Salina Regional
SLN Airport

SLN North Ramp MRO Hangar Construction Study

SLN North Ramp MRO Hangar Construction Study

For

Salina Regional Airport (SLN)
Salina, Kansas

Prepared by

February 2022

INTRODUCTION

Salina Regional Airport (SLN) is a vibrant aviation facility that serves both the commercial service and general aviation needs of the North Central Kansas region. United Airlines, operated by SkyWest, has multiple weekday and weekend flights to Denver International Airport and Chicago O'Hare International Airport. SLN also serves a wide variety of corporate, business, military, and general aviation needs and is home to the Kansas State University Aerospace and Technology Campus. The airport facilities include a 12,301-foot primary runway, one of the longest in the US, as well as three other paved runways and six helicopter landing pads. Taxiways support the runway surfaces and provide access to the landside components of the airport that are located on the east side of the property.

SLN is an important airport both regionally and nationally. It is classified as a non-hub, primary commercial service airport in the Federal Aviation Administration's (FAA) *National Plan of Integrated Airports System* (NPIAS). The airport enplanes approximately 20,000 passengers annually and averages over 70,000 aircraft operations each year.

The Salina Airport Authority (SAA) seeks to restudy the proposed future layout of general aviation facilities on the airport's north ramp. The north ramp is home to 1 Vision Aviation, a maintenance, repair, and overhaul (MRO) company. The goal of this study is to examine the availability for locating new hangar facilities at the north ramp for the purpose of expanding opportunities for MRO companies to operate.

PROJECT BACKGROUND

The impetus of this study was the goal to capture projected growth of the MRO aviation market. This goal is one part of an overall plan to position the State of Kansas as a leader in the aerospace industry. The *Kansas Framework for Growth*, published in February of 2021, lists several targeted sectors primed to drive economic growth within the state (see **Appendix A**). The installation of new hangar and ramp facilities at the north ramp of SLN would align with this strategic plan.

1 Vision performs work on a CRJ900 from Endeavor Air (a wholly owned subsidiary of Delta Airlines) in their maintenance hangar located off Taxiway G.

The air carrier MRO market (and associated aerospace jobs) is also a targeted industry for business by the Salina Community Economic Development Cooperation's October 2021 economic development strategic plan (see **Appendix B**). While the central and south ramps of the airport are occupied with aircraft storage facilities, the commercial passenger terminal, and two fixed-base operators (FBO), the north ramp is underutilized and is a prime location to expand landside facilities in order to attract additional MRO opportunities to the airport.

The north ramp is defined as the ramp and landside facilities to the east of Runway 17 and extending from the fire station and the Kansas State University facilities. The area contains approximately 380,000 square yards of ramp space, as well as a few assorted hangar buildings. 1 Vision Aviation is located off Taxiway G and straddles a large pass-through ramp area where aircraft can essentially taxi in and out without having to turn around. **Exhibit A** illustrates the area of the north ramp. The goal of the SAA is to see this area developed into an area of vibrant aircraft MRO facilities.

CRITICAL AIRCRAFT AND DESIGN STANDARDS

Prior to developing alternatives for the north ramp, it is important to understand the design standards relative to any future developments. The FAA has established multiple aircraft classification systems that group aircraft based upon operational (approach speed in landing configuration) and design characteristics (wingspan and landing gear configuration). These classification systems are used to design certain airport elements, such as runways, taxiways, aprons, safety areas, and separation standards, based upon the aircraft expected to use the facilities most frequently.

Salina Regional
SLNAirport

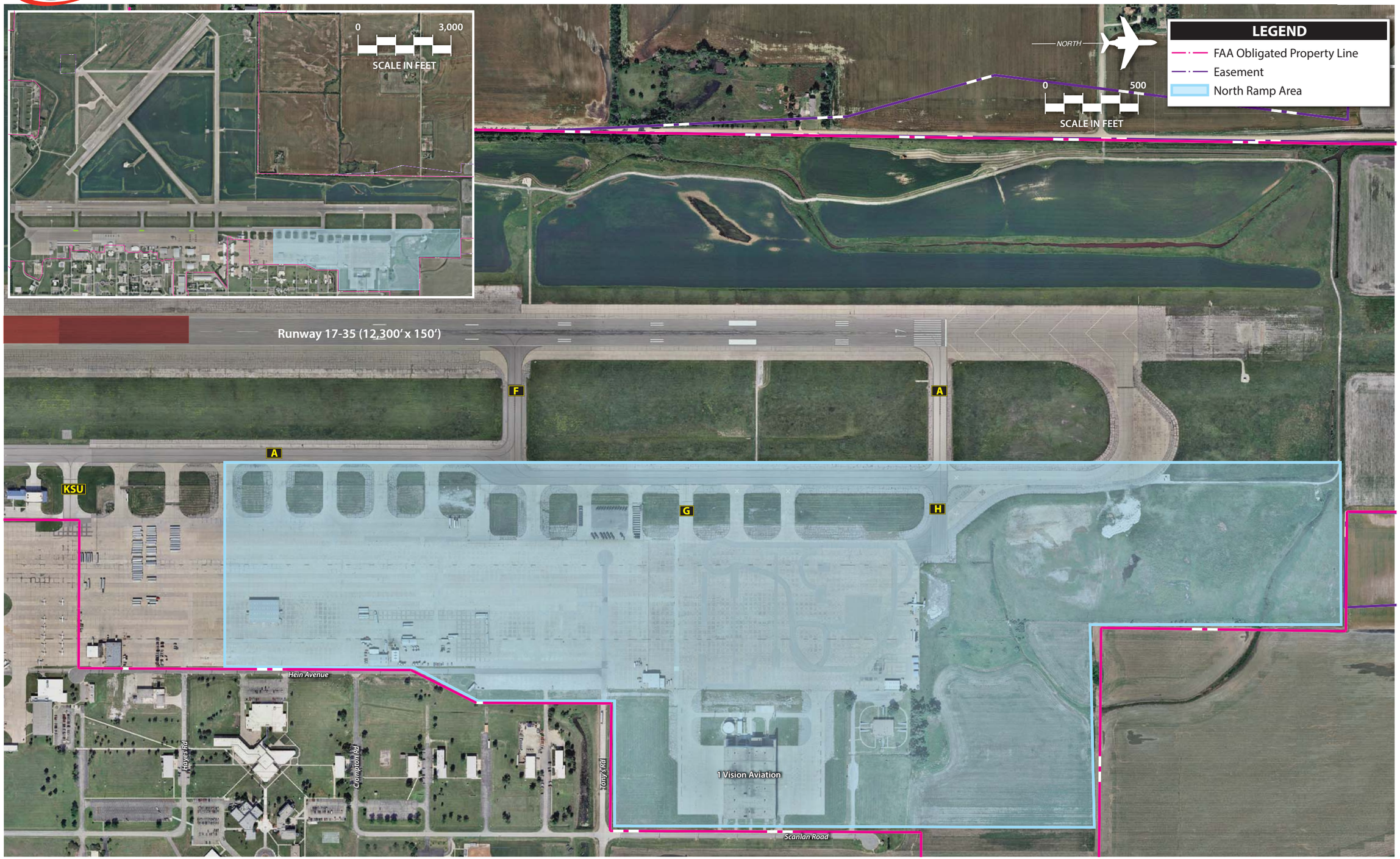


Exhibit A
NORTH RAMP AREA

DESIGN STANDARDS

Jets from Endeavor Air stored near the 1 Vision facilities.

The use of appropriate FAA design standards is generally based upon the characteristics of aircraft commonly using, or expected to use, the airport facilities. The aircraft used to design these facilities is designated as the "critical aircraft." The design criteria used in the aircraft classification process are presented in **Exhibit B**. An airport's critical aircraft can be a single aircraft or a grouping of similar aircraft commonly using the airport. The design aircraft or collection of aircraft is defined by three different categories: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, describes the classification systems and their parameters.

Aircraft Approach Category (AAC): A grouping of aircraft based on a reference landing speed (V_{REF}), if specified. If V_{REF} is not specified, 1.3 times the stall speed (V_{SO}) at the maximum certificated landing weight is used. These numbers are those values as established for an aircraft by the certification authority of the country of registry. The higher the approach speed, the more restrictive the design standards. The AAC is depicted by letters A through E and applies to runway and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), runway protection zone (RPZ), and separation standards.

Airplane Design Group (ADG): The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft relating to the aircraft wingspan or tail height. If the wingspan and tail height fall under different classifications, the higher (more restrictive) category is used. The ADG is used to establish design standards for taxiway safety area (TSA), taxiway/taxilane object free area (OFA), apron wingtip clearance, and other separation standards.

Taxiway Design Group (TDG): A classification of aircraft based on the dimensions of the airplane under-carriage: the outer-to-outer main gear width (MGW) and cockpit-to-main gear (CMG) distance. Several taxiway design elements are determined by the TDG, including taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet design and dimension, and separation standards. It is appropriate for taxiways to be planned and built to different taxiway design standards based on expected use.

Exhibit C presents the aircraft classification of common aircraft in operation today.

AIRCRAFT APPROACH CATEGORY (AAC)

Category	Approach Speed
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

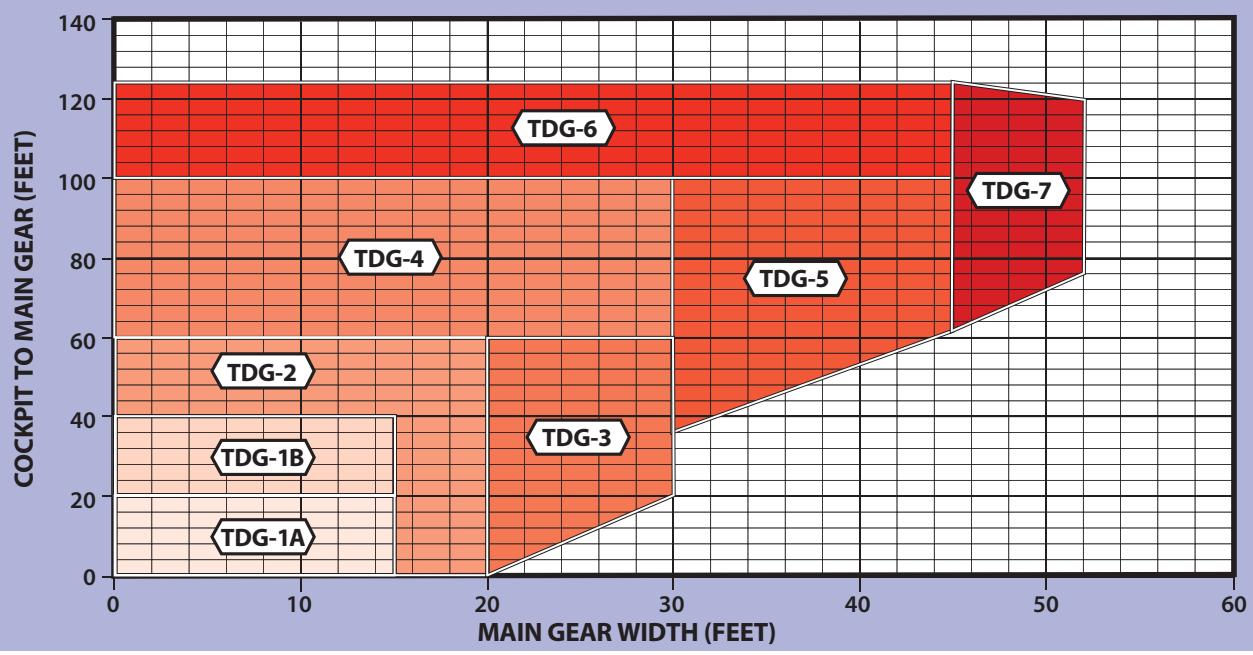
AIRPLANE DESIGN GROUP (ADG)

Group #	Tail Height (ft)	Wingspan (ft)
I	<20	<49
II	20-<30	49-<79
III	30-<45	79-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS

RVR (ft)	Flight Visibility Category (statute miles)
VIS	3-mile or greater visibility minimums
5,000	Not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile
2,400	Lower than ¾-mile but not lower than ½-mile
1,600	Lower than ½-mile but not lower than ¼-mile
1,200	Lower than ¼-mile

TAXIWAY DESIGN GROUP (TDG)



KEY

APV: Approach Procedure with Vertical Guidance
PA: Precision Approach
RVR: Runway Visual Range
TDG: Taxiway Design Group

Source: FAA AC 150/5300-13A, Airport Design

A-I

Aircraft	TDG
• Beech Baron 55	1A
• **Beech Bonanza**	**1A**
• Cessna 150, 172	1A
• Eclipse 500	1A
• Piper Archer, Seneca	1A

B-I

• **Beech Baron 58**	**1A**
• Beech King Air 90	1A
• Cessna 421	1A
• Cessna Citation CJ1 (525)	1A
• Cessna Citation 1(500)	2
• Embraer Phenom 100	1B

A/B-II *12,500 lbs. or less*

• **Beech Super King Air 200**	**2**
• Cessna 441 Conquest	1A
• Cessna Citation CJ2 (525A)	2
• Pilatus PC-12	1A

B-II *over 12,500 lbs.*

• Beech Super King Air 350	2
• Cessna Citation CJ3(525B), Bravo (550), V (560)	2
• **Cessna Citation CJ4 (525C)**	**1B**
• Cessna Citation Latitude/Longitude	1B
• Embraer Phenom 300	1B
• Falcon 10, 20, 50	1B
• Falcon 900, 2000	2
• Hawker 800, 800XP, 850XP, 4000	1B
• Pilatus PC-24	1B

A/B-III

• Bombardier Dash 8	3
• **Bombardier Global 5000, 6000, 7000, 8000**	**2**
• Falcon 6X, 7X, 8X	2

C/D-I

Aircraft	TDG
• **Lear** 25, 31, 45, 55, **60**	**1B**
• Learjet 35, 36 (D-I)	1B

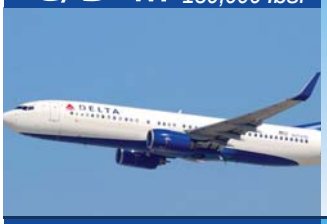
C/D-II

• Challenger 600/604/ 800/850	1B
• Cessna Citation VII, X+	1B
• Embraer Legacy 450/500	1B
• **Gulfstream IV**, 350, 450 (D-II)	2
• Gulfstream G200/G280	1B
• Lear 70, 75	1B

C/D-III *less than 150,000 lbs.*

• Gulfstream V	2
• **Gulfstream** G500, 550, 600, **650 (D-III)**	**2**

C/D-III *over 150,000 lbs.*



• Airbus A319-100, 200	3
• **Boeing 737 -800**, 900, BBJ2 (D-III)	**3**
• MD-83, 88 (D-III)	4

C/D-IV

• Airbus A300-100, 200, 600	5
• Boeing 757-200	4
• **Boeing 767**-300, **400**	**5**
• MD-11	6

D-V

• Airbus A330-200, 300	5
• Airbus A340-500, 600	6
• Boeing 747-100 - 400	5
• **Boeing 777-300**	**6**
• Boeing 787-8, 9	5

Note: Aircraft pictured is identified in bold type.

CRITICAL AIRCRAFT

For the purposes of this study, it was important to determine the specific aircraft or type of aircraft that would be using the future MRO facilities. The NIAR-WERX project that Salina is selected for is the 777-300 P2F Conversion project detailed in the report in Appendix C. The critical aircraft has been identified as the **Boeing 777-300ER**. While the Boeing 767 and Airbus A321 variants were also identified as being projected to use the developed area, it is the more restrictive attributes of the 777-300ER that are critical in applying FAA design standards for these analyses. **Table A** lists both aircraft and their relative characteristics with regard to the FAA design categories.

For this study, the Boeing 777 is the critical design aircraft.

TABLE A – Critical Aircraft for North Ramp Development

Aircraft	V_{REF}	AAC	Wingspan	Tail Height	ADG	MGW	CMG	TDG
767-200	135 knots	C	156.08 ft	52.92 ft	IV	35.75 ft	72.08	5
777-300ER	149 knots	D	212.58 ft	61.83 ft	V	42.33 ft	114.36 ft	6
A321-200	140 knots	C	117.45 ft	39.70 ft	III	29.43 ft	44.95 ft	3

Source: Aircraft planning manuals

TAXIWAY/TAXILANE DESIGN STANDARDS

The design standards associated with both taxiways and taxilanes are determined by either the Taxiway Design Group (TDG) or the Airplane Design Group (ADG) of the critical design aircraft. As determined previously, the applicable ADG for the North Ramp Development is ADG V. **Table B** presents the various taxiway and taxilane design standards related to ADG V. The table also shows those design standards related to TDG 6. Different taxiway and taxilane pavements can and should be planned to the most appropriate TDG design standards based on usage; in this case, TDG 6 will be used, representing the Boeing 777-300ER.

For any given ADG and TDG, the taxiway/taxilane safety area plus the wingtip clearance of both sides equals the object free area. In the case of the North Ramp Development alternatives, the taxiway/taxilane safety area (TSA) is 214 feet in width and is centered over the pavement centerline. Wingtip clearance should be a minimum of 31 feet for each wing, giving a total of an additional 62 feet in design space. That measurement, combined with the taxiway/taxilane safety area, equals 276 feet, which is the taxilane object free area (OFA). When measured from the taxilane centerline going toward a wingtip, this distance is halved to establish proper clearance to objects. Thus, **138 feet** is expected to be the minimum distance from taxilane centerline to new hangar developments.

