--		--
p. What is the color of the cab ceiling/tiles? (para 146)	--	☐ Black ☐ White ☐ Other	--
q. Are tower acoustics satisfactory? (para 147)	--		--
r. Are there visibility obstructions in the tower cab? (para 148)	--	☐ Glare ☐ Mullions ☐ Equipment ☐ Walls ☐ Other	--
s. Is external noise a distraction? (para 149)	--		--
t. Is the physical condition of the cab being maintained to professional operational standards? (para 150)	--	☐ Cleaning Contract ☐ Exterminator ☐ Shade Cleaning	--
u. Is outside glare a hindrance to vision? (para 152)	--	☐ Outside Lights ☐ Glare/Reflection ☐ Stray Illumination	--
v. What is the proximity of the cab to other locations in the facility? (para 155, 156, 157)	--	☐ Training: ☐ Break: ☐ Restroom: ☐ ATM Office:	--
w. What is the console height & depth? (para 158)	--		--
x. Is the equipment layout functional? (para 160)	--		--
y. Is the inter-position work flow impeded? (para 161)	--		--
z. Is there room for equipment replacement or upgrade? (para 163 & 164)	--		--
aa. Is there a supervisor work area in the tower cab? (para 165) Lack of a supervisor area/position should not have an adverse effect on an FCT	--		--
bb. Does the convenience area in the tower cab provide these items? (para 166)	--	☐ Microwave ☐ Potable Water ☐ Refrigerator ☐ Sink	--
cc. Is storage in the tower cab adequate? (para 167)	--		--

dd. Is the tower cab floor covering satisfactory? (para 169)	--		--
ee. Are exhaust fans installed in the tower cab (para 170)	--		--
ff. Is operational equipment accessible to technicians? (para 171)	--		--
gg. Is headset storage available? (para 172)	--		--
Section 2			
Section 2A – Configuration & Operational inventory			
JO 7210.54C, Appendix B – Minimum Equipment List			
a. Voice Switch System – Must include capability of headset use and instructor/student override (item 1a)	--		--
b. Handset – One per position (item 1b)	--		--
c. Headset – One per controller (item 1b)	--		--
d. VHF Radios – As required to support operations (GC, LC, ATIS, CD, etc.) (item 1c)	--		--
e. UHF Radios – As required to support military operations (item 1d)	--		--
f. Landline communication with direct access line to IFR facility (item 1e)	--	☐ Landline ☐ Shout Line	--
g. Tunable, backup transceiver with battery backup (item 1f)	--	☐ Motorola PET-2000 ☐ Bendix ☐ Other	--
h. Multi-Channel, multi-line digital voice recorder system with continuous unattended recording of each position (item 1g)	--		--
i. Recorder monitor in cab (item 1g)	--		--
1) Type/Make of Recorder			--
2) Total number of channels			--
3) Number of channels being used			--
4) Are administrative phones recorded?	--		--
5) Are any operational positions not being individually recorded? (Do not include positions which don't exist)	--	If yes, ☐ LC ☐ FD ☐ CD Which ones? ☐ GC ☐ CIC ☐ Other	--
j. Automated weather system OID or monitor in the cab (item 1h) Must be able to support LAWRS duties	--	☐ ASOS ☐ AWSS ☐ SAWS ☐ AWOS ☐ SWS ☐ Other	--
k. Two FAA approved altimeter setting indicators IAW JO 7210.3 (item i) 2 ASI or 1 ASI/DASI with Station Standard (ASOS/AWOS/AWSS)	--		--
l. FAA-approved or certified temperature and dew point sensor (item1j) Must be independent from the ASOS/AWOS/AWSS	--		--