TABLE B – Taxiway/Taxilane Dimensions and Standards

STANDARDS BASED ON WINGSPAN	*ADG V*
Taxiway Protection	
Taxiway Safety Area width (feet)	214
Taxiway Object Free Area width (feet)	320
Taxilane Object Free Area width (feet)	276
Taxiway Separation	
Taxiway Centerline to:	
Fixed or Movable Object (feet)	160
Parallel Taxiway/Taxilane Centerline (feet)	267
Taxilane Centerline to:	
Fixed or Movable Object (feet)	138
Parallel Taxilane (feet)	245
Wingtip Clearance:	
Taxiway Wingtip Clearance (feet)	53
Taxilane Wingtip Clearance (feet)	31
STANDARDS BASED ON UNDERCARRIAGE	*TDG 6*
Taxiway/Taxilane Width Standard (feet)	75
Taxiway/Taxilane Edge Safety Margin (feet)	15
Taxiway/Taxilane Shoulder Width (feet)	30

Source: FAA AC 150/5300-13A, Airport Design

Taxiway and taxilane OFA clearing standards prohibit service vehicle roads, parked aircraft, and other objects, except for objects that need to be located in the OFA for air navigation or ground maneuvers. The width of the OFA must be increased at intersections and turns. OFA standards must be met for a distance of [(0.7 × WS) – (0.5 × W) + 10] feet from the taxiway/taxilane edge, based on standard fillet design, where WS is the maximum wingspan of the ADG, and W is the taxiway/taxilane width. For this study, ADG V has a maximum wingspan of 214 feet, and the taxilane width, based on TDG 6, is 75 feet. This results in a wider OFA of 122.3 feet, rounded up to **123 feet** for safety purposes, **from the edge of the taxilane**. This additional safety clearance is critical when evaluating turns and intersections adjacent to future hangar developments and will be evaluated against the recommended concept.

DEVELOPMENT ALTERNATIVES

This report reviews the variety of alternatives developed for growth of the north ramp at SLN. These options include new facility hangar construction and impacts on the associated aircraft movement areas. Consideration is given to FAA design standards with the critical aircraft (Boeing 777-300ER) as the driving component. Each alternative is discussed below with a recommended concept presented to airport management and the FAA for updating the airport layout plan (ALP).

In each alternative, the additional holding bays that run between Taxiway A and the adjacent Kansas State University ramp north of the ARFF station are shown to be closed and removed. This will help in avoiding confusion for pilots who might be unfamiliar with the airfield, thereby reducing the possibility of collisions. The northernmost taxiway/holding bay off Taxiway A is also to be removed.

ALTERNATIVE 1

A regional jet receives engine maintenance at the 1 Vision facilities.

This alternative focuses on the growth of air cargo activity at SLN and the facilities required to nurture that growth. The proposed main hangar of this alternative would be located on Hein Avenue and be approximately 1,000,000 square feet (sf) in size, measuring 3,580 feet wide by 279 feet deep. This size would allow both the Boeing 767 and Boeing 777 to park inside for cargo loading and unloading activities. A taxilane would be established along the western edge of the apron, large enough to accommodate TDG 6 aircraft. The taxilane OFA, as discussed previously, would provide clearance between moving aircraft and the hangar structure. A "no aircraft parking" area would be enforced between the taxilane and hangar facilities in order to prevent accidents. Three additional hangars, ranging in size from 165,000 sf to 460,000 sf, would be constructed along Tony's Road, Scanlan Road, and north of Taxiway H. Additional taxiways and apron space would be poured to facilitate the additional aircraft movement needs, including approximately 18.3 acres of new apron surface to the north of Taxiway H, as well as a taxilane extending from Taxiway H, running east between hangars and south to the 1 Vision Aviation complex. Approximately 1,570 vehicle parking spaces would be provided, as well as approximately 193 spots for tractor trailer staging. The locations of the parking areas, hangars, and expanded aircraft movement areas of this alternative can be seen on **Exhibit D**.

ALTERNATIVE 2

Alternative 2 shifts to focus more on MRO facilities as opposed to potential cargo operations. The new taxilane and far north apron space from Alternative 1 are maintained. The hangar groupings at the far north would become two separate, three-bay MRO hangars, approximately 202,500 sf and 209,250 sf each. Both hangars would be 225 feet in depth, with one being 900 feet wide and the other 930 feet wide. This provides the ability to hangar both critical aircraft. A four-bay MRO hangar is planned north of Taxiway G on the existing ramp, measuring 280 feet by 1,055 feet, providing approximately 295,400 sf for aircraft maintenance areas. Just south of Taxiway G will sit another MRO hangar, also 280 feet deep but only 880 feet wide, totaling 246,400 sf of hangar space. The taxilane/no parking areas from Alternative 1 are carried forward to this option. Vehicle access to this hangar will be provided by Hein Avenue and a constructed 275-stall parking lot. Further south on Hein Avenue is a smaller, two-bay hangar, approximately 154,000 sf in size with an adjacent parking lot with 165 stalls. Within the 1 Vision Aviation loop will be a two-bay MRO hangar at the south end, measuring 245 feet by 625 feet, and a new machine shop on the north end, measuring 260 feet by 360 feet. The areas east of the apron taxilane and MRO hangars extending down to the 1 Vision hangar will be a tow only zone. The existing office building at the northwest corner of the 1 Vision Aviation loop will be renovated. Road access off Scanlan Road is provided to the machine shop and the far north hangar pair, with a 205-stall and a 650-stall parking lot serving both facilities, respectively. Alternative 2 is presented on **Exhibit E**.

Salina Regional
SLN Airport

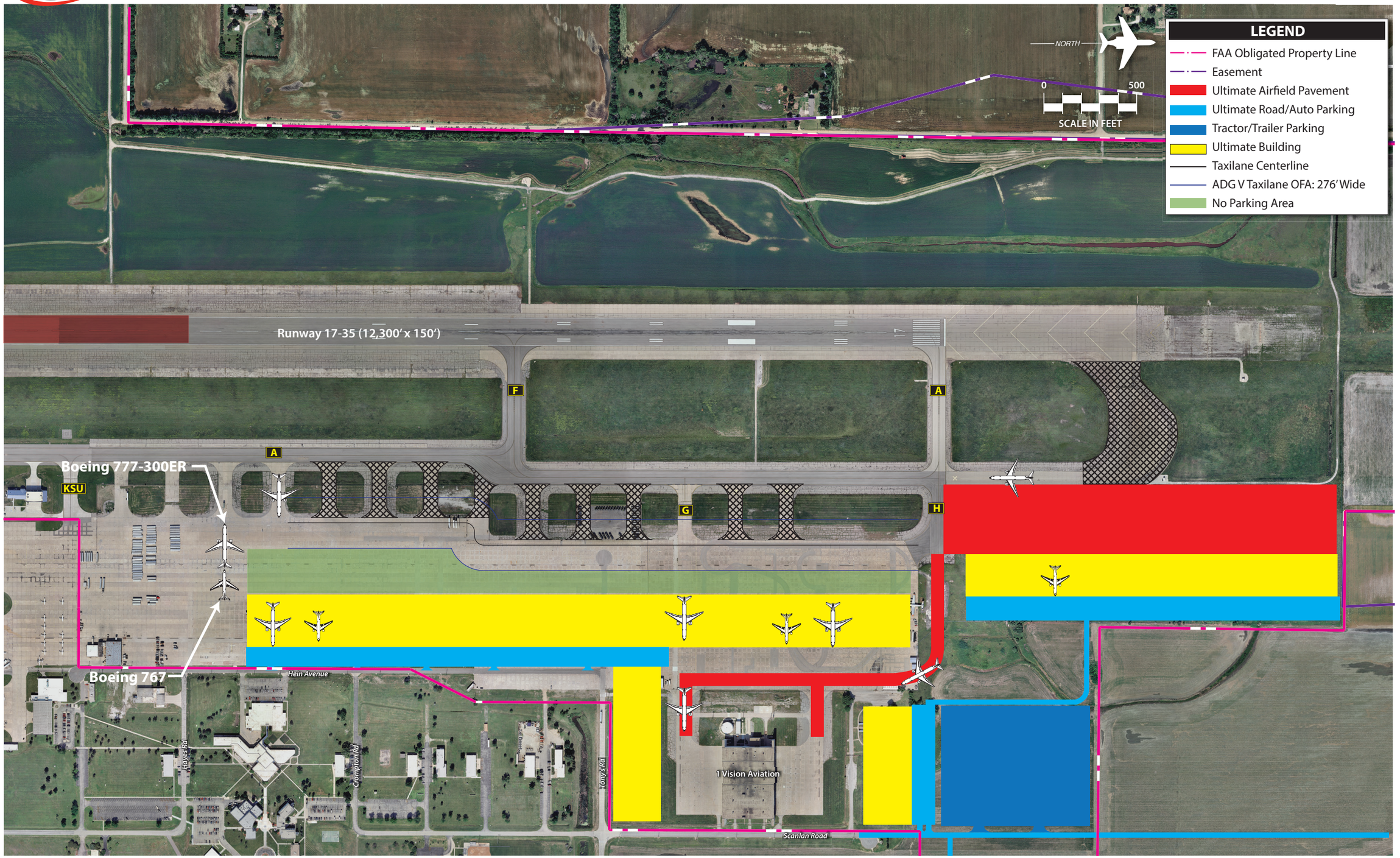


Exhibit D
ALTERNATIVE 1

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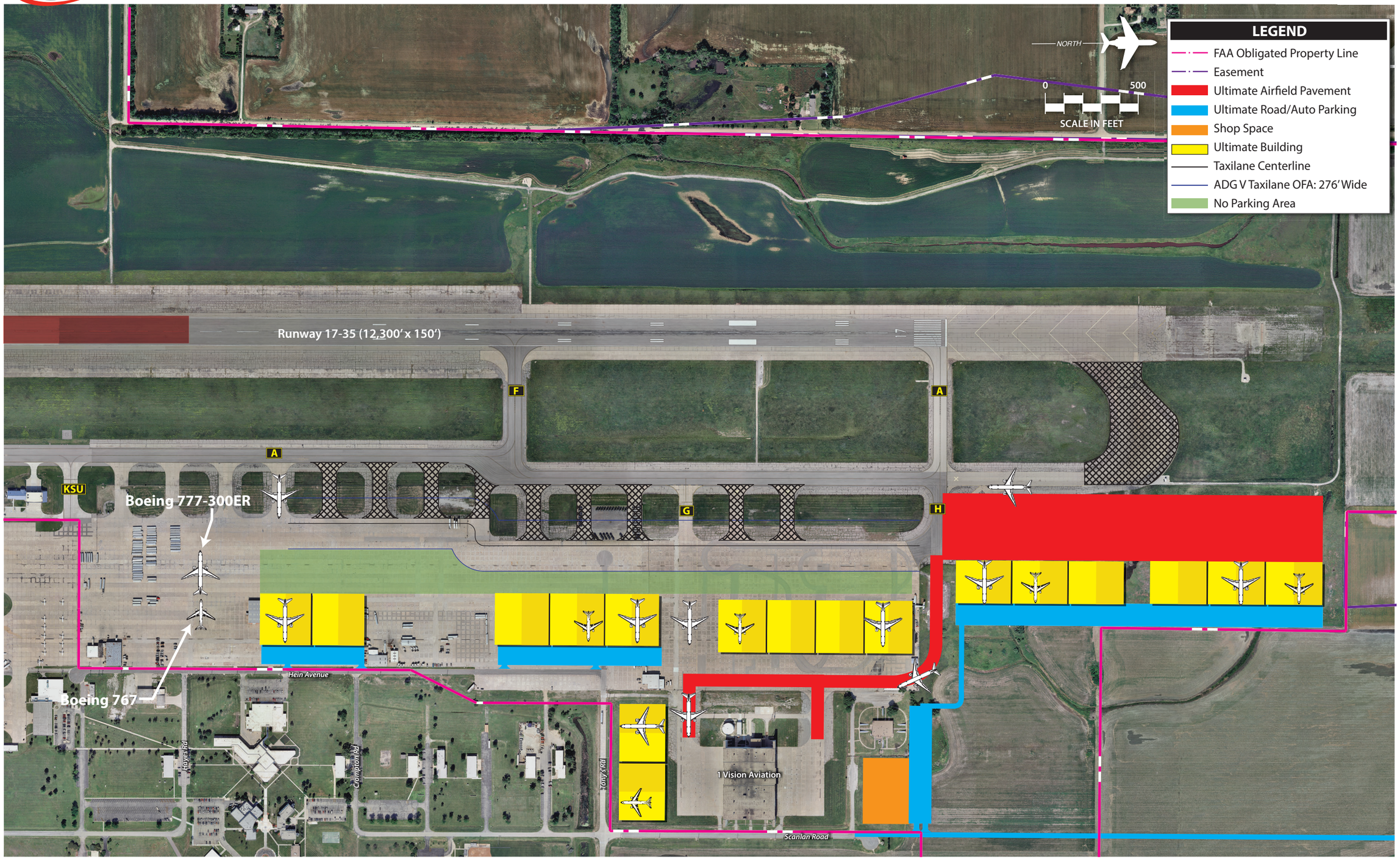


Exhibit E
ALTERNATIVE 2

ALTERNATIVE 3

Alternative 3 is identical to Alternative 2 with the exception of the addition of two warehouses north of the 1 Vision Aviation loop development. The first proposed warehouse will sit west of a proposed extension to Scanlan Road and measure 800 feet by 625 feet, totaling approximately 500,000 sf of space. The second warehouse would be located east of the new Scanlan Road extension, adjacent to the cul-de-sac at the end of the existing roadway surface. This warehouse, also approximately 500,000 sf in size, would measure 1,111 feet by 450 feet. Each warehouse would be accompanied by a new parking lot structure for vehicle access and parking. These new facilities may require the acquisition of new land outside the existing airport property line. A connecting road between Scanlan Road and Centennial Road may also be constructed to provide additional vehicle access to the warehouses. **Exhibit F** shows this alternative.

ALTERNATIVE 4

Alternative 4 proposes new hangar development and adjustments to the existing taxiways. Taxiway A is straightened, removing the bend at Taxiway F, and continued north, with a centerline distance from Runway 17-35 of 670 feet. The existing pavement would be removed and both Taxiway G and Taxiway F would be extended west to meet the new Taxiway A surface. The apron is proposed to extend north 150 feet and join Taxiway H. The hangar developments proposed in this alternative include five 130,000-square-foot, dual-entry hangars: two pairs of hangars connected to each other, located on the apron, and the fifth installed on the newly extended apron surface at the north end of the existing apron. The orientation of the hangar pairs would allow for dual entry of aircraft, while the size would permit the "stacking" of aircraft. Stacking aircraft, in this instance, involves positioning a Boeing 777 into the center of the hangar, while smaller aircraft could be positioned around the 777. While the northernmost hangar is also a dual-entry design, only the south entry would be used. A warehouse and parts storage facility would be constructed on the south side of the 1 Vision Aviation loop, approximately 126,000 square feet in size. On the north side of the loop would be a 91,000-square-foot machine shop. Vehicle parking areas for both the warehouse and machine shop would extend from Scanlan Road, with an additional parking lot servicing the northernmost hangar facility extending from the machine shop lot. **Exhibit G** presents Alternative 4.

More Endeavor Air jets parked outside of 1 Vision's Hangar 959 (known as "Big Bertha").

Salina Regional
SLN Airport

NORTH

0 500
SCALE IN FEET

LEGEND

- FAA Obligated Property Line
- Easement
- Ultimate Airfield Pavement
- Ultimate Road/Auto Parking
- Shop Space
- Ultimate Building
- Ultimate Warehouse
- Taxilane Centerline
- ADG V Taxilane OFA: 276' Wide
- No Parking Area

Runway 17-35 (12,300' x 150')

17

F

A

A

KSU

Boeing 777-300ER

G

H

Hein Avenue

Boeing 767

Hayes Rd

Crompton Rd

Tony's Rd

1 Vision Aviation

Scanlan Road

Exhibit F
ALTERNATIVE 3

Exhibit G
RECOMMENDED DEVELOPMENT CONCEPT

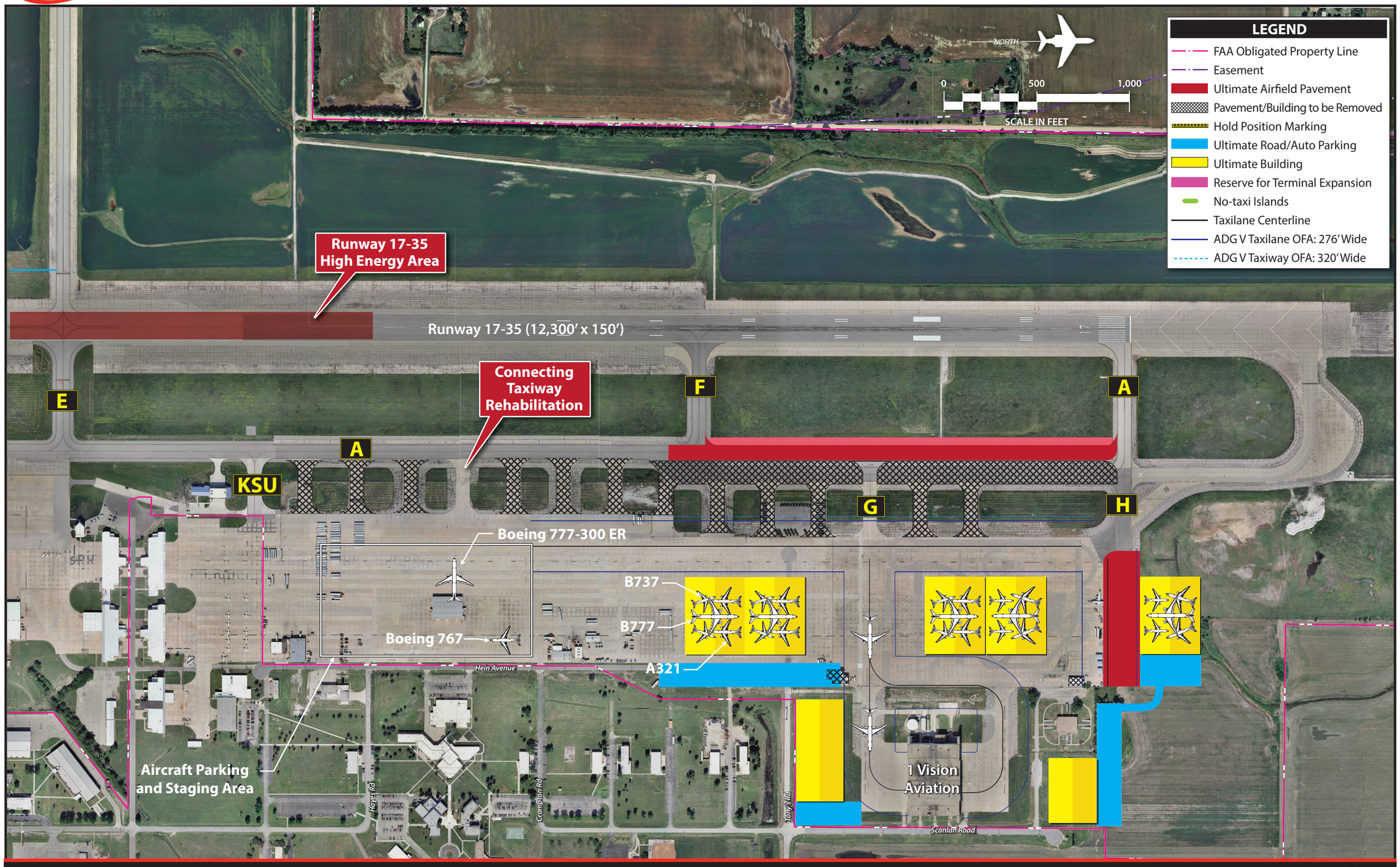


Exhibit G
RECOMMENDED DEVELOPMENT CONCEPT

RECOMMENDED CONCEPT

A former Air France CRJ700 awaits work after being purchased by SkyWest Airlines.

After reviewing the proposed alternatives with airport management, Alternative 4 has been selected as the preferred development concept. The dual entry hangar layout provides the optimum amount of aircraft maintenance floorspace and stacking short-term repair work on smaller aircraft within the area of long-term projects conducted on the 777 requires fewer physical structures to be built. In order to maintain positive aircraft control and separation distances, the entire MRO complex area shall be designated a "tow only" zone; that is, aircraft may only move within the MRO complex if towed by ground support vehicles, as depicted on **Exhibit H**. A taxilane will be designated along the western edge of the north apron in order to permit aircraft to taxi between the Kansas State University facility and Taxiway H. A staging area south of the hangar complex and north of the KSU Aviation Ramp will be established for pilots to maneuver and park their aircraft for towing to the MRO hangars. While the numerous holding bays between the apron expanse and Taxiway A are proposed to be removed, one connecting taxiway will be rehabilitated to provide access to the staging area. The existing office building at the north end of 1 Vision Aviation will be refurbished and maintained as office space.

AIRSPACE SURFACES OF THE RECOMMENDED CONCEPT

The airspace surfaces required to be evaluated in this plan update have changed since the Master Plan. The introduction of Engineering Brief 99 (EB99), and then revision 99a (July 2020), have consolidated the runway end siting surfaces and call them the Obstacle Clearance Surfaces (OCS). The EB99a update was also a significant change to the departure surface. **Exhibit J** shows the preferred alternative in relation to FAR Part 77 surfaces and the updated EB 99a surfaces. For purposes of this evaluation, the existing approach type for runway 17 is a non-precision type D providing visibility minimums as low as ¾ mile. The ultimate condition, as depicted in the 2014 Master Plan is a Precision Instrument Approach (PIR) with visibility minimums lower than ¾-mile.

With regard to the hangars, all of them sit on the existing apron but one. They do have approximately the same western edge, thereby making them nearly equidistant from the primary surface. All dual entry hangars are under the Inner Transitional surface. **Exhibit J** has labeled points that show a clearance value to the Inner Transitional surface. The estimated building height used is 76 feet AGL and the ground elevation used is the same elevation as the existing apron at 1,241.5 feet. Some earthwork will be required to bring the area around the northernmost hangar to grade. **Exhibit J** depicts the airspace for the existing and ultimate conditions.


Legend
Part 77 Surfaces
Existing Approach (NP-D)
Inner Transitional
Ultimate Approach (PIR)
EB 99 A Surfaces
Departure Section 1
Departure Section 2
OCS #4 Existing
Taxilane Centerline
ADG V Taxilane OFA: 276' Wide
1 inch = 500 feet
Part 77 Approach
Type Non-Precision D
34:1
Runway 17-35 (12,300' x 150')
Point values in the staging area
is the clearance from the ground
to the Inner Transitional surface.
100.37
Aircraft Parking and
Staging
46.56
46.06
45.01
45.44
46.44
45.73
Point values on the hangars are the estimated
clearance from the building height of 76 feet
to the Inner Transitional surface.
Hein Avenue
Hays Rd.
Compton Rd.
Tony's Rd.
Scanlan Rd.
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,

Part 77 Analysis

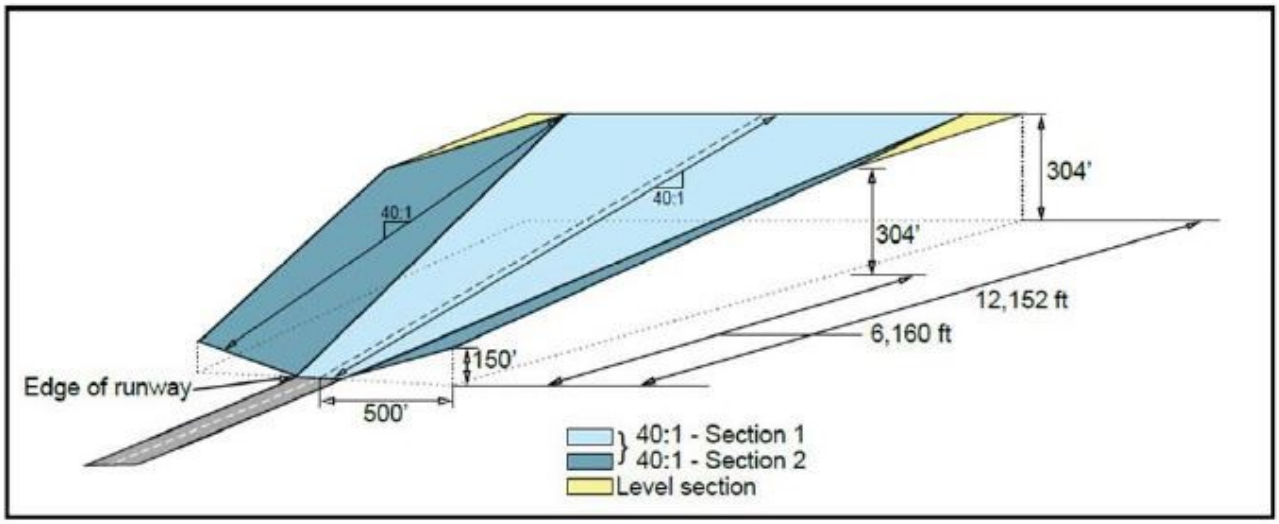
All hangars have approximately the same western edge. This places them approximately 800 feet from the edge of the primary surface. The hangars are under the approach transitional surface. Building 4 will be used for warehousing/storage and the machine shop (No.7) and future office (No.8), are under the horizontal surface. No structure is directly under the approach in the existing or future condition.

EB 99a Surfaces

The EB99a surfaces are of two types; first is the appropriate OCS surface, and second is the revised departure surface. The OCS surfaces are the newer version of the previously used TSS and are either 20:1 or 34:1 slopes, depending on the visibility minimum of the approach. The surfaces are defined in the FAA Memorandum *Engineering Brief No. 99A, Changes to tables 3-2 and 3-4 of Advisory Circular 150/5300-13A, Airport Design*. The OCS surface dimensions and slopes for Runway 17 can be found in table 3-2 (page 5) of EB 99A. For the existing condition, the OCS number 4 was used, and for the future condition OCS number 5 will be used. None of the buildings in the preferred alternative are directly under the existing or future OCS surface.

The departure surface changed significantly between EB 99 and EB 99A. In EB 99 it was similar to the departure surface on the 2014 ALP. The new surface is broken into 2 parts: Section1 and Section 2. Figure 2 on page 4 of EB 99A shows an isometric view of the revised departure surface and is shown below.

Figure 2. Departure Surface – Perspective View



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Section 1 is narrow at the runway end and extends upward and out to 12, 152 feet at an even 40:1 slope. Section 2 is more complex. It extends laterally from the sides of Section 1 to 500 feet on either side of the centerline and reaching an elevation of 150 feet above the runway end. It extends outward until it reaches 304 feet above the end elevation where it flattens out the remaining distance. The recommended concept shows the dual entry hangars are not located under, or near, any EB99a surface.

SUMMARY

This study of the North Ramp area at SLN proposed four alternatives to the development of cargo and/or MRO facilities. A recommended concept was developed and evaluated against both FAA airspace and surface design standards. The recommended concept meets FAA design standards, as well as the needs for the airport to develop the North Ramp into a thriving, economic boost to the existing airport facilities. Airport management will next review the alternatives and recommended concept and make changes as needed. The final design concept will then be presented to the FAA in order to update the SLN Airport Layout Plan.

Appendix A

KANSAS FRAMEWORK FOR GROWTH REPORT
FEBRUARY 2021

KANSAS FRAMEWORK FOR GROWTH

FEBRUARY 2021

TABLE OF CONTENTS

LETTER FROM THE GOVERNOR

As our children and grandchildren, along with our friends and other family members, leave Kansas to enjoy greater pay and career opportunities, we face a struggling economy, threatening our collective quality of life for generations to come. This is not acceptable. The world is changing and accelerating every day, and therefore with urgency, we too must change. It is time for Kansas to once again "punch above our weight class."

Recognizing the decline in our state, our local economic development professionals asked for a new economic development strategy to build upon the legacy of the Redwood-Krider report, our last comprehensive economic development strategy, published in 1986. My administration, through the leadership at the Kansas Department of Commerce, made developing a Framework for Growth, a top priority. We also wanted to make sure this is a Kansas strategy and we were successful by using a public process where over 2,000 Kansans were engaged to help guide the direction of the Framework for Growth.

The world is changing and accelerating every day, and therefore with urgency, we too must change.

Our great people, communities, educational system and unique assets give Kansas a solid foundation for growth. While our sector mix is not aligned for future growth and resilience, with intentional action and investment, we can leverage our sectors into new opportunities through the development of modern skills and innovation. The Framework for Growth is grounded in four pillars:

TALENT | INNOVATION | COMMUNITY ASSETS | POLICY

The Framework for Growth is a guide for our actions today and into the future. To help set the Framework into action, two exciting initiatives will be developed by the Department of Commerce. Kansas Competitiveness Project, a cross-cutting competency development effort built on advanced skills, knowledge, and innovation, will position Kansas as a leader and future-proof our economy. The Regional Excellence Initiative will help communities work together to leverage their collective assets and creativity to further develop their region for global economic competition. These initiatives combined with other actions will position our economy for success.

Join me as we stabilize and strengthen our economy and "punch above our weight class" in a robust Kansas economy built on advanced skills, innovation, and outstanding community assets. Through bold action we will win the talent war and enjoy a prosperous future together. It is with this vision and collective effort we can welcome new friends, reunite with old friends, and enjoy time with our families, children, and grandchildren, in Kansas.

Sincerely,

Governor
Laura Kelly

OUR COMPETITIVE POSITION

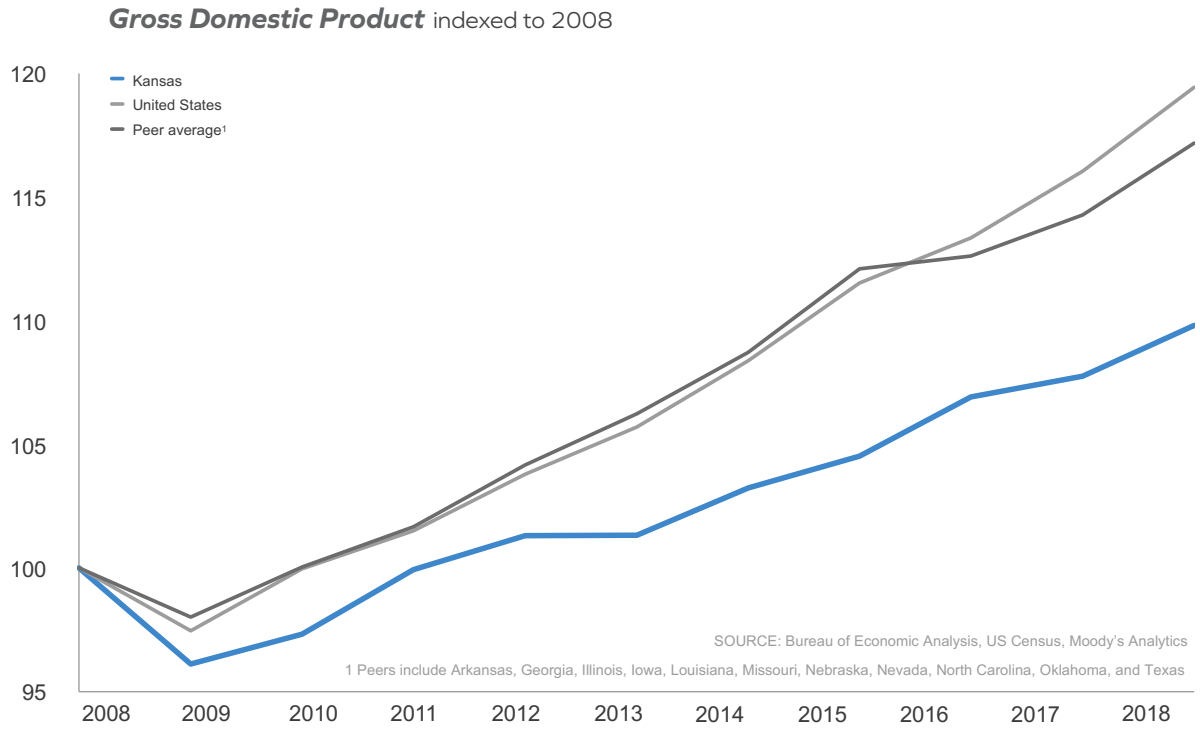
In an increasingly competitive and rapidly changing environment for economic development, Kansas has fallen behind. The future of our state and the prosperity of our residents are at stake.

Disruptive forces are changing the competitive landscape for our state's economy and its businesses, and a variety of trends are rapidly accelerating and changing the economic geography of various sectors of economic activity. Automation is fundamentally reshaping manufacturing processes, warehouse operations, and other activities. New technologies are emerging and rendering once competitive products obsolete. Consumer preferences are ever-changing and creating new markets every day. Global wealth is expanding, opening up new trade and export opportunities. Global pandemics and other emerging threats challenge the resiliency of our economies, and our preparation for the future.

ECONOMIC OVERVIEW

In Kansas we take pride in our great people and strong communities. Our state has a history of steady economic performance enabled by our unrivaled talent and strong network of businesses.

In 2008, Kansas was performing in the top half of U.S. states in terms of employment growth (24th), GDP growth (14th), and average wage growth (21st), and even had several years of sustained GDP growth that ranked in or near the top 10 in the U.S. (from 2009-2011).



In recent years, however, Kansas has slipped, our advantages have eroded and a gap is widening with our peers.

By 2018, our state had fallen from its position among the top half of states in core economic outcomes, ranking 43rd in employment growth, 35th in GDP growth, and 42nd in average wages. Compared to peer states Kansas has experienced slower growth since the recession with 0.9% GDP growth per year in Kansas since 2008 vs. 1.6% growth for peers.

ECONOMIC OVERVIEW (CONTINUED)

Fortunately, our state has core assets that we can leverage to catalyze future growth.

Kansas outperforms peers in several key areas that are critical to driving economic growth. For us to achieve our aspiration, it will be essential for Kansas to build upon its strengths, including but not limited to:

- **✓ A robust education pipeline from kindergarten to higher-ed that outperforms peers.**
- **✓ A favorable business climate and efficient incentives programs.**
- **✓ A competitive advantage in certain high growth sectors.**
- **✓ A central location and strong transportation system.**
- **✓ A high quality of life and affordable living for residents.**

U.S. LEADING STATES INDEX RANKINGS

#15 for Preschool - 12

#3 Percent of <5 year-olds enrolled in pre-K

#22 On-time graduation rates from secondary school

#36 Percent of student meeting college readiness standards

#20 NAEP Math scores

#13 for Higher Education

#22 Average student debt

#25 Average tuition

#29 Graduation rate for bachelors degree

#8 Graduation rate for 2-year post secondary institutions

#7 Unemployment rate

#13 Labor force participation

#15 Educational attainment

Despite these strengths, Kansas is facing a unique set of challenges that are hindering our state's ability to prosper and grow.