m. FAA-Approved wind indicator – Independent from the ASOS/AWOS (item 1k) At least one independent indicator	--		--
n. 2 pair of binoculars – 7x50 or greater (item 1m)	--		--
o. Signal light gun with backup/battery power source (item 1n) Light gun may be incandescent or LED	--	☐ UPS ☐ Battery Operated ☐ Generator Backup	--
p. 24-Hour clock with seconds display (item 1o) *At least 1 clock, digital or analog*	--	☐ Digital Clock ☐ Analog Clock	--
q. Alert system to notify emergency equipment operators (item 1p) Alert system may include 911 activation	--		--
r. Traffic counting device (item 1q) Manual or automated	--	☐ Manual ☐ Automatic	--
s. Airport lighting control including on/off for the rotating beacon (item 2b) Rotating beacon may be located off the field and be uncontrolled	--	☐ Beacon on the Field ☐ Beacon not on Field ☐ Beacon auto/remotely operated	--
t. FAA-approved control tower window shades (item 2c)	--		--
u. Position Lighting dimmable at each operating position and administrative area (item 2d)	--		--
v. Controller chairs (item 2e) One for each control position, electro-static discharge, adjustable	--		--
w. ESD floor covering (item 2f) If floor is carpeted	--		--
x. Administrative telephone line in the operating and administrative quarters (item 2g) Must be able to support single-person operations	--		--
y. Appropriate desk, table, and chairs	--		--
z. CBI Computer	--		--
aa. Lockable ATM Office	--		--
bb. FTI Lines and Access Includes Mission Support Router, LAN, UPS, rack with patch panel, and cabling to wall jacks. Mission support computer, administrative computer, and printer may not arrive until ATM is available.	--		--
Section 2b – Optional Equipment and Facilities (Inventory)			
a. Automatic Terminal Information Service (ATIS)	--		--
b. ATIS/ASOS/AWOS Interface Unit (AAIU) Required if ATIS is installed. Facilities equipped with an ATIS and an automated weather system with broadcast capability must be equipped with an interface switch which inhibits the automated system from broadcasting the weather while the FCT is open	--		--
c. Flight Data Input & Output (FDIO)	--		--
d. Tower Radar Display (TRD)	--	☐ Certified Radar Display (STARS, DBrite, etc) ☐ Uncertified Radar Display	--
e. NAVAID Monitor	--		--

f. Information Display System (IDS)	--	Type of IDS:	--
g. Runway Incursion Detection System (RIDS)	--		--
h. Break Room	--		--
i. Storage Space	--		--
j. Conference Room	--		--
k. Training Room	--		--
l. Tape Play-back Room	--		--
Section 3			
Documentation, Security, and Occupancy			
a. Is there a signed Tower Operating Agreement? Sponsor-Owned or Leased Facility Only	--		--
b. Is there a copy of the Certificate of Occupancy?	--		--
c. Is there a copy of the Elevator Certificate?	--		--
d. Are there copies of the FCC frequency licenses?	--		--
e. Is there a copy of the safety inspection?	--		--
f. Does the tower meet FAA Security Requirements for Sponsor-Owned facilities? (JO 1600.69)		☐ Not Applicable – This is <u>not</u> a sponsor-owned facility	--
1) Security fence at least 6 feet high Fence is not required if the tower is a part of the terminal building complex or located within the fenced-in Airport Operations Area	--		--
2) Lighting at base of tower and controller parking area, Separate lights not required if controller parking is adjacent to the ATCT	--		--
3) Tower cab-controlled mechanism for access to the ATCT.	--		--
4) Surveillance camera, with intercom, at the main entrance with monitor/intercom in the tower cab.	--		--
5) Mechanical or electrical access control on main door to ATCT	--		--
6) Warning signage on each entry door to the ATCT.	--		--

AIR TRAFFIC CONTROL TOWER OPERATIONS AGREEMENT BETWEEN
FEDERAL AVIATION ADMINISTRATION (FAA)
AND
_____

I. PARTIES

This Air Traffic Control Tower Operations Agreement (TOA) (hereinafter "Agreement"), is hereby made and entered into this _____ day of _____, 20___ by and between the Federal Aviation Administration ("FAA") and the _____ ("Airport Sponsor") (collectively known as the "Parties").

II. SCOPE

The purpose of this Memorandum of Understanding (MOU) between the FAA and the Airport Sponsor is to set forth the terms under which the FAA will provide air traffic control (ATC) services to the Airport Sponsor at _____ ("Airport"), located in _____, _____. This Agreement replaces and supersedes any prior TOA signed by the parties.

III. ROLES AND RESPONSIBILITIES OF THE PARTIES

A. Roles and Responsibilities of the FAA.

The FAA shall provide ATC services at the Airport, by way of a contractual agreement between the FAA and an air traffic control services provider of the FAA's choice, in accordance with standards established by the FAA, subject to the availability of funds.

The tower hours of operation will be _____ am to _____ pm.

The FAA reserves the right to adjust those hours in accordance with applicable FAA standards, regulations and policy. The FAA/ATC contractor will collect hourly and daily traffic count data during tower operating hours.

The FAA will maintain all FAA-owned equipment installed in the tower.

The FAA will conduct annual occupational safety and health inspections, for any FCT that is an FAA employee's duty station.