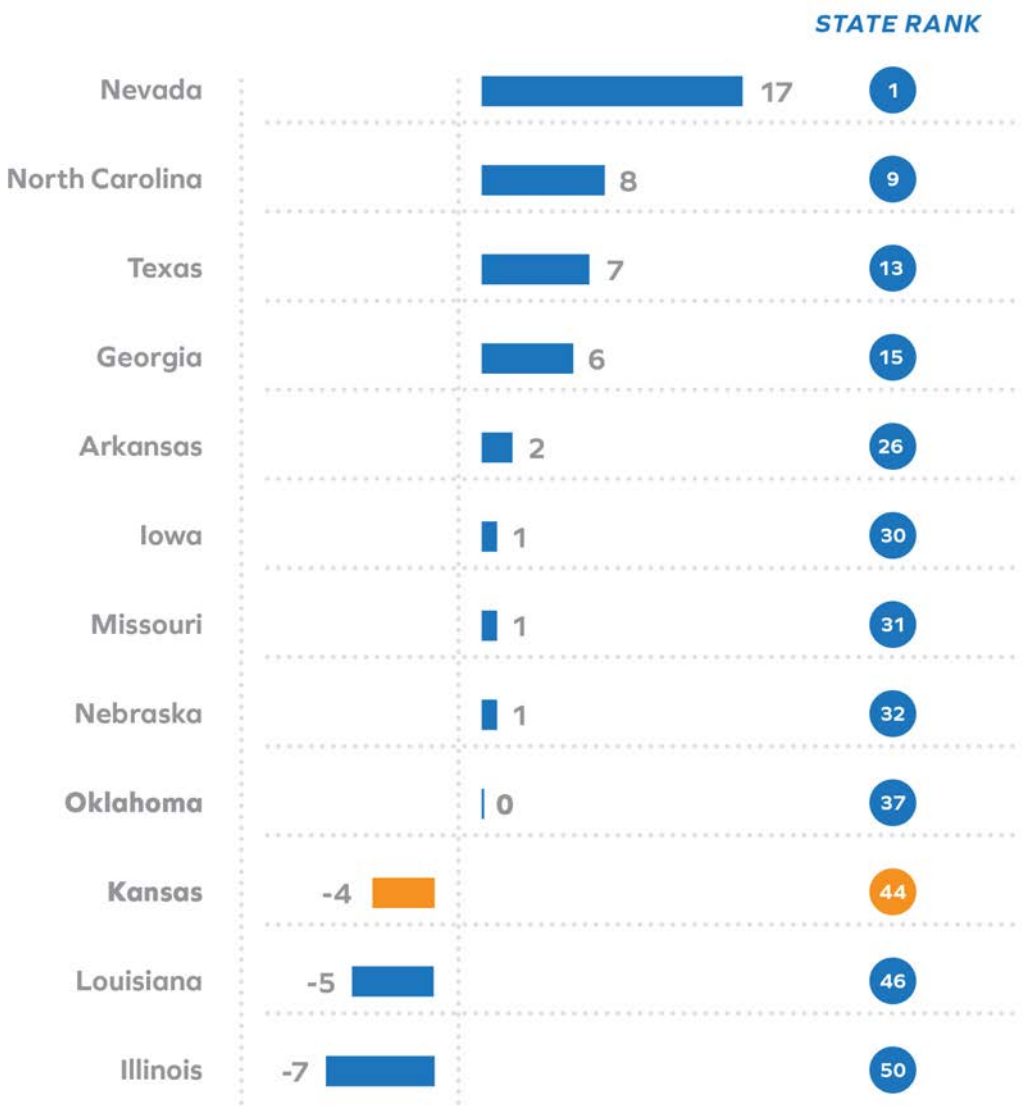
Our sector mix is not aligned for future growth and resilience. Kansas is highly specialized in industries that are experiencing stagnant growth and under indexed in high growth industries in the U.S. (i.e., tech, biosciences). Absent intervention, many of Kansas' regions will remain dependent on one to two sectors, leaving them vulnerable to a downturn or loss of a major company anchor.

Kansas has a stifled innovation ecosystem that has limited the opportunities for Kansas based start-ups. Kansas underperforms the U.S. across the innovation pipeline, falling the most behind in start-up creation and patent commercialization. We rank 38th in startup job creation and 22nd in patents granted in the country.

Population decline and the widening talent gap are immediate threats facing our economy. Kansas has experienced severe net outmigration in the past five years (44th in the country in net migration). The working population is projected to decline 2.3% by 2028. There is also a widening skill gap in high skilled professions. Our state has few high-skill opportunities for workers with a bachelor's degree or higher (~32% of the population has a bachelor's degree or above, and only ~24% of the current jobs require this level of skill). Absent shared commitment and collective action, these skill gaps will grow as the impacts of automation and the knowledge economy make skilled work even more valuable.

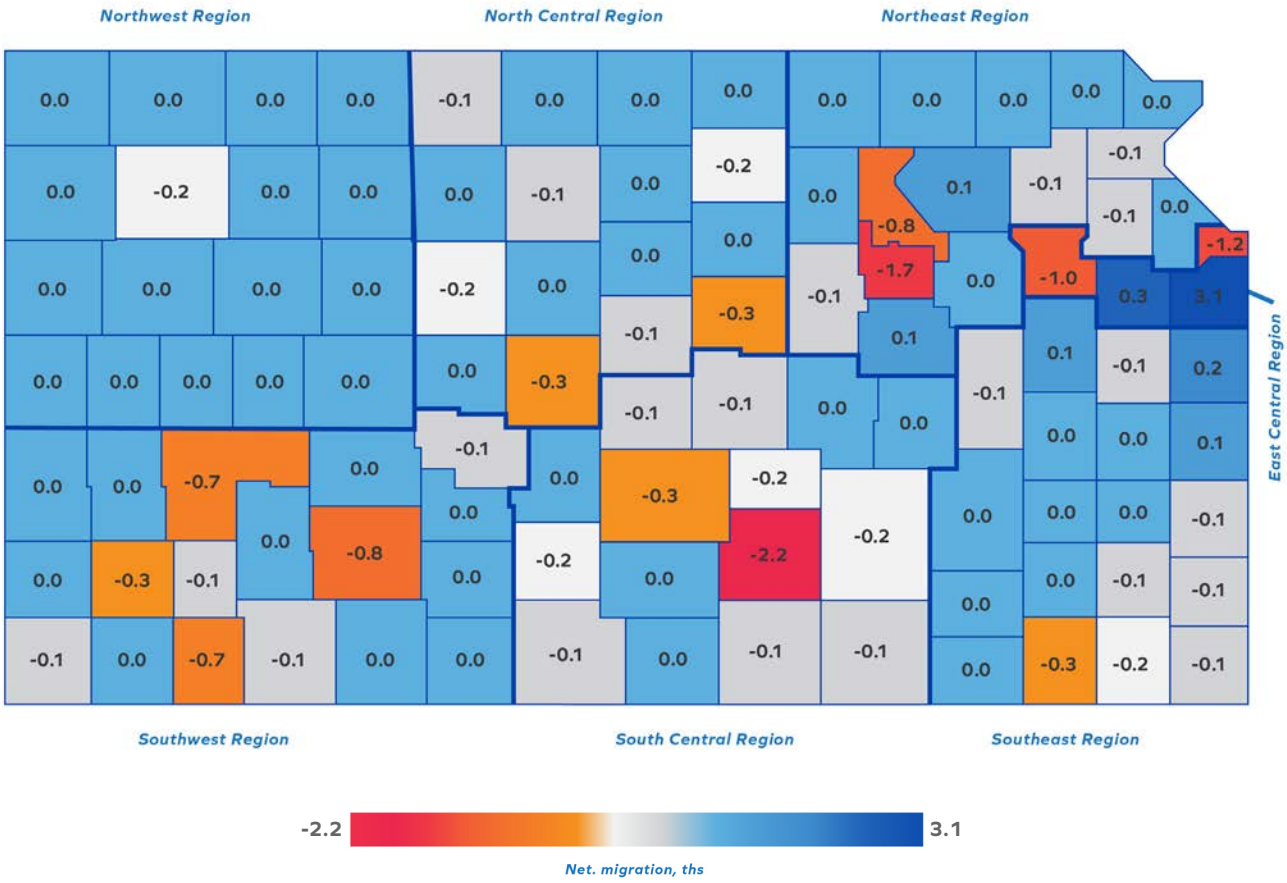
Certain regions in Kansas are experiencing greater challenges related to population loss, unemployment, and GDP growth. Some communities have faced such severe population loss that they have lost critical mass for key social services (i.e., schools, hospitals). Some are less connected to the higher growth markets and have lagging outcomes in physical and digital connectivity (i.e., broadband). Others face a disproportionate risk of job displacement from automation due to the industry mix (i.e., manufacturing, office support, food services).

ECONOMIC OVERVIEW (CONTINUED)



Net Migration by County in Kansas, 2018

SOURCE: US Census Bureau, Moody's Analytics



These trends and their implications for our state's future cannot be accepted. Individually and collectively, these issues cannot be confronted in isolation. We will not elevate our competitive position working in silos. Doing so will require coordinated action supporting the pillars of our state's Framework for Growth, and the unique needs of our target sectors and economic regions.

TARGET SECTORS

Kansas has a portfolio of concentrated industry sectors (clusters) that are readily identifiable and reflect the unique competitive advantages of the region. A cluster is a geographically proximate group of companies and associated institutions in a field, linked by their shared workforce, supply chain, customers or technologies. Economic clusters are an essential tool to help drive our state's regional competitiveness and economic growth by improving productivity, fostering innovation, and facilitating commercialization of new ideas.

The United States and Kansas economies can be characterized by two kinds of industries: tradable and non-tradable. Traded industries sell products or services across regions and countries. Non-tradeable industries, on the other hand, serve almost exclusively the local market and are not exposed to cross-regional competition. These tradeable sectors have a greater "multiplier effect," creating multiple jobs in the economy for every job they create through the adjacent impacts and spillovers in the economy.

Looking ahead to Kansas' future, the Framework for Growth identifies a set of tradable target sectors that will create a balanced portfolio of growth opportunities for which Kansas is effectively positioned to capture. These clusters were prioritized based on the future growth projections, level of specialization (or "comparative advantage") Kansas has in the sector, and the potential impact on the aspiration across employment growth, wage growth, and impacts on lagging regions. The target sectors identified are areas that the state can and should play a more active role in supporting and promoting through implementation of the Framework for Growth:

Advanced Manufacturing

Aerospace

Distribution, Logistics, and Transportation

Food and Agriculture

Professional and Technical Services

Advanced Manufacturing

Turn headwinds into tailwinds and become a Manufacturing 4.0 hub by embracing digital manufacturing.

Increasing global competition is creating challenges for North American manufacturers. In recent years, new players in Asia have entered the market with competitive prices and innovations, hardware is becoming commoditized as digital technologies have become capable of producing more complex products at a faster rate, and manufacturers' business models are shifting from hardware-centric to the software and services domain. The growth of digital manufacturing (i.e. the use of big data, Internet of Things (IoT) and Industrial Internet of Things (IIoT), cloud technology, advanced analytics, advanced robotics and other digital tools in traditional manufacturing processes) also has implications for labor. Manufacturing is the sector with the highest share of activities that can be automated, which has the potential to create both job displacement and higher-wage jobs.

Given these headwinds, we need to prepare our manufacturing businesses for digitalization and prepare our workers for the manufacturing jobs of tomorrow. Kansas is specialized in several major advanced manufacturing subsectors and is forecasted to have a higher five-year employment growth than both peers and the U.S. in all the major advanced manufacturing subsectors. We should leverage our existing specialization in major subsectors to help transition local manufacturers to digital manufacturing, attract high-tech players that could bring high-wage jobs and invest in local innovators who will become the next-generation digital manufacturers. Moreover, given that these subsectors are labor-intensive industries, we need to give our workers the knowledge and skills necessary for the transition into digital manufacturing.

STRATEGIC OPPORTUNITIES INCLUDE

- ✓ **Create a manufacturing 4.0 program for companies**
- ✓ **Offer new incentives to businesses to encourage digital manufacturing transformation**
- ✓ **Develop new programs to effectively train workers with Manufacturing 4.0 skills**
- ✓ **Develop and expand apprenticeship programs**
- ✓ **Help recruit tech talent to the state and its manufacturers**
- ✓ **Support the establishment of incubators that advance new technology development**
- ✓ **Improve financing and capital access to support innovative research and development activity**

TARGET SECTORS (CONTINUED)

Aerospace

Build on existing foundations to expand the value chain, drive innovation, and capture projected growth.

Kansas has a proud history as an aerospace manufacturing leader. Some of the industry's earliest pioneers, including Clyde Cessna and Walter Beech, made Kansas their home. During the 1940's, Boeing's B-29 Superfortresses rolled off Wichita's assembly lines. In 1954, Wichita began producing the iconic B-52 bombers, aircraft that are still in service today. More than 106 years since the first plane was built in Kansas, the state remains a vibrant hub for aviation manufacturing. Manufacturers in the state leverage low operating costs, a skilled workforce and world-class research institutions to build some of the most iconic planes and aerospace technologies in the world.

Looking ahead, Kansas has an opportunity to better align its world-class assets and competitive advantage in the aerospace industry with the subsectors that anticipate the most growth. Emerging technology is creating shifts in the aerospace value chain. More specifically, within aerospace manufacturing, guided missile and space vehicles (2.3% annual growth since 2013) and aircraft engine parts (1.8% annual growth) have driven the most growth the past five years. Despite this fast growth, Kansas has currently overinvested its existing workforce in sub-clusters that are in fact more at risk of slowed growth through 2023.

STRATEGIC OPPORTUNITIES INCLUDE

- ✓ **Double down on our competitive advantages to capture projected growth in MRO opportunities**
- ✓ **Scale existing aerospace assets (i.e. research centers) into new arenas of the value chain**
- ✓ **Promote cross-sectors applications such as unmanned aerial systems (UAS)**
- ✓ **Better connect aerospace anchors and OEMs to smaller manufacturers and researchers**
- ✓ **Commit Kansas to being a customer for disruptive aerospace technologies**
- ✓ **Double down on attracting new locations for OEMs and Tier 1 suppliers/vendors**
- ✓ **Expand the state's resources into aerospace industry conferences and events**
- ✓ **Increase student exposure to innovation and new technologies in aerospace**
- ✓ **Promote contracting opportunities and federal military spend in the state**

Distribution, Logistics and Transportation

Leverage location, transportation networks and investments to solidify status as a national logistics hub.

Kansas has experienced strong recent growth across distribution, logistics and transportation keeping pace with high growth sector and capturing our fair share of U.S. growth. The relative specialization, alongside our beneficial location, support the large employment share and above average growth projection. Kansas, however, needs to prepare for the global trends in evolving consumer preferences, automation and data-driven solutions that are impacting the distribution, transportation and E-Commerce market. The E-Commerce market has been growing every year since 2000 and is projected to reach $8 trillion by 2025 as E-Commerce customers want things faster and cheaper. Automation – which will impact our low- and middle-skilled workers – is also expected to play a bigger role in the competitive landscape: by 2021, there could be over $1 billion in annual warehouse automation installation investments from just the top 50 grocers globally. The increase in the use of data-driven innovations, such as analytics and Internet of Things (IoT) and Industrial Internet of Things (IIoT), will also fundamentally change every step of the logistics chain, from warehousing to last-mile delivery.

Kansas has a high level of employment and specialization in major subsectors such as trucking and warehousing, and we need to stay on the forefront of these global trends to continue capturing growth and providing jobs for our logistics workers. Kansas is projected to outperform the U.S. in employment growth for warehousing, wholesale, and ground transportation support activities – subsectors where advanced analytics and automation would increase operational efficiency and create high-wage jobs. Our central geographic location and urban cores could also help win logistics deals that could attract businesses and jobs.

STRATEGIC OPPORTUNITIES INCLUDE

- **✓ Encourage companies and developers to prepare warehouses and spaces for automation**
- **✓ Partner with logistics companies to host innovation competitions**
- **✓ Incentivize logistics companies to retrain workers to manage automated solutions**
- **✓ Provide forums to enable industry collaboration on solutions for workers at risk of automation**
- **✓ Invest in innovative logistics solutions through a logistics center of excellence**
- **✓ Offer grants for startups to adopt innovative third-party analytical tools**
- **✓ Help partners establish accelerators and/or incubators supporting logistics technology startups**
- **✓ Bolster air transportation connectivity and infrastructure to win multimodal logistics deals**
- **✓ Incentivize prospective site development for logistics and distribution centers**

TARGET SECTORS (CONTINUED)

Food and Agriculture

Support the resilience of our agriculture sector and solidify our status as a global leader and innovator.

According to the Kansas Department of Agriculture, the sixty-six agriculture and food sectors provide nearly $68 billion in total economic contribution to Kansas. Eighty-eight percent of all Kansas land (over 46 million acres) is farmland with another 16 million acres serving as pastureland for grazing animals. Kansas is twice as specialized in Agriculture than the national average. Technology, consumer demands, alternative proteins, geopolitical changes, trade policy changes, sustainability, and many other factors pose challenges to our Agriculture industry, but they also provide an opportunity for growth.

Kansas is a globally recognized as a premier region for cattle production, but this heavy reliance on a single industry poses natural risks to our state. Consumer preferences are rapidly shifting with American consumers eating a third less beef today, eating double the amount of chicken and many are seeking alternative protein choices; these changing preferences present an opportunity for Kansas. In order to generate more security for our economy, Kansas must explore opportunities for further economic diversification while supporting the vibrancy and competitiveness of its Food and Agriculture sector.

Additionally, technology adoption continues to transform agriculture and food manufacturing at an incredibly rapid pace. New technology is increasing farm and processing productivity, generating higher crop yields and securing our livestock's health. The state must prepare and equip Kansas farmers and food manufacturing workers with new skills to succeed, including technical and analytical expertise.

Kansas – with our leading higher education institutions, extension system and research facilities – is a natural home for these developments and should align itself as a world-class home to research, development, and testing of new technologies in animal health, crop science, ag-tech and data analytics.

STRATEGIC OPPORTUNITIES INCLUDE

- ✓ **Provide technical assistance to support the growth of small businesses**
- ✓ **Ensure consistent, reliable broadband access so producers can integrate new technologies**
- ✓ **Create nontraditional lending sources to support startups and succession planning for family farms**
- ✓ **Strengthen relationships with and access to export markets for food and agricultural products**
- ✓ **Establish a center of excellence for alternative crop development and value-added opportunities**
- ✓ **Strengthen the premier animal health services corridor in the world by expanding the value chain**
- ✓ **Develop centers of excellence for ag tech innovation and applications**
- ✓ **Encourage sustainability initiatives that aid operations**

TARGET SECTORS (CONTINUED)

Professional and Technical Services

Double down on headquarters growth, strengthen regional service hubs and build centers of excellence.

While more traditionally known for industries such as agriculture and manufacturing, Kansans have developed a comparative advantage and experienced growth in the professional and technical services industries in recent decades. Of the identified target sectors, the professional and technical services sector currently comprises the largest workforce, with over 87,000 Kansans employed in 2019 (nearly 6% of Kansas' total employment). And by 2029, this figure is expected to top over 102,000 employees. In addition to nearly doubling the state's average annual wage ($83,000 compared to Kansas' average of $46,000), every job created in the professional and technical services cluster adds an additional 2.4 jobs to the local economy by increasing demand for supporting services. To maintain and accelerate our growing leadership in this high-opportunity cluster, there are three broad approaches that Kansas can pursue:

1. ***doubling-down on headquarters opportunities,***
2. ***supporting regional service hubs and centers of excellence,***
3. ***and strengthening the digital backbone and talent pipeline.***

Headquarters comprise the largest employment base (over 25,000 jobs in 2018) and created the greatest outperformance compared to the U.S. (over 8,000 jobs more than what would have been expected if Kansas had grown at the same rate as U.S. average in the sector). Kansas' competitive labor costs for headquarters ($14,000 less than peer average) also makes it an attractive destination for companies that need access to an educated workforce.

Within the business and technical services industries, company trends are increasingly moving toward more automated solutions and higher-skilled "centers of excellence" enabled by computer services. Kansas' strong talent pipeline and growing computer services industries will help support and sustain digitally-enabled business processes, automation and business tourism in the state.

STRATEGIC OPPORTUNITIES INCLUDE

- ✓ **Attract the U.S. headquarters of foreign companies through targeted international recruitment efforts**
- ✓ **Attract computer services and consulting companies through CEO networks**
- ✓ **Improve air service connectivity at Kansas' major airports**
- ✓ **Develop incentives to encourage investments in process digitalization**
- ✓ **Invest in developing vibrant business districts to attract employers and talent**
- ✓ **Attract data center investment in areas with strong broadband connectivity**
- ✓ **Strengthen relationships and partnerships between MBA and computer science programs**
- ✓ **Invest in centers of excellence to drive growth in niche technologies**

Kansas' strong talent pipeline and growing computer services industries will help support and sustain digitally-enabled business processes, automation and business tourism.

OUR VISION FOR THE FUTURE

We are at a critical juncture in our state's history. Now is the time for Kansans to come together and be bold as we contemplate our vision and strategies to enable growth and prosperity in our state. As we look to the future, it is critical for us to ensure that we continue to harness the strengths in Kansas and address our challenges head on. Accordingly, the Framework for Growth incorporates a bold vision that is defined in key increments to be achieved over time.

5 YEARS

***Stabilize and reposition* (2021 – 2025)**

Reverse negative trends and set a clear growth trajectory by building a foundation through initiation of new programs, policies, and investments.

10 YEARS

***Punch above our weight* (2026 – 2030)**

As investments begin to yield substantive gains, they drive our competitive position in key economic outcomes to the top half of all states.

15 YEARS

***Realize a "future proof" economy* (2031 – 2035)**

New approaches will have become ingrained, effects will be compounded and the return on investment will be evident as our state emerges with a reputation as a disruptor rather than the disrupted.


As we look to the future, it is critical for us to ensure that we continue to harness the strengths in Kansas and address our challenges head on.

OUR FRAMEWORK FOR GROWTH

Achieving the vision of a "future proof" Kansas economy will require aggressive yet flexible investment; the Framework for Growth will help guide this investment. Specifically, four strategic pillars provide the foundation for our state's Framework for Growth.

TALENT

INNOVATION

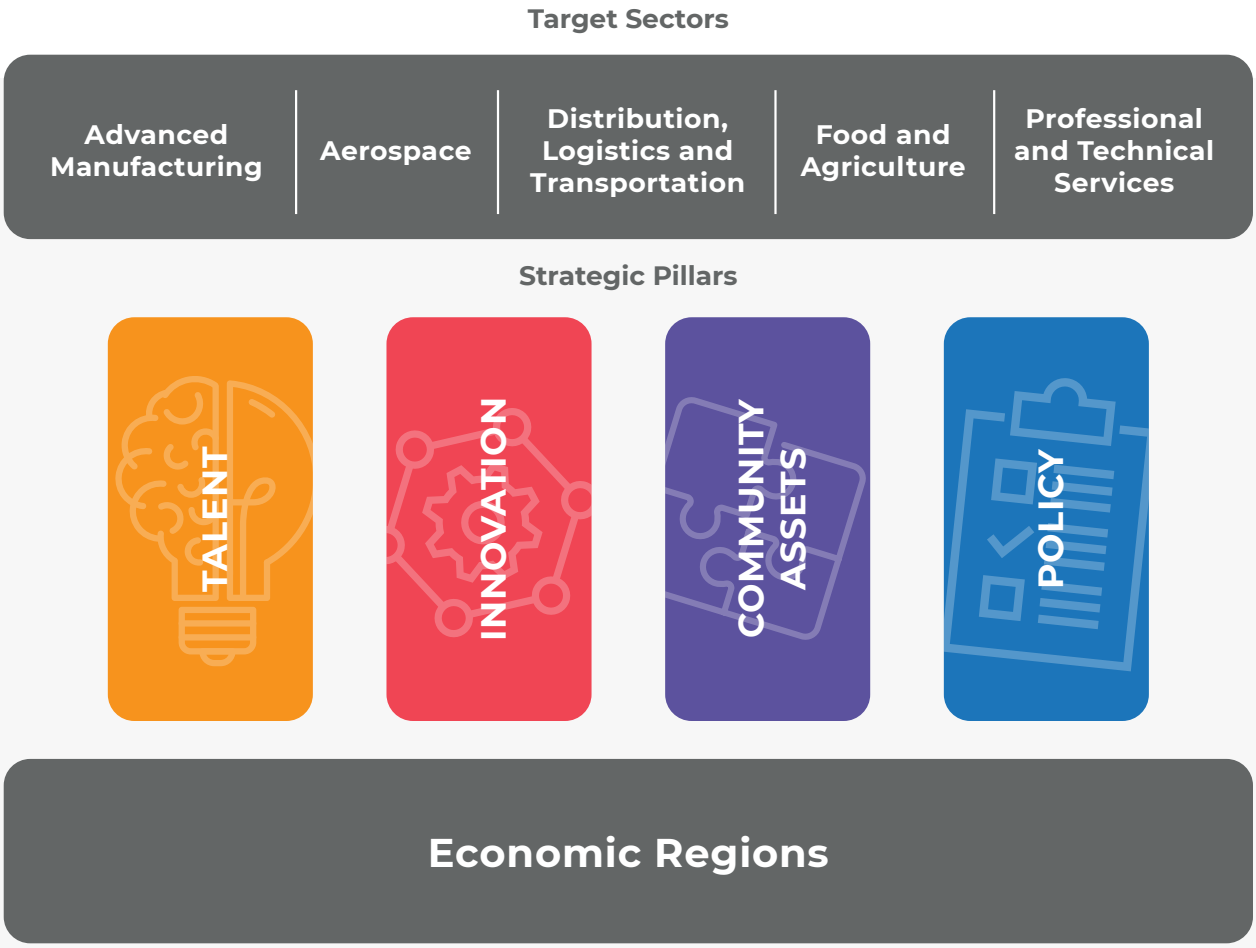
COMMUNITY ASSETS

POLICY

These four pillars support the competitiveness and resilience of our state's target sectors and economic regions. Target sectors reflect those areas of our state's economy that are most competitive, and which hold the strongest prospects for employment and income growth, and accordingly, merit focused investment to support their development. Our state's economic regions have distinct assets, opportunities and needs, and accordingly, deserve focused investment to support their prosperity. Supporting our target sectors, economic regions and the four pillars are our excellent public-school systems and higher education institutions. Specifically, our Kansas Board of Regents schools will be critical in driving job growth and capital investment in Kansas through cutting-edge research and talent development.

The Framework for Growth presents a set of objectives and outcomes and a complementary set of priority and potential initiatives and investments for each pillar and each sector. Objectives and outcomes will guide the development of new initiatives and investments by state agencies each year, initiatives and investments that are expected to align with the Framework for Growth, its strategic pillars and its target sectors. Initiatives and investments reflect new or augmented programs, policies and expenditures proposed by various state agencies as they fulfill a mandate to align budgeting and operations with the Framework for Growth. In this regard, the Framework for Growth is not a static strategy with a discrete budget; it is a framework that enables flexibility and responsiveness in our efforts to support economic growth.

Kansas Framework for Growth Model



As a result, the Framework reflects an enduring, guiding structure for our state's economic growth – one that will appropriately and proactively respond to new challenges and opportunities confronting the state, its target sectors and its economic regions. In order to address these challenges and reverse certain trends related to our state's competitive position and achieve our vision of a "future proof" economy, the Framework cannot simply exist as a set of objectives and potential initiatives. Objectives will only become outcomes and initiatives will only become investments if necessary and sufficient resources are dedicated. Accordingly, the Framework's implementation and operationalization will be supported by the establishment of two new programs: the Kansas Competitiveness Project (KCP) and the Regional Excellence Initiative (REI), supported by a new Chief Strategy Officer.

STRATEGIC PILLAR: TALENT

Objectives and Outcomes

Bridge the skills gap for in-demand and high-wage occupations in target sectors.

Attract and retain top talent across the state's economic regions.

Strengthen graduate retention from our state's institutions of higher education.

Rise to the top of Midwestern states with respect to educational and workforce outcomes.

Attract jobs in target sectors that align with the skills of our workforce.

Set annual targets for the retention of graduates in the state of Kansas.

Priority Initiatives and Investments

Kansas Talent Enterprise: Establish a new partnership to modernize state approaches to workforce development; create synergy between education and economic systems; empower business and industry to drive results; and align systems toward a shared, transformative vision.

Quick Work Kansas: Launch a comprehensive, rapid-response, workforce development program to provide new or expanding employers with a flexible, customized training solution.

"Elevate Kansas" Talent Attraction Marketing Campaign: Implement a robust and targeted talent attraction effort that effectively promotes employment opportunities in our state's economic regions and target sectors, and which welcomes former residents and alumni back to the state, through investments that promote and strengthen our image and brand identity.

Potential Future Initiatives and Investments

Employer Engagement and Work-Based Learning: Deploy Employer Engagement representatives and/or Work-Based Learning intermediaries in each of the state's economic regions to develop partnerships with industry that support applied learning and job placement.

Align "Excel in Career Technical Education Initiative" Outcomes: Establish regional advisory boards in each of the state's economic regions to align credentials with skills demanded by target sectors.

Amplify Apprenticeships: Strengthen the Registered Apprenticeship Program through a series of coordinated investments that incentivize employer engagement, nurture new partnerships, promote equity in access and accelerate the number of registered apprentices.

Kansas Completes Scholarship: Design a new scholarship program to complement existing aid and provide gap financing to help students graduate with 24-30 hours of college credit.

Welcome to Kansas: Building on the successes seen with such efforts in Dodge City and Garden City, launch a campaign to attract and support immigrant communities in Kansas through marketing, funding to resettlement agencies and services such as ESL and career placement.

Revolving Talent Fund: Work with private employers to establish a self-sustained resource for training and workforce development through interest-free loans for education and training.

STRATEGIC PILLAR: INNOVATION

Objectives and Outcomes

Foster a vibrant innovation ecosystem within and across economic regions.

Improve commercialization outcomes that drive innovation and job creation.

Support research and development of disruptive technologies that define future growth prospects.

Ensure that entrepreneurs are afforded with adequate access to capital.

Invest in the retention, expansion and attraction of innovative companies in target sectors.

Set annual targets for new business creation for each university.

Establish "front doors" at each state university to create easy access points for partnerships with the private sector to encourage new business and product development.

Priority Initiatives and Investments

Accelerating Innovation: Accelerate and focus state investment in the research, development, and commercialization of emerging and niche technologies that can "future proof" our economy by way of new programs such as the Kansas Competitiveness Project (KCP).

"Elevate Kansas" Corporate Recruitment Marketing Campaign: Implement a robust and targeted corporate recruitment effort that supports the state's vision to "stabilize and reposition" our economy, and which promotes the advantages that support our competitiveness in target sectors, through investments that promote and strengthen our image and brand identity,

Innovation Network: Create a new statewide network to provide resources for entrepreneurs, services for investors and coordinated matchmaking (i.e., mentorship, connections to investors and capital for entrepreneurs, and concierge service for investors).

Potential Future Initiatives and Investments

Corporate Accelerators and Innovation Competitions: Partner with and incentivize companies to establish accelerators and/or innovation competitions that provide industry-specific innovation ecosystems to entrepreneurs and/or incentivizes to address a specific corporate challenge.

College and University Entrepreneurship Tracks: Establish entrepreneurship-focused courses and concentrations across STEM disciplines that encourage students to combine academic and entrepreneurial interests and provide resources to support potential endeavors and enterprises.

"Invest in Kansas" Marketing Campaign: Implement a highly focused, relationship-based campaign to encourage venture capital investment in the state's target sectors.

High-Tech Research and Development Loan Program: Develop a new research and development loan program that partners with and incentivizes lenders to provide low-interest loans to small and mid-sized companies to support technology improvements.

Innovation Centers: Invest in industry-serving, university innovation centers to develop cutting-edge technology using cross-cutting advanced competencies such as AI, data analytics, robotics and automation.

STRATEGIC PILLAR: COMMUNITY ASSETS

Objectives and Outcomes

Empower our regions to develop the infrastructure that will help "future proof" their economies.

Rise to the top of Midwestern states with respect to broadband connectivity and access.

Maintain and enhance transportation networks that solidify our position as a distribution hub.

Improve multi-modal infrastructure in strategic locations throughout the state.

Promote vitality, livability and quality of place in our state's economic regions.

Priority Initiatives and Investments

Office of Broadband Development: Provide capacity and resources to support our economic regions and their collaborative yet differentiated approaches to broadband technology deployment through a coordinated Office of Broadband Development.

Sites and Buildings: Direct state resources to economic regions seeking to improve the attractiveness and preparation of sites and buildings that can support economic development by way of the Regional Excellence Initiative and other programs.

Runway to Recovery: Provide targeted support to regional partners and their airports to promote the recovery of passenger traffic and economic activities that are critical to the prosperity of our economic regions (i.e. aerospace and aerospace maintenance, overhaul and repair; transportation, logistics and distribution).

Potential Future Initiatives and Investments

Anchor Institutions and Regional Revitalization: Develop a partnership program to incentivize and encourage anchor investment strategies that spur revitalization and placemaking.

Quality of Place: Provide resources to help communities create housing solutions (i.e., co-living for young graduates), overcome connectivity issues (i.e. public transportation and walkability), and develop compelling places (i.e. Main Street revitalization).

Enabling Infrastructure: Expand state investment in infrastructure that enables competitiveness in emerging technologies and core competencies supporting target sectors (i.e. unmanned aerial systems, smart grids and technologies, driverless vehicles, etc.).

Air Service Connectivity: Work with regional and state partners to align marketing efforts and expenditures that help attract new nonstop destinations and improve passenger air connectivity.

Multi-Modal Logistics: Support the sustainability of existing logistics parks and the intentional establishment of new logistics parks by incentivizing and investing in the adoption of the latest multi-modal capabilities and technologies.

State Energy Plan: Develop a long-term, statewide energy plan to ensure the infrastructure is developed to maintain and grow our energy producing sectors including oil & gas, and renewables.

Rail Service: Help communities prepare and promote rail-served sites that leverage our network.

STRATEGIC PILLAR: POLICY

Objectives and Outcomes

Align economic development policies and incentives with target sectors.

Promote transparency through processes to evaluate the return on investments and incentives.

Provide stable and at-scale funding for economic development incentives.

Ensure that state policy supports objectives and outcomes in other strategic pillars.

Regularly evaluate state regulations policies, and incentives relative to peers and competitors.

Priority Initiatives and Investments

Modernize Incentive Programs: Adjust eligibility requirements and award amounts associated with the state's primary economic development incentive programs, Promoting Employment Across Kansas (PEAK) and the High-Performance Incentive Program (HPIP), to improve their applicability to and outcomes within economic regions and target sectors.

Funding for Incentives: Enable consistent, stable, multi-year funding streams to support the implementation of economic development programs and the provision of competitive economic development incentives (i.e. JobsOhio's monetization of state liquor licenses).

Transparency in Operations: Maintain and update the state's database to improve transparency into incentives awarded and support regular, in-depth evaluation of return on investment using economic and fiscal impact multipliers (i.e., Virginia's ROI calculator).

Potential Future Initiatives and Investments

Innovation Incentives: Support the attractiveness of our innovation ecosystem by ensuring that incentives for innovation are constantly evaluated and updated, including updates to incentives for research and development activity, angel investment and other activities.