The FAA will conduct periodic security inspections based upon the criteria identified in FAA Order 1600.69, as may be amended. Relevant portions of the Order will be provided to Airport Sponsors. (A Signed Non-Disclosure Agreement (NDA) will be required to receive a copy of the Order.)

B. Roles and Responsibilities of the Airport Sponsor.

The Airport Sponsor shall provide and maintain, at no expense to the FAA, an Air Traffic Control Tower (ATCT) that meets all applicable state and local codes, standards and regulations.

In the absence of applicable state and local codes, standards, and regulations, the Airport Sponsor shall provide and maintain, at no expense to the FAA, an Air Traffic Control Tower (ATCT) that meets all applicable Federal codes, standards and regulations.

The Airport Sponsor shall provide, maintain, and replace, at no expense to the FAA, all non-FAA-owned tower equipment required by the Minimum Equipment and Facilities List (MEL).

The Airport Sponsor shall provide and continually maintain all utilities and services, including but not limited to: heating, air conditioning, electrical, water, gas and sewer. The Airport Sponsor shall maintain janitorial services (to include washing tower cab windows and shades, interior and exterior, when necessary).

The Airport Sponsor shall be responsible for the proper and continued functioning of all equipment that the FAA determines is necessary for ATC operations, including that which cannot be placed in operation or otherwise controlled from the ATCT building or that is not otherwise within the control of the FAA, its agents, representatives or contractors. Examples include, but are not limited to airport lighting, windsock, obstruction lights, rotating beacon, etc.

The Airport Sponsor is responsible for ensuring security and controlled access to the tower is established and maintained in accordance with FAA Order 1600.69, as may be amended. Relevant portions of the Order will be provided to Airport Sponsors. (A Signed NDA will be required to receive a copy of the Order.) The Airport Sponsor agrees to enter into a Letter of Agreement (LOA) with the ATC service provider's local representative specifically for the purpose of providing an airport point of contact and procedures to follow to ensure a timely response to requests concerning equipment, security or building problems.

In accordance with FAA Order JO 7210.3, as revised, other Letters of Agreement may be necessary for topics such as airport emergency service, control of vehicular traffic on airport movement areas, operation of airport lighting, local procedures and reporting airport conditions. However, the terms and conditions set forth in this Agreement or the FAA Contract Tower (FCT) contract cannot be waived or superseded by such local agreements.

IV. BENEFIT/COST RATIOS CONSIDERATION

Statue dictates how often and under what conditions FAA recalculates benefit/cost ratios to determine the percentage of funds for which the FAA and the airport are responsible. The FAA currently provides full funding for sites with a benefit/cost ratio of 1.0 or greater. Fully funded sites whose benefit/cost ratio decreases to less than 1.0 will be offered the opportunity to participate in the FCT Cost Share Program.

V. SUPPLEMENTAL HOURS

If the Airport Sponsor requests ATC services outside of FAA approved tower hours of operation, the provision of such additional services shall be at the expense of the Airport Sponsor. These supplemental hours of operation may be achieved through an agreement with the air traffic control services provider, supplemental agreement with the FAA, or by other authorized means.

VI. POINTS OF CONTACT

Airport Sponsor:

_____

_____

_____

FCT Program Implementation Manager:

_____

_____

_____

FCT Program Manager:

_____

_____

_____

VII. CHANGES AND/OR MODIFICATIONS

Changes and/or modifications to this Agreement shall be in writing and signed by both parties. The modification shall cite the subject Agreement, and shall state the exact nature of the modification. No oral statement by any person shall be interpreted as modifying or otherwise affecting the terms of this Agreement.

VIII. TERMINATION

The Airport Sponsor agrees that notwithstanding any other provisions of this TOA, the FAA's ability to provide contract ATC service is contingent upon the appropriation of adequate funds. If adequate annual appropriations are not provided, the FAA may terminate this Agreement without penalty. In addition to any other termination rights provided by this Agreement, either party may terminate this Agreement at any time prior to its expiration date, with or without cause, and without incurring any liability or obligation to the terminated party (other than payment of amounts due and owing and performance of obligations accrued, in each case on or prior to the termination date) by giving the other party at least Ninety (90) days prior written notice of termination. Upon receipt of a notice of termination, the receiving party shall take immediate steps to stop the accrual of any additional obligations, which might require payment.

IX. TERM OF THE AGREEMENT

This Agreement shall automatically renew annually on the effective date unless terminated by either of the parties in writing, as provided herein.