Regulatory Alignment: Regularly convene stakeholders from target sectors and economic regions to evaluate state regulations and policies, and their impact on our economic regions and target sectors, providing necessary feedback to legislators.

Purchasing Power: Utilize state purchasing power to support the state's target sectors and economic regions abilities to be early adopters of disruptive technologies (i.e. UAS, VTOL, etc.)

Incentivizing the Supply Chain: Develop new, highly-targeted incentives that seek to incentivize the attraction of suppliers/vendors supporting existing supply- and value-chains, and/or new incentives to encourage employers to source products and services from local suppliers/vendors.

Export Promotion: Establish new policies and programs that support and promote the exportability of products manufactured in the state.

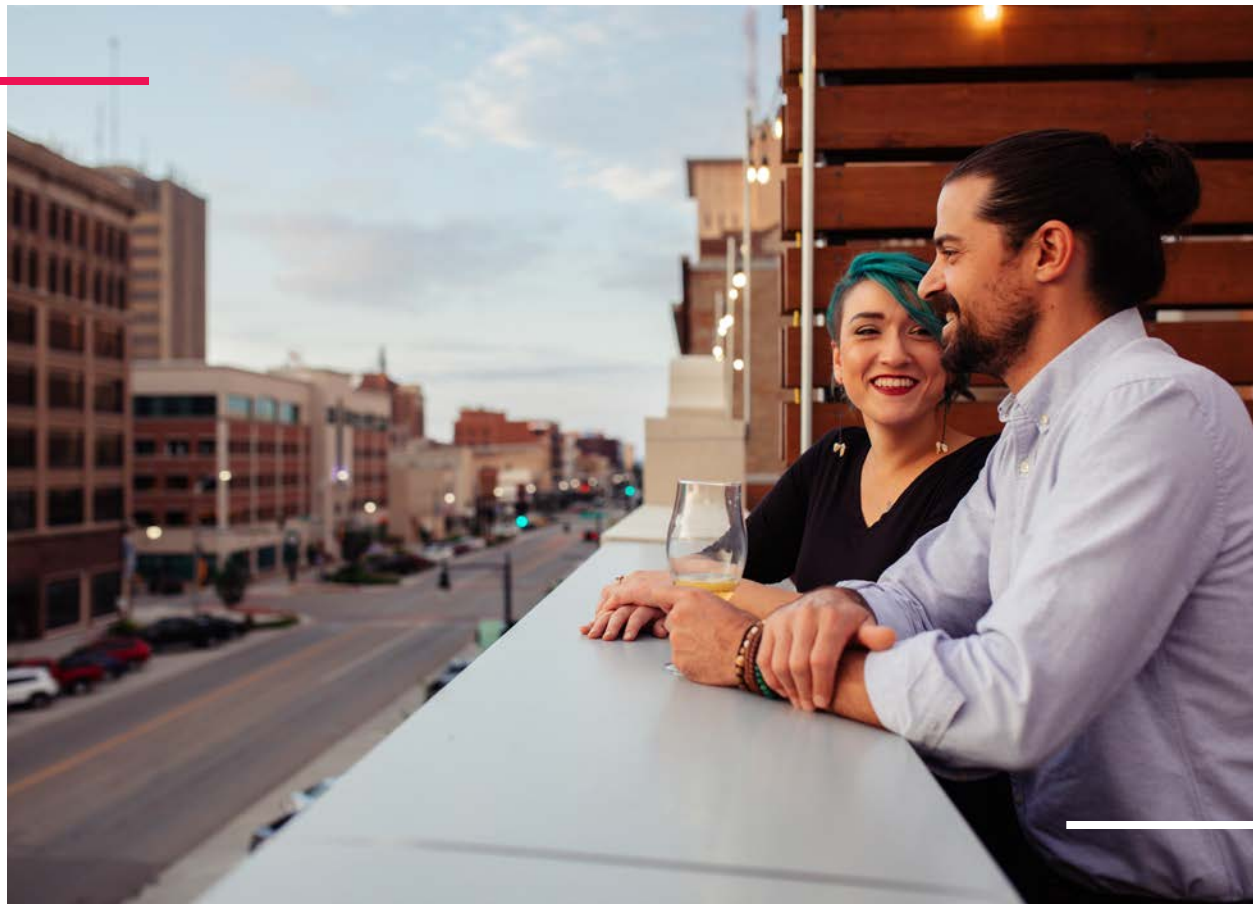
OUR COMMITMENT TO IMPLEMENTATION

OPERATIONALIZING THE FRAMEWORK

In doing so, it provides strategic guidance to the state's agencies regarding the ways in which they can and should support the state's growth objectives in their annual planning and budgeting. It guides us by way of core principles but does not prescribe our actions by way of specific tactics. Rather, it recognizes that strategic challenges and opportunities emerge every day, and that specific tactics and investments should be derived over time in alignment with guiding principles.

A new Chief Strategy Officer (see next section) will coordinate with state entities as they develop and implement programs, ensuring that the Framework for Growth is a model that permeates all state operations rather than a strategy siloed within its Department of Commerce. Proposed initiatives and investments that align with the state's Framework and its strategic pillars will be integrated into the Framework for Growth; initiatives and investments that have been appropriated or are underway will also be incorporated. In this regard, the Framework for Growth remains a dynamic document, updated annually to "tell a story" about the state and the fulfillment of its vision to "future proof" the economy.


The Kansas Framework for Growth is intended to be a flexible and responsive model to guide our state's investments in a manner that supports long-term growth and competitiveness.



CAPACITY SUPPORTING THE FRAMEWORK

Chief Strategy Officer

The Chief Strategy Officer (CSO) is a new position within the Department of Commerce which serves a critical function as the organizational backbone to the Framework for Growth, and a resource to various state agencies, regional partners and private industry to help accelerate and align the state's investments around the Framework for Growth. The CSO is responsible for oversight and administration of two new programs – the Kansas Competitiveness Project (KCP) and the Regional Excellence Initiative (REI) – to direct state investments to develop the state's target sectors and regions in a manner that aligns with the Framework's pillars and associated principles. In addition to administering these two programs, the CSO serves as an internal strategic resource within state government, tasked with supporting each agency or department's mandate to demonstrate alignment in annual budgets and operations with the pillars and principles of the Framework for Growth.

CAPACITY SUPPORTING THE FRAMEWORK
(CONTINUED)

Regional Excellence Initiative (REI)

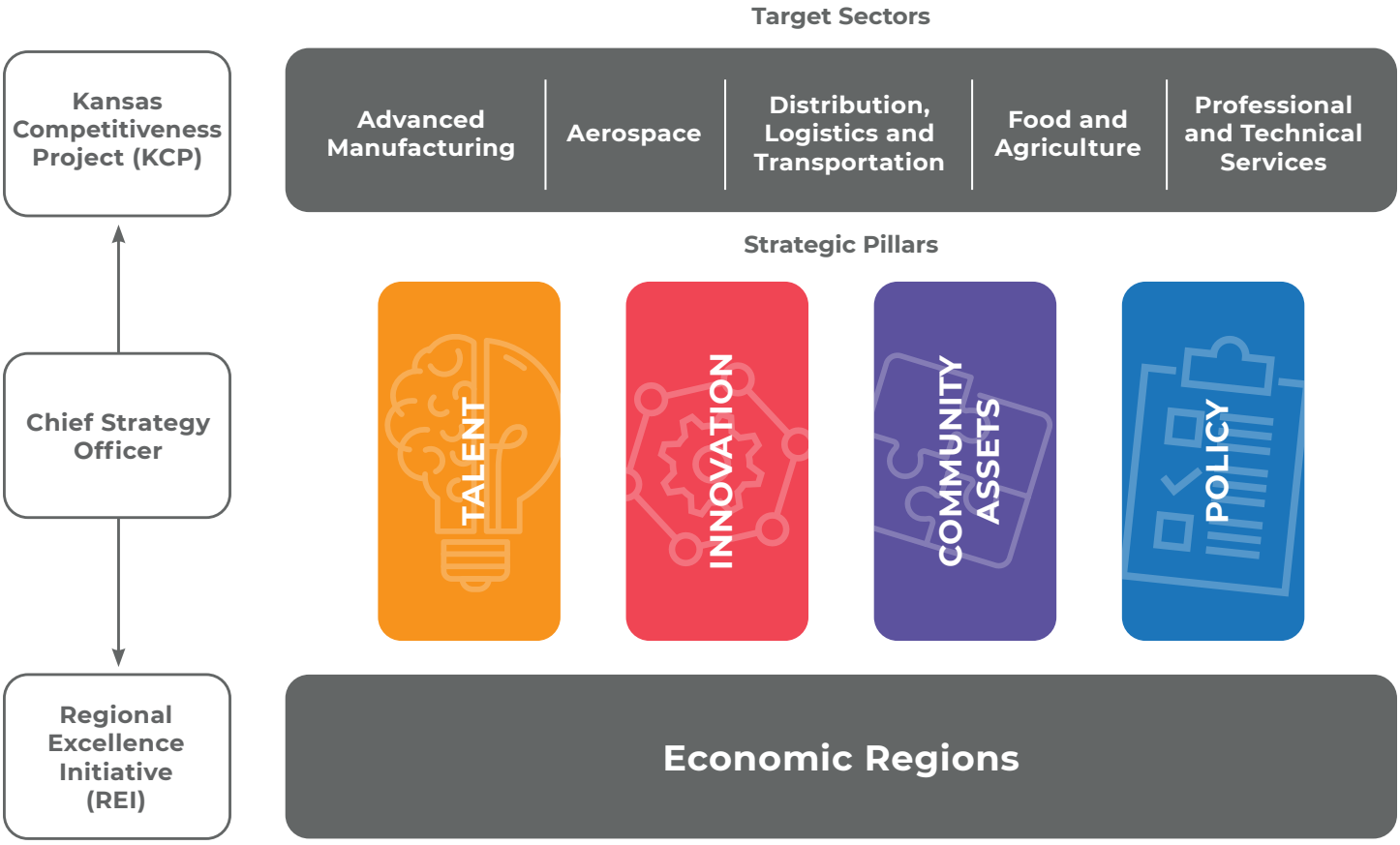
The Regional Excellence Initiative (REI) is a new effort to direct state resources and technical assistance in support of regional planning efforts that align with the Framework for Growth. The REI is intended to help regional partners assess their specific needs and opportunities, develop proactive plans to accelerate their competitiveness in alignment with the Framework for Growth and afford resources to aid their implementation. Specifically, the REI would provide regions with a set of planning and implementation grants, as well as technical assistance from the Chief Strategy Officer, to support regional strategic planning in alignment with the Framework. The Initiative should support our transition away from a fragmented system of local-level planning and rigid definitions of economic regions that often fail to reflect regional economies and clustered activities. It recognizes the reality that regional economies and clustered sectors have little regard for jurisdictional borders; accordingly, the REI will allow grant applicants to self-define their region for planning purposes.

The Initiative supports the Framework in three primary ways. First, regional planning processes serve as a regular source of strategic input that informs annual updates to the Framework for Growth. Second, regional planning processes allow regions to identify priority projects and investments that can and should be eligible for REI implementation grants, Kansas Competitive Project (KCP) grants or a variety of other state funding opportunities that can and should be aligned with the Framework for Growth. And third, regional planning processes afford an opportunity for Commerce to remain engaged with regional partners, ensuring that relationships fundamental to economic development service delivery are nurtured and respected.

Kansas Competitiveness Project (KCP)

The Kansas Competitiveness Project (KCP) is an aggressive new program to focus and direct state resources toward the development of new skills and technologies that can drive our performance in the state's target sectors. The initiative is intended to help accelerate the development of core competencies embedded in the state's workforce, institutions of higher education, research centers and elsewhere that have the potential to support a more resilient, "future-proof" economy. Specifically, KCP directs state resources by way of matching grants to institutions and organizations in the state that are working to develop new skills and technologies by way of education, research and development that align with and support the state's performance in target sectors.

Kansas Competitiveness Project & Regional Excellence Initiative Model



The model is similar to the South Carolina SmartState Centers of Excellence program in that it directs resources to support cluster-focused research and development. However, rather than investing in the establishment of a series of new "centers of excellence" at specific institutions in specific regions, the Kansas Competitiveness Project will direct resources to a variety of existing institutions that have established and continue to develop competencies in the forms of applied research, education, training and a variety of public-private partnerships. Grants could be applied to a variety of eligible uses provided matching funds from the private sector are received, from support for existing research, establishment of new research centers, endowment of researchers and scholars, establishment of new training programs and so on. The premise of KCP is to accelerate knowledge and innovation that contributes to sector performance and competitiveness.

MEASURING PERFORMANCE AND PROGRESS

A new interactive dashboard will be developed to illustrate the state's competitive position with respect to key outcomes that we wish to influence related to our strategic pillars and vision to "future proof" our economy. This dashboard will be updated annually and will benchmark the state's competitive position relative to all states and a subset of peer Midwestern states that reflect our aspiration to achieve premier status within our region. Rather than prescribing specific, measurable goals associated with various economic outcomes – measurables influenced by a variety of exogeneous factors – we intend to measure our relative competitiveness and its change over time.

Rather than prescribing specific, measurable goals associated with various economic outcomes, we intend to measure our relative competitiveness and its change over time.

The interactive dashboard will be accompanied by the aforementioned annual update to the Framework for Growth and its component initiatives and investments. In this regard, the Framework for Growth not only serves as a living strategy but also a historical record on progress. It will incorporate annual reporting on operational benchmarks related to economic development program (i.e. grant awards) and project activity (i.e. jobs, capital investment, wages, etc.).

KANSAS
FRAMEWORK
FOR GROWTH

Appendix B

SALINA COMMUNITY EDO: TARGET INDUSTRY UPDATE AND BUSINESS CASE DEVELOPMENT

OCTOBER 2021

Salina Community EDO (KS)

Target Industry Update and Business Case Development

Executive Summary Report –
October 22, 2021

AdyAdvantage™
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Executive Summary

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Executive Summary

OBJECTIVE & KEY THEMES

The objective of this project is to refine existing target industries (pictured to the right) to identify opportunities to drive future industry growth and diversification in Salina and the region. This will include looking at the impacts of Covid on Salina's main industries, as well as new industry sub-sector opportunities that may arise from the pandemic.

Target Industry	Subsectors of Focus	Comments
Agribusiness and Supply Chain	• Crop Production (NAICS 111000) • Animal Production and Aquaculture (NAICS 112000) • Other Animal Food Manufacturing (NAICS 311119) • Animal (except Poultry) Slaughtering (NAICS 311611) • Farm Machinery and Equipment Manufacturing (NAICS 333111) • Farm and Garden Machinery and Equipment Merchant Wholesalers (NAICS 423820) • Grain and Field Bean Merchant Wholesalers (NAICS 424510) • Livestock Merchant Wholesalers (NAICS 424520) • Farm Supplies Merchant Wholesalers (NAICS 424910)	Companies in these industries would benefit from the strong agriculture and manufacturing history in the region, as well as the availability of water. Additionally, Salina's proximity to Western Kansas is highly advantageous. Food manufacturers who are looking to have a regional presence with access to markets, such as Denver, Salt Lake City, Oklahoma City, etc. would benefit from the location and distribution assets of the region. Moreover, the presence of the Bulk Solids Research Center may provide value to this industry. The center can offer strategic partnerships with industries focused in the bulk solid industry or related supply chain.
Aerospace	• Aircraft Manufacturing (NAICS 336411)* • Aircraft Engine and Engine Parts Manufacturing (NAICS 336412) • Other Aircraft Parts and Auxiliary Equipment Manufacturing (NAICS 336413) • Other Support Activities for Air Transportation (NAICS 488190) • Other Airport Operations (NAICS 488119) **Note: Aircraft Manufacturing includes the manufacturing of drones.*	Although this industry did not show up strongly through the NAICS code analysis, Salina has a number of assets to support this industry, including good highway access, an under-leveraged airport, and a strong aerospace program at Kansas State Polytechnic. More specific aerospace industries are included in the identified subsectors. This includes areas of focus like aircraft interior manufacturing, avionics, maintenance repair operations, etc.
Distribution	• Distribution related to any of the identified target industries • Aircraft Merchant Wholesalers (NAICS 423860)	Saline County sits on two Interstates, I-70 and I-135, and within a 500 mile radius, companies in Salina can reach large regional markets, including Dallas, St. Louis, Denver, Oklahoma City, and Kansas City, among others.

During the virtual on-site analysis, Ady Advantage conducted a variety interviews, roundtables, surveys, and stakeholder sessions to gain direct input. Key themes were identified through all these means of input, aggregated together and analyzed. Questions aimed to understand the area's competitiveness related to operating conditions and operating costs along with key opportunities around talent, partnerships, growth, etc. The questions also aimed to understand barriers to growth and other challenges employers and talent may experience. The following themes emerged:

1. The Salina region has a **robust product pipeline**, with a large number of sites and buildings available for businesses looking to relocate or expand. This is especially true as it relates to **sites that are suitable for industrial development**. Sites are generally quite shovel-ready, with flat terrain and utilities and infrastructure already in place or close by. There are many **sites located near the Airport,** making it ideal for the aerospace industry and other industries that benefit from proximity this asset.