X. DISPUTES

Where possible, disputes will be resolved by informal discussion between the parties. In the event the parties are unable to resolve any disagreement through good faith negotiations, the Director of Operations- Headquarters (AJT-2) will resolve the dispute. The decision of the Director of Operations-Headquarters is not subject to further administrative review and, to the extent permitted by law, is final and binding.

XI. INSURANCE

The Airport Sponsor shall arrange for insurance or otherwise for the full protection of the Airport Sponsor from and against all liability to third parties arising out of, or related to, the performance of this Agreement to the extent permitted by law. *(If necessary, Airport Sponsor may insert a description of any State laws that apply here.)*

XII. LIABILITY

The FAA assumes no liability under this Agreement for any losses arising out of any action or inaction by the Airport Sponsor, its employees or contractors, or any third party acting on its behalf. The Airport Sponsor agrees to hold the FAA harmless against any claim by third persons for injury, death, or property damage arising out of or in connection with the Airport Sponsor's performance under this Agreement.

XIII. LEGAL AUTHORITY

This "other transaction" MOU is entered into under the authority of 49 U.S.C. §§ 106 (f)(2)(A) and 106(l) and (m), which authorizes agreements and other transactions on such terms and conditions as the Administrator determines necessary. This MOU is not a Memorandum of Agreement, procurement contract, grant or cooperative agreement. Nothing in this Agreement shall be construed as incorporating by reference or implication any provision of Federal acquisition law or regulation.

XIV. CIVIL RIGHTS ACT

The Airport Sponsor shall comply with Title VI of the Civil Rights Act of 1964 relating to nondiscrimination in federally assisted programs and, if requested, provide a certification to that effect.

XV. PROTECTION OF INFORMATION

The parties agree that they shall take appropriate measures to protect proprietary, privileged, or otherwise confidential information that may come into their possession as a result of this MOU.

XVI. FUNDING

No funds are obligated under this MOU. Each party shall bear the full cost it incurs in performing, managing, and administering its responsibilities under this MOU.

XVII. CONSTRUCTION

Parties agree to exercise good faith in achieving the goals of this MOU; this means that the Government will adopt and perform the above delineated roles and responsibilities and will provide air traffic control services for the above designated airport sponsor at the designated location. The Airport Sponsor also agrees to adopt and perform the above delineated roles and responsibilities. Neither party is authorized or empowered to act on behalf of the other with regard to any matter, and neither party shall be bound by the acts or conduct of the other in connection with any activity under this MOU. This provision shall survive termination of this MOU. The undersigned TOA holder affirms that this MOU is entered knowingly and voluntarily.

The FAA reserves the right to withdraw FAA funding for ATC services from Airport Sponsors that do not comply with the terms of this agreement.

AGREED:

Airport Sponsor	Federal Aviation Administration
BY: _____	BY:_____
TITLE: _____	TITLE: _____
DATE: _____	DATE: _____

Appendix E
ATCT Development & Operating Costs

Appendix E
ATCT DEVELOPMENT & OPERATING COSTS

Development costs have many variables (date of construction, height, construction materials, etc.) that make a true comparison with other airports difficult. Likewise, comparable operational costs are also difficult to identify due to the various accounting policies of airports, most of which do not have an established cost center for their air traffic control tower (ATCT) expenses. In both cases, development and operational costs are discussed in the context of specific line items, ranges of reasonable estimates, and drivers for how those costs can be determined locally.

A. Introduction

The process for initiating the development of an ATCT that is intended to be operated under the FAA's Federal Contract Tower (FCT) program is generally phased into four steps.

- FCT Feasibility Study & Benefit Cost Determination
- ATCT Siting Study & Comparative Safety Analysis
- ATCT Design
- ATCT Construction

Once accepted into the Federal Contract Tower Program, the planning and development of an air traffic control tower can take 3 to 4 years to complete. The following narrative discusses the tasks and general costs associated with these four phases of ATCT development.

B. FCT Feasibility Study

The initial step in the development and operation of an ATCT under the FCT program is to apply to the FAA for entry into the program. The FAA provides an application process that asks for certain data to be included by sponsors. Upon receipt of the application, the FAA will conduct a Benefit/Cost (B/C) analysis that takes the Airport's aircraft activity data and estimated ATCT operational costs and expenses to assess the potential benefits that the tower would provide. Benefits are quantified by the econometric value of the lives and property saved from accidents as a result of providing controlled airspace where none existed before. The value of time saved by the ATCT managing the airfield (i.e., traffic pattern) more efficiently is also included in the B/C calculations. A benefit-to-cost ratio equal to 1.0 or greater is required to be considered a candidate for the FCT program.

While not specifically required, a preliminary assessment of the potential BCA prior to submitting an application helps establish the potential feasibility that the request will result in a favorable ratio. It also helps to identify data specific to the Airport that FAA has on record which may be inaccurate and could affect the outcome of the B/C determination. The feasibility study also provides an opportunity to educate the Airport's governance regarding the FCT application process, and the need for enhancing the safety of the users that the FCT program provides.

Typical tasks that comprise the scope of an FCT Feasibility Study include:

a. Aviation Activity Review – Available data related to historical and existing aviation activity at the airport will be reviewed and compared to the FAA's most recent Terminal Area Forecast

(TAF) and other forecasts of aviation activity. Additional information necessary to update the TAF with accurate site-specific data will be identified and compiled.

b. Pro-forma ATCT Benefit/Cost Analysis – The TAF and Alternate Scenario forecasts will be used as input data to conduct a Benefit/Cost (B/C) analysis using the FAA's Office of Policy and Plans' standard criteria. The resultant B/C ratios will be evaluated for determining the FAA's potential funding of air traffic control services at the Airport. A sensitivity analysis will also be conducted to identify and evaluate the impact of critical factors for adjustment of the B/C ratio. A detailed report containing the background, rationale, and results of the Benefit/Cost Analysis will be prepared. Also included will be a recommended strategy for updating the FAA's data base and other pertinent information related to the Airport that can be used for calculating future B/C ratios.

c. Comparative Airport Analysis – Other airports with similar operating characteristics will be compared on the basis of (1) community size, (2) aircraft operations by volume and fleet mix, and (3) estimated development and operational costs among other comparable criteria. Anticipated ATCT operational costs for the Sponsor's out-of-pocket operations and maintenance (O&M) costs will be estimated. The eligibility and magnitude of potential federal and state funding resources will be identified.

d. B/C Application Preparation and Support – An FCT application package will be prepared for submittal to the FAA. Draft communications for requests with appropriate FAA/State offices will be provided. Review of the FAA's BCA determination if less than the requisite 1.0 ratio will be conducted and materials for an appeal will be provided.

The project costs for an FCT Feasibility Study range from $10,000 to $15,000 which represents the consultant's time and expenses to provide the services and is generally set up as a not-to-exceed budget. The project schedule for the work to prepare the FCT application is usually 90-120 days.

A favorable B/C ratio (i.e., 1.0 or greater) will result in the FAA's determination that the Sponsor is now officially considered a "candidate" for the FCT program with the condition that the Sponsor develop an ATCT that meets the FAA's criteria. Candidate status also allows the Sponsor access to and use of available funds under the Airport Improvement Program (AIP) and to program subsequent projects in the Airport's federal Airport Capital Improvement Program (ACIP).

C. ATCT Siting Study & Comparative Safety Analysis

The next phase of ATCT development is to select a site that meets the FAA's Siting criteria as promulgated by FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process* and other interim guidance. The general siting process involves a systematic analysis for determining the minimum height of the ATCT based on line-of-site criteria at potential locations on (or near) the airfield. Specific criteria include:

a. Visual Performance – demonstrate an unobstructed view from any proposed ATCT site, at controller eye level, of all controlled movement areas on the airport, including all runways, taxiways, and any other landing areas, and of air traffic in the vicinity of the airport.

b. Obstruction Analysis – document any potential impacts caused by the height of a proposed ATCT that may have an adverse impact to any current or planned instrument approach procedures or may create an significant obstruction to any of the Airport's as identified by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace.

c. Environmental Conditions – document conditions that may impair the ability to manage the airfield/airspace due to:

- sunlight/daylight (glare)
- artificial lighting (high mast lights)
- atmospheric conditions (fog, smog, dust, etc.)
- industrial municipal discharge (smoke, steam, etc.)

d. Other Criteria – identify conditions to assure that:

- access to any proposed ATCT site does not cross airfield movement and non-movement areas.
- no interior physical barriers of an ATCT (mullions/equipment etc.) will create sight limitations.
- any proposed ATCT site can be secured to meet FAA security requirements

e. Environmental Impact – as a federal action, a proposed ATCT will become part of the National Airspace System (NAS) and required compliance with the National Environmental Protection Act (NEPA). Usually, an environmental assessment (EA) study focused on just the proposed ATCT site will meet the requirement and usually results in a Finding of No Significant Impact (FONSI). The EA project is generally conducted as a separate project but tracks concurrently with the Siting Analysis.