Executive Summary

KEY THEMES

2. Stakeholders expressed a **mixed view for the growth potential of the three target industry clusters**, expressing a very positive outlook for the aerospace cluster, a somewhat neutral to positive outlook for the agribusiness and supply chain cluster, and a somewhat pessimistic to neutral view for the distribution cluster.
    A. Regarding the **aerospace sector**, stakeholders noted all the positive developments regarding **recent project interest and wins** and the new aerospace-related businesses choosing to locate in the Salina area. There is a **strong aerospace talent pipeline** from the education institutions in the region. Additionally, the **Salina Regional Airport** is an immense asset which features some of the longest runways in the country. Overall, aerospace was viewed as having the strongest growth potential.
    B. Regarding the **agribusiness and supply chain sector**, stakeholders noted that while they had viewed less notable activity in this cluster in the immediate Salina area, they understood it to be a **critical industry for the broader region and the state of Kansas**. Data from the market assessment shows that agribusiness continues to maintain a strong concentration for the greater Salina region, and growth is projected.
    C. Regarding the **distribution sector**, stakeholders noted that intuitively distribution makes a great deal of sense for Salina. The region has **strong transportation assets, most notably road and interstate infrastructure, but also rail and the airport.** However, stakeholders noted how much of the activity in the **distribution industry seems to gravitate to the bigger metro areas like Kansas City and Wichita.** Stakeholders questioned the viability of the distribution industry in the Salina area as industry trends change and evolve. Data from the market assessment shows that growth is projected for the transportation and warehousing.

3. **Employers in the Salina region continue to experience workforce challenges.** Until recent years, Salina had experienced relatively steady population and labor force growth which helped to alleviate the workforce shortages experienced by employers. The **COVID-19 pandemic has exacerbated the workforce challenges** as employees are routinely forced to quarantine due to exposure incidents or become sick themselves. This is **especially challenging for production-related occupations** that make up a significant portion of the backbone of the Salina region economy, and who do not have the ability to work from home as other occupations and industries may be able to.

4. The **downtown of Salina is an immense asset** to the community and features **many amenities that contribute to the quality of life**. Such amenities include the community theatre, the theatre for performing arts, the art center, and the bowling alley arcade, just to name a few. The downtown has experienced **significant construction and renovations** in recent years, showing a willingness from the community to re-invest in itself.

Executive Summary

KEY THEMES

5. As noted in the previous key theme, the Salina region offers an exceptional quality of life. However, this quality of life is **little known outside of the Salina region.** There is a growing recognition that historically Salina has done a **poor job of messaging and communicating and telling its story to the outside world.** In response to this, Salina launched **the Imagine Salina campaign** earlier this year. While it was unfortunate that this timing coincided with the onset of the COVID-19 pandemic which has stalled its progress, the Imagine Salina campaign is a great start towards addressing this challenge. It provides a **strong foundation that can be built upon** towards telling a positive narrative of the Salina region and ultimately talent attraction.

6. **Housing is a challenge** in the Salina region that is currently constraining full growth and development potential. There is increasing **scarcity in available housing that is suitable and affordable** for the low-skilled and semi-skilled workers, as well as entry level salaried professionals. As with most communities across the country, developers are primarily interested in the development of high-end housing projects, and not the entry to middle-tier level housing that is needed. The scarcity of housing that is suitable and affordable for workforce is a **deterrent to the Salina region's ability to capitalize on attracting and retaining talent,** including the growing segment of remote workers.

7. The **availability and affordability of childcare in the Salina region is a significant challenge**. While COVID-19 has exacerbated the childcare challenges in the region, these challenges pre-dated the pandemic and will continue post-pandemic if left unaddressed. This issue is contributing to **the talent retention and workforce challenges experienced by employers** in the region. There is a growing recognition from employers and stakeholders in the region that the scarcity of childcare is an **economic constraint for the region**, and that employers may have to play a more proactive role in addressing the childcare issue if they wish to alleviate their workforce challenges.

Executive Summary

KEY THEMES

8. There seems to be a relatively **fair amount of alignment between stakeholders and partners** in the Salina region. There is a sense that in the not-so-distant past there had been some degree of misalignment and strife between economic development partners, and although this is not necessarily forgotten there is greater consensus that today the City, County, Salina Community EDC, and other economic development partners work fairly well together. In particular, **the three higher education institutions are well aligned** and have little overlapping programming that could cause competition.

9. **Kansas Wesleyan University, Salina Area Technical College, and Kansas State University Polytechnic Campus are major talent pipeline assets** to the Salina region. Not all communities the size of Salina have access to both a 2-year college and a 4-year university right within their own backyard. Additionally, the Polytechnic campus provides **specialized vocational training that aligns with the aerospace target industry**. Employers noted their appreciation for the work these education institutions do and the programming and training they provide to their businesses. The three aforementioned institutions do an **exceptional job collaborating**, and there is little overlapping programming or competition amongst them.

10. There is a perception among many stakeholders that historically, Salina's employers were collectively **paying wages that were somewhat uncompetitive**, which likely had a detrimental effect on the Salina region's ability to attract and retain talent. This perception is supported by data from the market assessment of this report, which shows that in general Saline County wages are lower than the greater region and considerably lower than the state or national averages. Many speculated that the reason Salina has won some recent projects and new employers is that the lower wages in the region provided these businesses the confidence in the knowledge that they could locate in the region and pay wages that were higher than the region but still competitive relative to the national average. This would translate to their **ability to attract and retain top tier talent** in the region. It should be noted that wages in the region have started to increase over the past couple of years, likely due to the low nationwide unemployment rates. Wage increases will likely continue to accelerate as **new competition and pressure for workforce is driven by these new employers locating in Salina.**

Executive Summary

TARGET INDUSTRY REFINEMENT

Ady Advantage conducted thorough research on the existing target industries and all potential subsectors. Ady Advantage prioritized these sub-sectors based on the key screening criteria from the previous section. These key screening criteria include the following:

- Projected growth in the greater region over the next 5-year period
- Projected growth in the US over the next 5-year period
- Life cycle stage
- Concentration
- Technology Change
- Capital Intensity
- Revenue Volatility
- 2020 Driver Direction
- Regulation and Policy Level & Trend
- Industry Assistance Level & Trend

The weighting of the key screening criteria above in the sub-sector prioritization process is different for each target industry, dependent on the input from Salina Community EDO leadership as to what it considers the most important factors to consider. Those key screening criteria deemed higher in importance for a particular target industry correspondingly received a higher weighting in the sub-sector prioritization process.

An additional layer of qualitative analysis was applied in the prioritization process, based on our industry experience and expertise. This qualitative analysis can be found in the summaries for each target industry accompanying the ranking of the sub-sectors. It is also reflected in the priority tier level assigned to each sub-sector, where Ady Advantage further categorized the sub-sectors into Tier A and Tier B based on our assessment of priority based on these qualitative factors and inputs. It is important to note that all sub-sectors shown here are stars and opportunities for the Salina region, and even those sub-sectors assigned as Tier B still show competitive potential.

As a result of this analysis, we recommend the industries and sub-sectors as prioritization targets for the Salina region on the following pages. Regional and refined target industry positioning and business case development can be found in the later in the report.

Executive Summary

AGRIBUSINESS AND SUPPLY CHAIN PRIORITIZATION

In Ady Advantage's assessment, Agribusiness and Supply Chain is an industry that offers opportunity for the Salina region. As noted earlier in the report, while there is less activity in this cluster in the immediate Salina area, it is a critical industry at a regional and state level and there are synergies that can be created with the broader region and state economies and supply chains. Additionally, the target industry analysis data shows that the agribusiness industry continues to maintain a strong concentration and growth in the greater Salina region. Sub-sector prioritization below focuses on the animal and crop production and processing operations, and business recruitment efforts should focus on trying to build out the full value stream for the agribusiness cluster. This includes both the production of the raw materials already produced in the region, as well as increasing value-add processes to those raw materials and producing end consumer products.

Target Industry Sub-Sector	Sub-Sector Prioritization Score	Assigned Priority Tier
Animal (except Poultry) Slaughtering (NAICS 311611)	32	Tier A
Crop Production (NAICS 111000)	30	Tier A
Other Animal Food Manufacturing (NAICS 311119)	29	Tier A
Livestock Merchant Wholesalers (NAICS 424520)	29	Tier B
Flour Milling (NAICS 311211)	27	Tier A
Grain and Field Bean Merchant Wholesalers (NAICS 424510)	27	Tier B
Crop Harvesting, Primarily by Machine (NAICS 115113)	26	Tier A
Farm Labor Contractors and Crew Leaders (NAICS 115115)	26	Tier B
Soil Preparation, Planting, and Cultivating (NAICS 115112)	25	Tier A
Support Activities for Animal Production (NAICS 115210)	21	Tier A

Executive Summary

AEROSPACE PRIORITIZATION

In Ady Advantage's assessment, Aerospace is an industry with significant opportunity for the Salina region, but also with an uncertain national outlook at the current moment. As noted earlier in the report, Salina has had recent project activity and wins within the aerospace industry, and thus a proven record of recent success. However, commercial activity in this industry nationally has taken a massive hit from COVID-19, and even under the best of projections is not anticipated to fully rebound for at least a few years. Freight and defense should be the higher priorities for the Salina region, at least in the short-term. There may be opportunities for Salina to leverage the educational assets in the region to position itself as a technology and innovation hub for the aerospace industry, particularly around automated planes, software development and analytics. Sub-sectors below marked as a higher priority can support both the defense industry, as well as other manufacturing opportunities in the Salina region. Those sub-sectors marked as a lower priority tier are predominantly commodity-based products and/or are sub-sectors less closely related with the aerospace industry; however, they can still support aerospace and should continue to be considered from that perspective.

Target Industry Sub-Sector	Sub-Sector Prioritization Score	Assigned Priority Tier
Fabricated Pipe and Pipe Fitting Manufacturing (NAICS 332996)	32	Tier A
All Other Miscellaneous Fabricated Metal Product Manufacturing (NAICS 332999)	32	Tier A
Other Airport Operations (NAICS 488119)	32	Tier A
Bolt, Nut, Screw, Rivet, and Washer Manufacturing (NAICS 332722)	31	Tier B
Aircraft Manufacturing (NAICS 336411)	31	Tier A
Aircraft Engine and Engine Parts Manufacturing (NAICS 336412)	31	Tier A
All Other Plastics Product Manufacturing (NAICS 326199)	30	Tier B
Ornamental and Architectural Metal Work Manufacturing (NAICS 332323)	29	Tier B
Other Industrial Machinery Manufacturing (NAICS 333249)	29	Tier A
Storage Battery Manufacturing (NAICS 335911)	29	Tier B
Fabricated Structural Metal Manufacturing (NAICS 332312)	28	Tier A
Construction Machinery Manufacturing (NAICS 333120)	28	Tier B
Other Support Activities for Air Transportation (NAICS 488190)	27	Tier A
Machine Shops (NAICS 332710)	26	Tier B
Industrial Valve Manufacturing (NAICS 332911)	26	Tier B
Rolling Mill and Other Metalworking Machinery Manufacturing (NAICS 333519)	25	Tier B
Conveyor and Conveying Equipment Manufacturing (NAICS 333922)	25	Tier B

Executive Summary

DISTRIBUTION PRIORITIZATION

In Ady Advantage's assessment, distribution is an industry that offers opportunity for the Salina region, particularly as it relates to supporting the supply chain of other recommended target industries. As noted earlier in the report, the region has strong transportation assets, including road, interstate, rail, and the airport. It is true that on a macro level the distribution industry has traditionally gravitated towards the larger metro areas, but the target industry analysis data shows that select sub-sectors of the distribution industry have shown growth in the region and can support the supply chain of other industry clusters at a regional level. We can also see increasing pressures for same-day delivery, which is driving the emergence of more physical locations, including in smaller markets like that of Salina. This opens up further opportunities in this industry in the long-term. Focus should be on further cultivating clusters in these areas and leveraging downstream opportunities, and sub-sectors have been prioritized below accordingly. Additional sub-sectors have been added below to further build out the distribution cluster and support other target industry clusters, please see the footnote for additional detail regarding this.

Target Industry Sub-Sector	Sub-Sector Prioritization Score	Assigned Priority Tier
Local Messengers and Local Delivery (NAICS 492210)	25	Tier B
Other Support Activities for Air Transportation (NAICS 488190)	23	Tier A
General Warehousing and Storage (NAICS 493110)	23	Tier A
Farm Product Warehousing and Storage (NAICS 493130)	21	Tier A
General Freight Trucking, Long-Distance, Truckload (NAICS 484121)	20	Tier A
Rail Transportation (NAICS 482110)	*	Tier B
General Freight Trucking, Local (NAICS 484110)	*	Tier B
General Freight Trucking, Long-Distance, Less Than Truckload (NAICS 484122)	*	Tier B
Specialized Freight (except Used Goods) Trucking, Local (NAICS 484220)	*	Tier B
Specialized Freight (except Used Goods) Trucking, Long-Distance (NAICS 484230)	*	Tier B

**Select sub-sectors that were not stars or opportunities have been added to the prioritization recommendations above. These sub-sectors were included to build out the distribution cluster further, and while they currently have projected negative growth ahead they support other industry clusters and associated opportunities. Accordingly, they are assigned as a Tier B priority rather than a Tier A.*

Thank You!

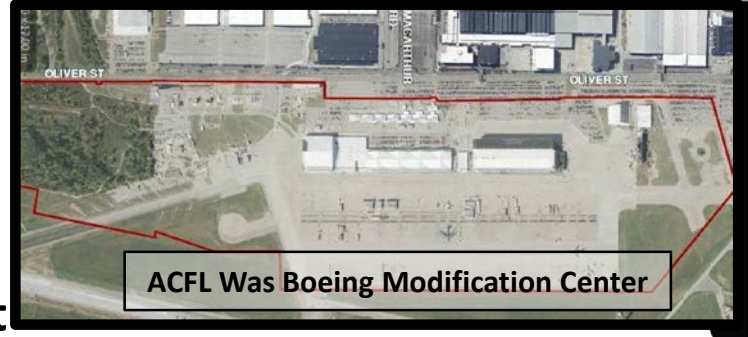
AdyAdvantage™
STRATEGY MATTERS

Appendix C

NIAR-WERX REPORT TO KANSAS HOUSE OF REPRESENTATIVES, JAN. 24, 2022


NIAR
WERX
AT WICHITA STATE UNIVERSITY
ENGINEERING SERVICES
ENVIRONMENTAL TEST
MRO
FLIGHT TEST & CERTIFICATION
DESIGN BUILD TEST

GrowthTimeline



2012 Boeing Leaves Kansas – Kansas is no longer modifying large aircraft

2014 ACFL Purchases Existing Boeing Military and Modification center

2018 WERX starts - 55 Engineers working @ campus for one customer

2019 WERX Grows to 100 leases old Boeing Engineering Building

2020 WERX Grows to 200 adds NIAR Environmental Test Lab to WERX

2021 WERX Grows to 400 adds MRO 140H (Air Force One Hangar)

2022 WERX currently @ 500 adds New 80K square foot Hangar

WERX will add 200+ Kansas Jobs a Year

LOCATIONS

ENGINEERING SERVICES
FLIGHT TEST CENTER

NIAR WERX HEADQUARTERS Air Capital Flight line BLDG23L

ENVIRONMENTAL TEST

WERX TESTING
Air Capital Flight line BLDG13L

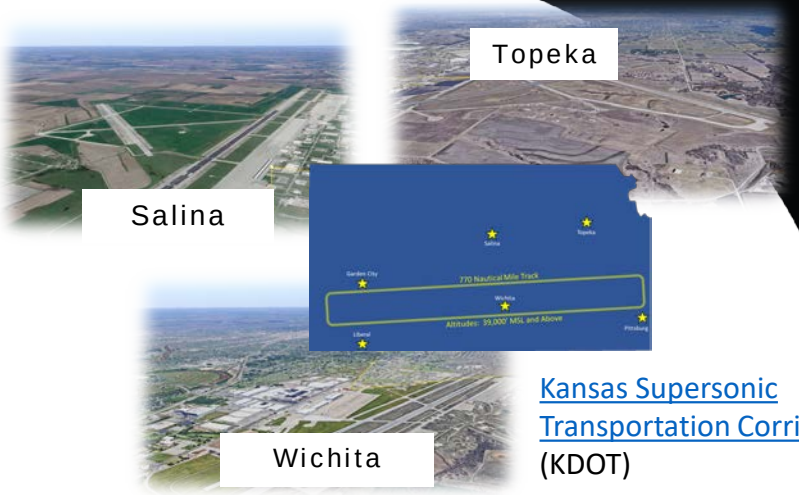
MODIFICATION REPAIR & OPERATIONS

WERX MRO SITE 1
Air Capital Flight Line BLDG140H

MODIFICATION REPAIR & OPERATIONS

WERX MRO SITE 2
Air Capital Flight Line BLDG163N

NIAR WERX AT WICHITA STATE UNIVERSITY MRO



[Kansas Supersonic Transportation Corridor](#) (KDOT)

Secure long-term growth aligned with KS "Framework for Growth"

- Create and retain jobs in new and expanding market sectors
- Develop MRO, Flight Test, & Modification capability
- Development projects to attract and retain new business
- Support all three pillars of KBORs "Building a Future"

NIAR WERX will enable the State, Military and Private sector to:

- Diversify the Kansas aerospace market
  - MRO, UAS, Hyper/Supersonic, Modification, Flight Test
- Accelerate frequency of new product development
  - Traditional and new market sectors
- Make Kansas the location of choice
  - Reduce non-recurring cost via non-profit cost structure
- Maximize utilization of new Supersonic Transportation Corridor
- Support the modern-day warfighter via Joint Test & Evaluation Site

MRO and Mod
[Source: Aircraft maintenance - Wikipedia](#)

Commercial Space
[From](#): [The Spaceship Company](#)

UAS Development
[Pics from: http://droneguidebook.com/?p=622](#)
Local example: [AgEagle](#)

Leveraging Wichita, Salina, and Topeka workforces and institutions

Current Programs

- Aero Air MD87 Fire Tanker Modification
  - 1 Aircraft in Maintenance now coming to Wichita for Modification Oct 2021
  - Potential for 4 More Aircraft to undergo Modification in Wichita 2022-2024