f. Comparative Safety Analysis (CSA) – FAA's Safety Management System (SMS) policies require that safety assessments be done for any potential changes to the NAS that may have a significant safety impact. Compliance with the SMS policies is demonstrated as the culmination of the ATCT siting process for potential sites. The CSA involves the comparison of the relative risks among the potential preferred sites. For each site, a Preliminary Hazard Assessment (PHA) is prepared to evaluate the hazards that can impact aviation safety by developing the ATCT at the proposed location and height. Hazards are usually identified in relation to the results of the siting criteria for each site. Risks that are considered "high" must be mitigated to at least a level considered "medium" or "low".

The final assessment of hazards and their associated risk is developed by a Safety Risk Management (SRM) Panel consisting of FAA personnel in various lines of business, subject matter experts, and the Sponsor and their representatives. A formal SRM panel meeting is conducted to evaluate each site in relation to the hazards, to discuss mitigation strategies and ultimately to gain consensus regarding the preferred site for the ATCT. The results of the CSA/PHA are prepared as an SRM document that includes a final site approval to be signed by the responsible FAA personnel.

Project costs for the Site Analysis which includes the CSA can range from $80,000 to $150,000 given the complexity of the potential sites. An Environmental Assessment for the ATCT sites is normally conducted as a separate project to comply with the requirements of the National Environmental

Protection Act (NEPA) and can range from $60,000 to $120,000, again dependent of the complexity of the sites. In many cases, the cost for the EA can be ameliorated by having a cultural resources survey that covers all airport property conducted in advance of the EA for the ATCT. The schedule for conducting the Site Assessment including the CSA and the EA can take up to 270 days. While the final EA findings may take longer, the preliminary findings must be available for consideration prior to the SRM panel meeting.

D. ATCT Design

The design phase of ATCT development depends on the project delivery method that is selected. There are three basic methods for project delivery including:

- Design-Bid-Build (DBB)
- Design-Build (DB)
- Construction Manager at Risk (CMAR)

Traditionally, the Design-Bid-Build (DBB) method has been used for ATCT design and construction projects primarily due to federal, state, or local policies or restrictions on other types of projects that use public funding sources. More recent policies have allowed other forms of project delivery methods which allow earlier participation by the constructor and value engineering which in turn may offer an accelerated development schedule, cost savings and other benefits.

The following tasks follow the DBB methodology:

a. Preliminary Project Design (PD)
   - Project scope
   - Project budgeting
   - Project schedule
   - RFP and selection of design team
b. Schematic Design (SD) – up to 30 percent complete
   - Concept design
   - Site layout & spatial requirements
   - Survey & geotechnical investigation
   - Building code review
   - Order of magnitude cost estimates
c. Design Development (DD) – up to 60 percent complete
   - Floor plans
   - Elevations
   - Structural requirements
   - Mechanical, electrical, plumbing, & HVAC systems requirements
   - Preliminary interior finished floor requirements
d. Construction Documents (CD) – up to 100 percent complete
   - Finalize design plans and details
   - Prepare technical specifications
   - Prepare bid documents
e. Bidding Assistance (BA)
   - Participate in pre-bid meeting
   - Respond to requests for information (RFIs)

- Review bids
- Recommend lowest responsive bid acceptance

For planning purposes, the project design cost will usually fall in the range of 10 to 12 percent of the estimated construction costs which due to the complexity of vertical construction is higher than other design projects. Assuming a $8 million construction budget, design fees should fall around $800,000 to $960,000 although the actual fee will be based on the design professional's detailed estimate of time and expenses for each task and subtask. The schedule for design services will range from 270-360 days.

D. ATCT Construction

Selection of the contractor for ATCT construction under the DBB project delivery will involve the lowest responsive bid including meeting specific federal, state, and local requirements. If federal funds (i.e., AIP) are involved in the project, requirements such as meeting Disadvantaged Business Enterprise (DBE) goals, Davis-Bacon (federal wage determinations) and Buy American provisions among others must be followed.

Also, while not part of the design phase of the project, the design team will participate in Construction Administration (CA) which involves:

- Participate in pre-construction meeting
- Provide resident project representative (RPR)
- Review contractor's progress & recommend payments
- Respond to requests for information (RFIs)
- Review & recommend change orders
- Participate in final acceptance inspection

Table E-1 presents an example of a detailed cost estimate for ATCT construction.

E. ATCT Development Funding

As shown in the previous discussion, the cumulative costs associated with the development of the ATCT are significant and without funding assistance from federal and/or state resources, usually out of reach for general aviation airports. Fortunately, Congress has provided access to federal funding, first though legislation found in Sections 338 and 370 of the Department of Transportation and Related Agencies Appropriations Act of 2003. This and subsequent legislation allows for the use of AIP entitlements funds for ATCT development.

The 2003 Act also contained provisions allowing sponsors to seek reimbursement for eligible project costs using its AIP entitlement funds provided federal procurement requirements were followed. For non-primary (i.e., general aviation) airports, entitlement funds amount to $150,000 annually with a maximum carry-over of 4 years for a total of $600,000 which is inadequate to cover the majority of ATCT development costs. It also assumes that the AIP entitlements are not committed to the Airport's other higher priority projects.

The FAA Reauthorization Act of 2018 made ATCTs eligible for funding from the Small Airport Fund, which comes from AIP funds returned by large and medium hub commercial airports collecting

passenger facility charges. The legislation also stipulated that ATCTs shall be given "priority consideration" for the Small Airport Fund.

Table E-1
ESTIMATED ATCT DESIGN AND CONSTRUCTION COSTS

Professional Services			
Planning & Programming		15,000	
Site Analysis & Safety Risk Assessment		125,000	
Environmental Analysis		100,000	
Design		640,200	*12% of Construction*
Construction Administration		533,500	*10% of Construction*
Subtotal (Professional Services)		**1,413,700**	
Construction			
Common Features		**Cost**	**Remarks**
Level 1	General Equipment Room	600,000	*Includes Electical Service/ Telecommunications/Fire Sytems/Elevator*
Level 2	Unfinished	100,000	*Required to meet Tower Cab elevation*
Level 3	ATM Office	150,000	*Air Traffic Manager's / Admin Office*
Level 4	Airport Equipment Room	150,000	*Sponsor Equipment & Racks*
Level 5	FAA Equipment Room	150,000	*FAA & Equipment Rack*
Level 6	Training / Break Room	150,000	*Training /Break / Conference Room / Restrooms*
Cab Level	Cab Floor	750,000	*ATCT Control Tower Cab Structure, Glazing, Catwalk, Parapet, etc.*
Subtotal (Common Features)		**2,050,000**	
Other Specific Features			
General Conditions		410,000	*20% of Common Features*
Fire Pump & Fire Protection		205,000	*10% of Common Features*
Site Civil (Access Road, Parking, Security)			
Access Road		95,000	*(500' x 22' = 1,250 sy) @ $75 per sy*
Parking (10 spaces)		31,500	*(10 spaces 9' x 18' + 24' access = 420 sy @ $75 per sy)*
Security Fencing & Gates		27,200	*(120' x 120' = 480 lf @ $15 per lf + $20,000)*
Site Civil (Utilities)		125,000	*Connection to water/sewer*
Site Civil (Electrical & Telecommunications)		125,000	*Connection to electrical power*
Subtotal (Site Specific Features)		**1,018,700**	
Subtotal Construction Costs		3,068,700	
Location Factor (15%)		460,000	*Index for area construction*
Subtotal		3,528,700	
Escalation & Inflation (8%)		282,000	*Cost increases during construction*
Subtotal		3,810,700	
Contingencies - Supply Chain & Logistics (20%)		762,000	*Materials supply chain & transportation*
Contingencies (20%)		762,000	*Unforeseen circumstances*
Total Estimated Construction Cost		**5,334,700**	
Construction Support, Equipment			
Bid Ads, Publications, etc		9,000	*Bid Notices, Printing, etc.*
Testing & Special Inspections		75,000	*Geotech, Materials, Building, etc.*
FAA Equipment Installation (RA)		300,000	*Reimbursible Agreeement - Engineering & Installation of FAA equipment*
FAA Equipment Telecom (RA)		175,000	*Reimbursible Agreeement - Installation of FAA Telecom Equipment + 2 yrs Service*
ATCT Equipment (Sponsor)		475,000	*Required for FAA FCT minimum equipment list*
ATCT Cab (Slatwall Option)		125,000	*Optional*
Furniture & Accessories		25,000	*ATC Manager, Training, Break Rooms, & Tower Cab furniture*
Subtotal (Construction Support, Equipment, etc)		**1,184,000**	
Total Estimated ATCT Development Costs		**7,932,400**	

ATCT projects compete annually with other projects for the Small Airport Funds using the FAA's National Priority Ranking (NPR) system. Recent guidance from the FAA regarding how ATCT projects are coded and the resultant NPR are shown in **Table E-2**.

Table E-2
ATCT National Priority Ranking

Item	Work Code	Description	Value
Airport (A)		GA Regional	16
Purpose (P)	SP	Special Emphasis	80
Component (C)	BE	Building (Control Tower)	65
Type (T)	CT	Construct FCT	50
NPR =	**68**		

*Note: NPR = ((4*A) + (2*C) + (7*P) + (7*T))/4.2*

Source: FAA Order 5090.5, Formulation of the NPIAS and ACIP

The highest NPR for general aviation airports is 93. As such, the NPR for an ATCT is marginally competitive nationally against airfield pavement and other projects of higher importance for the funds available annually from the Small Airport Fund. Nonetheless, under the assumption that an ATCT project will be eventually be funded, **Table E-3** presents an example for programming the Airport's ACIP.

Table E-3
Sample Airport Capital Improvement Program

Fiscal Year	Item	Total Project	FAA	State	Local
2022	Planning & Programming	40,000	36,000	2,000	2,000
2023	Site Analysis / CSA	125,000	112,500	6,250	6,250
2023	Environmental Assessment	100,000	90,000	5,000	5,000
2024	Design	700,000	630,000	35,000	35,000
2025	Construction	7,000,000	6,300,000	350,000	350,000
	TOTAL	7,965,000	7,168,500	398,250	398,250

Note: assumes funds from FAA AIP and Small Airport Funds are available

Estimated development costs may vary significantly depending on the implementation timeframe and other variables.

F. ATCT Operational Costs

Once the ATCT has been completed and commissioned, FAA will be responsible for the labor costs for the ATCT controllers as well as the maintenance and repair expenses for their own equipment. The Sponsor will be responsible for the FAA's datacom expenses (high-speed internet) for the first two years which is paid to FAA in advance. After the initial two-year period, the FAA will assume the cost.

The FCT program also provides liability insurance with a $10 million limit per occurrence with the County as a named additional insured. For the risks and consequences of a mid-air collision or

runway accident, $10 million is woefully inadequate since judgements have recently exceeded ten times that for the FCT contractor found at fault. The County may elect to explore excess liability coverage to cover any legal expenses as protection from litigation involving the ATCT operation through no fault of its own.

The FAA's Tower Operating Agreement (TOA) (See Attachment D) stipulates that the Airport Sponsor will be responsible for:

> *Providing, maintaining, and replacing, at no expense to the FAA, all non-FAA-owned tower equipment required by the Minimum Equipment and Facilities List (MEL).*
>
> *Providing and continually maintaining all utilities and services, including but not limited to: heating, air conditioning, electrical, water, gas, and sewer.*
>
> *Maintaining janitorial services (to include washing tower cab windows and shades, interior and exterior, when necessary).*

Table E-4 illustrates a potential budget for ATCT operational expenses.

Table E-4
ESTIMATED ANNUAL ATCT OPERATIONAL EXPENSES

Utilities	**Costs**	**Remarks**
Water/Sewer	2,500	
Electric/Gas	15,000	
Telecommunications	15,000	*ATCT Shout line/AWOS/ATIS/Emergency*
Subtotal	**32,500**	
Maintenance & Repairs		
Building Systems	5,000	*(HVAC, Elevator, Security, Life Safety)*
ATCT Equipment	2,500	*(Communications Radios, Voice Switch/Recorder)*
Janitorial Services		
Interior	1,800	
Window Cleaning	2,400	*Cab windows*
Groundskeeping	4,800	*Mowing, snow removal, pavement crack sealing*
Subtotal	**16,500**	
Total Estimated Annual Expenses	**49,000**	

G. Summary

Since the beginning of the Federal Contract Tower program, there have been over 125 new ATCTs constructed for airports that previously did not have a tower. All of these have been developed solely as the Sponsors' initiative and most constructed primarily with local funds. Some states have also contributed significantly to ATCT development. The Office of the Inspector General (OIG) and Government Accountability Office (GAO) has consistently demonstrated that Contract Towers are very cost-effective in providing equal (and in some cases better) air traffic control services compared to similar sized FAA-staffing facilities. Because of this and the fact that the FCT program has traditionally enjoyed the bilateral support of Congress, it is expected that funding for operations will continue for many years to come.

Appendix F
Letters of Support