- Dynamic Aviation 737 Aerial Sprayer Modification
  - 3 in work with a AC undergoing modification
  - Potential for 15 more AC on contract 2022-2025

- Kansas Mod Center 777 Passenger to Freighter Modification
  - 2 777 in Wichita Oct 2021 will be used for Flight test and modification
  - Plan to complete and deliver 3 AC in 2024
  - Plan to complete and deliver **12 AC per year with Salina**
  - Plan to complete and deliver **18 AC per year with Topeka**

- Military Work: B1, UH60, F18, F16
  - CATIA Checking/Modeling support
  - Finite Element Modeling for future modification as required to keep AC flying

C-5

Current workforce @ WERX 400 heads + 100 students

737-500 Oil Spill Recovery

Environmental Response Aircraft – WERX Design, Modification, and Certification

- Component and Certification Testing Services
- Aircraft Inspection, Repair, and Heavy Maintenance Involvement
- Heavy Aircraft Modification Effort – 3 Aircraft Concurrently
- Ground and Flight Certification Testing - January 2022
- Customer Operational Deployment – March 2022
- NIAR WERX - FAA STC Certification – June 2022

C-6

First Two Aircraft Arrived for Conversion – Q1 2021

MD-87 Fire Bomber

Multi Aircraft Program

- Support Existing Customer Engineering
- Aircraft Inspection and Retrieval for Modification
- Heavy Aircraft Modification
- Return to Service and Flight Testing Completed Aircraft

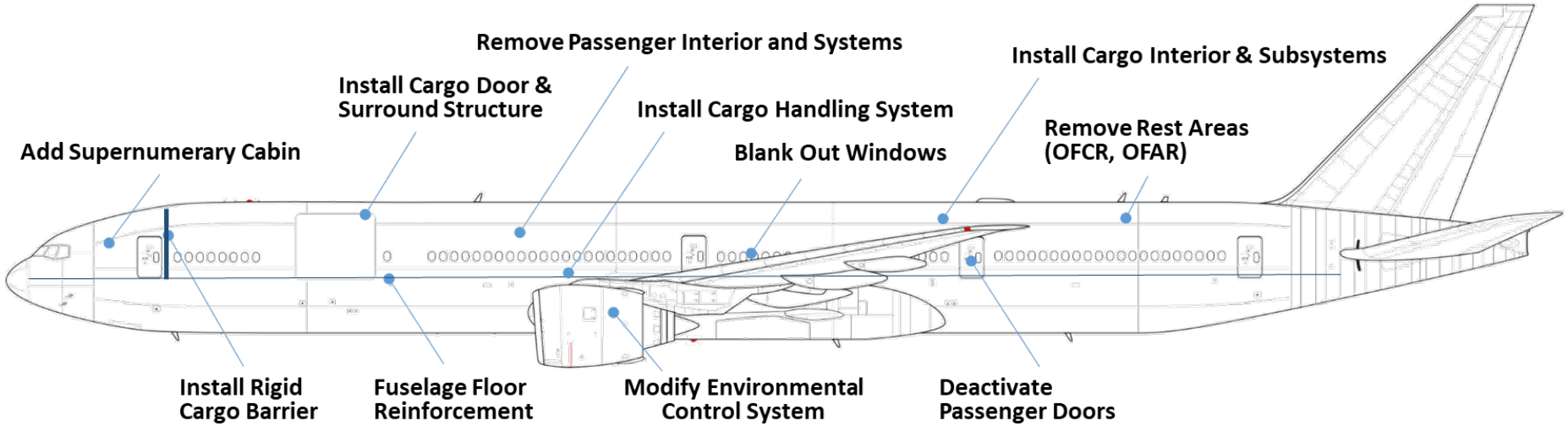
C-7

First Aircraft Arrived for Conversion – Q4 2021

777-300 P2F Conversion

Annual Multi Aircraft Program

- In-house Design, Modification, and Certification
- Component and Certification Testing Services
- Aircraft Inspection, Repair, and Heavy Maintenance Involvement
- Heavy Aircraft Modification Effort
- Ground and Flight Certification Testing
- FAA STC Certification and Delivery – 2024



C-8

First Aircraft Arrived for Conversion – Q3 2021, Second Aircraft Q1 2022

Future Programs

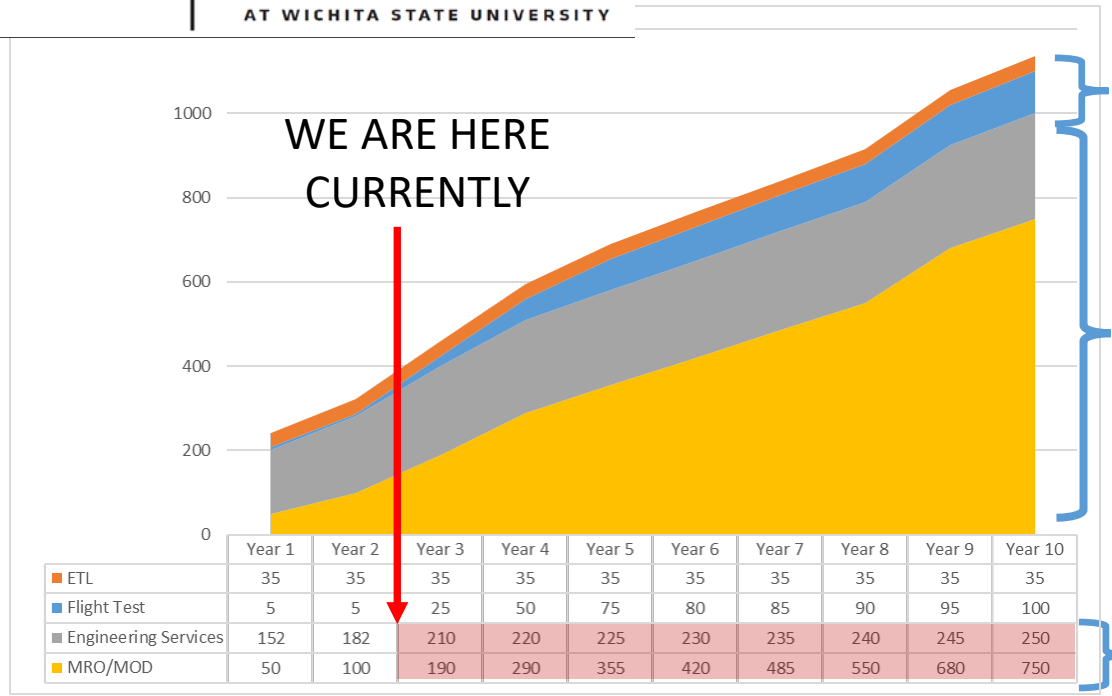
- Commercial Aircraft
  - 777 P2F Modification - Deliver 3 AC in 2024, 12-18 AC per year
  - A321 New Aircraft Mods for US Airline - Potential for 24 Aircraft in 2022
  - Aero Air MD87 Fire Tanker Modification - Potential for 4 More AC 2023-2025
  - Other P2F Conversions for Overseas lessor - 3-5 more AC on contract 2022-2025

- Military Work: B1, UH60, F18, F16, commercial derivative aircraft
  - Future AC modification for DoD (several in work)
  - Military obsolescent/modification parts and aircraft
  - Certification Support for existing fleet and new models

- FUTURE Work opportunities
  - Prototype Aircraft (up to 20 737 sized AC)
  - Prototype Air Mobility (up to 10-20)
  - Prototype Spacecraft

WERX future workforce projecting an additional 200 Jobs each year
400-800 new jobs in Wichita by 2025
800-1200 WERX workforce by 2025

777 P2F Kansas Jobs



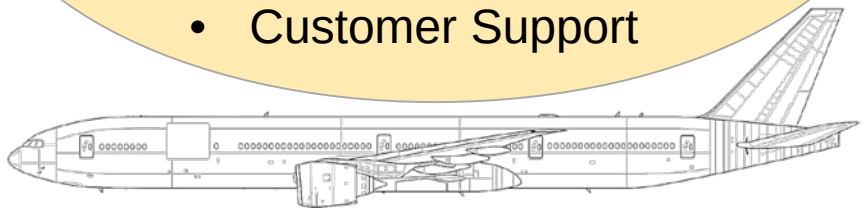
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
ETL	35	35	35	35	35	35	35	35	35	35
Flight Test	5	5	25	50	75	80	85	90	95	100
Engineering Services	152	182	210	220	225	230	235	240	245	250
MRO/MOD	50	100	190	290	355	420	485	550	680	750

Development Programs

Conversion Programs

Up to 1000 jobs

- Engineering
- Test and Certification
- MRO / Modification
- Customer Support



Program Phases

Years 1-2 Design & Cert → Years 1-3 Wichita MRO → Years 3-7 +Salina & Topeka MROs

Sites

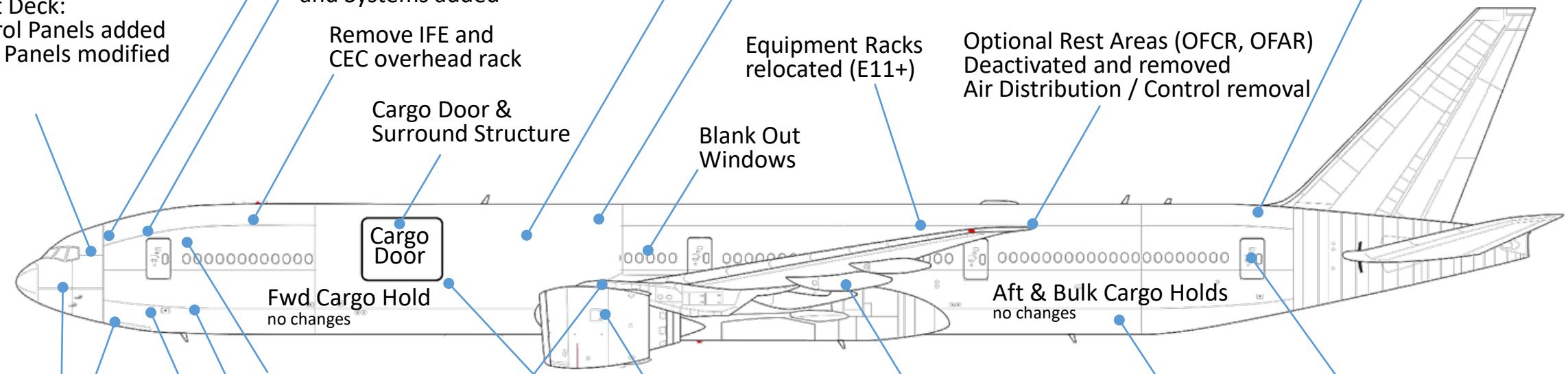
Wichita Design and MRO	Salina MRO	Topeka
Up to 6 production lines 6 aircraft per year	Up to 2 production lines 2 aircraft per year	Up to 2 production lines 2 aircraft per year

10 aircraft per year at full rate

C-10

- NIAR model successful in many areas
  - Nationally renown R&D labs, training and structural & materials centers of excellence
- Extend the model into key new areas
- NIAR WERX (Putting Research to Work)
  - ✓ Engineering Services: 200+
  - ✓ Environmental Test Lab: 35+ jobs
  - NEW New: MRO and modification: 750 jobs
  - New: Flight Test Center: 75-100 jobs

777 P2F Overview



Flight Deck:
Control Panels added
CBs / Panels modified

Air Distribution rerouted
ECS Controls added locally

Supernumerary Interior
and Systems added

Remove IFE and
CEC overhead rack

Cargo Door &
Surround Structure

All Passenger Accommodations removed
Cargo Deck Features / Systems added

Air Distribution repackaged; maintain Control System
maintain Trim, remove Upper Air Recirculation Fans

Blank Out
Windows

Equipment Racks
relocated (E11+)

Optional Rest Areas (OFCR, OFAR)
Deactivated and removed
Air Distribution / Control removal

E7 Equipment Rack
CVR / FDR / APU
Controller relocated

Fwd Cargo Hold
no changes

Aft & Bulk Cargo Holds
no changes

Rigid Cargo
Barrier

Fuselage Floor
Reinforcement

Air Distribution /
Ventilation / Smoke
no changes (confirm not affected)

Service Panel relocated
Waste/Water Tanks added

Main Equipment Center (MEC):
Electrical CB modifications
Smoke Detectors Controller added
SATCOM Equipment relocation

Conditioned Air SOVs added
Mixer Bay Distribution mods
maintain flow balancing

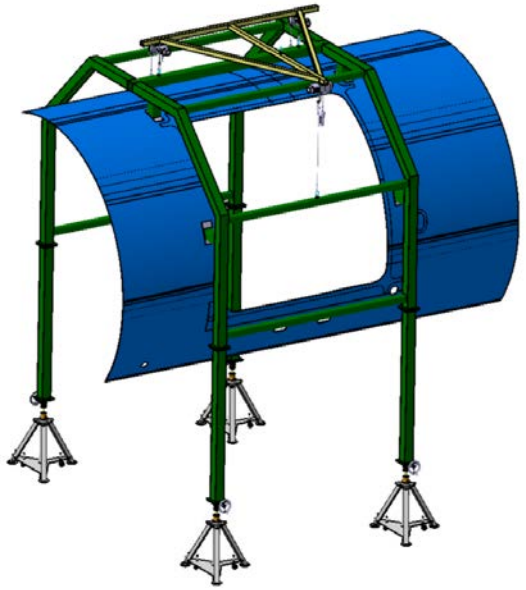
Off-Wing Escape System removal;
deactivate Slide Doors (qty 2) and
Spoiler 7/8 Auxiliary Retract Device (SARD)

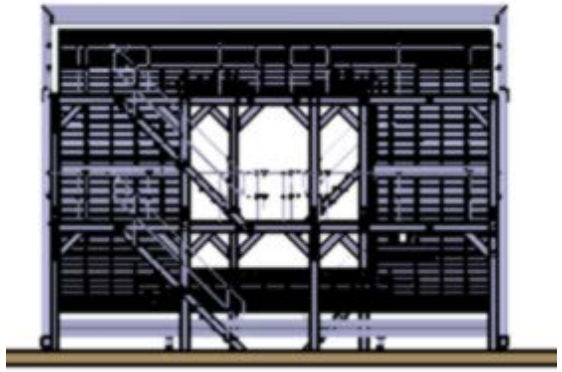
Doors 2 - 5 L/R (qty 8)
removed / deactivated
Escape Slide removal

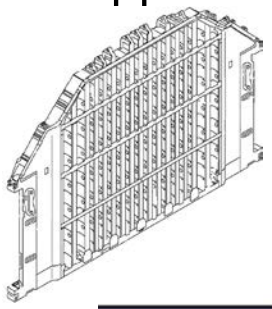
Waste/Water Tanks removed
Service Panel relocated

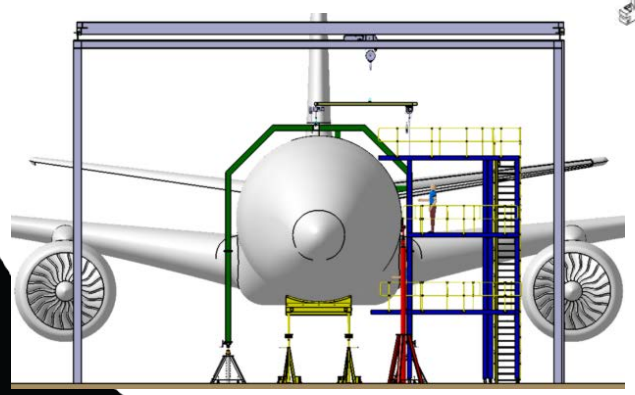
Tooling and GSE Needed

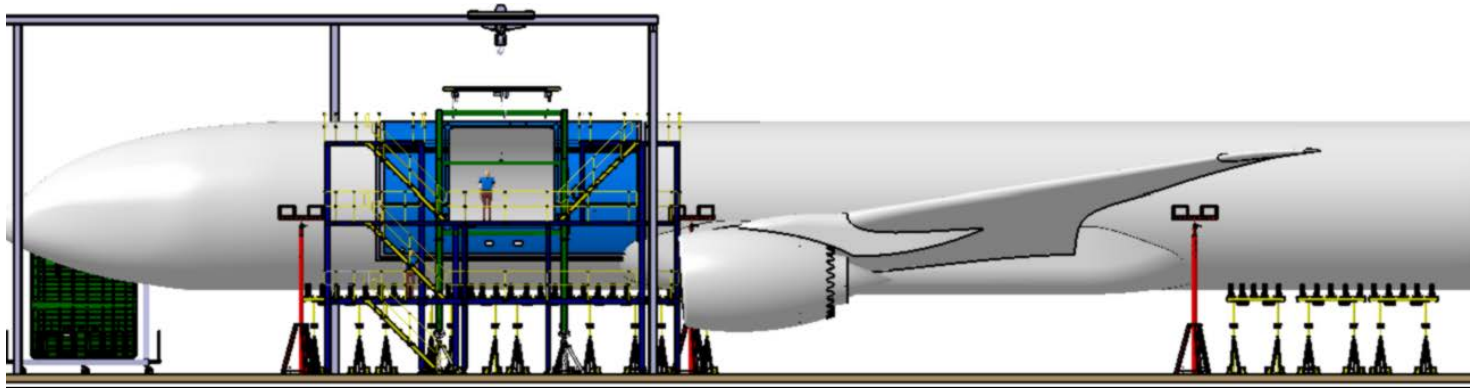
- 777 P2F Tooling Design and Fabrication in work by KMC with aircraft rate buildup considerations
- Extensive A/C Scanning In Work and Digital Alignment Processes Planned
- Obtaining 777 Ground Support Equipment aligning with schedule



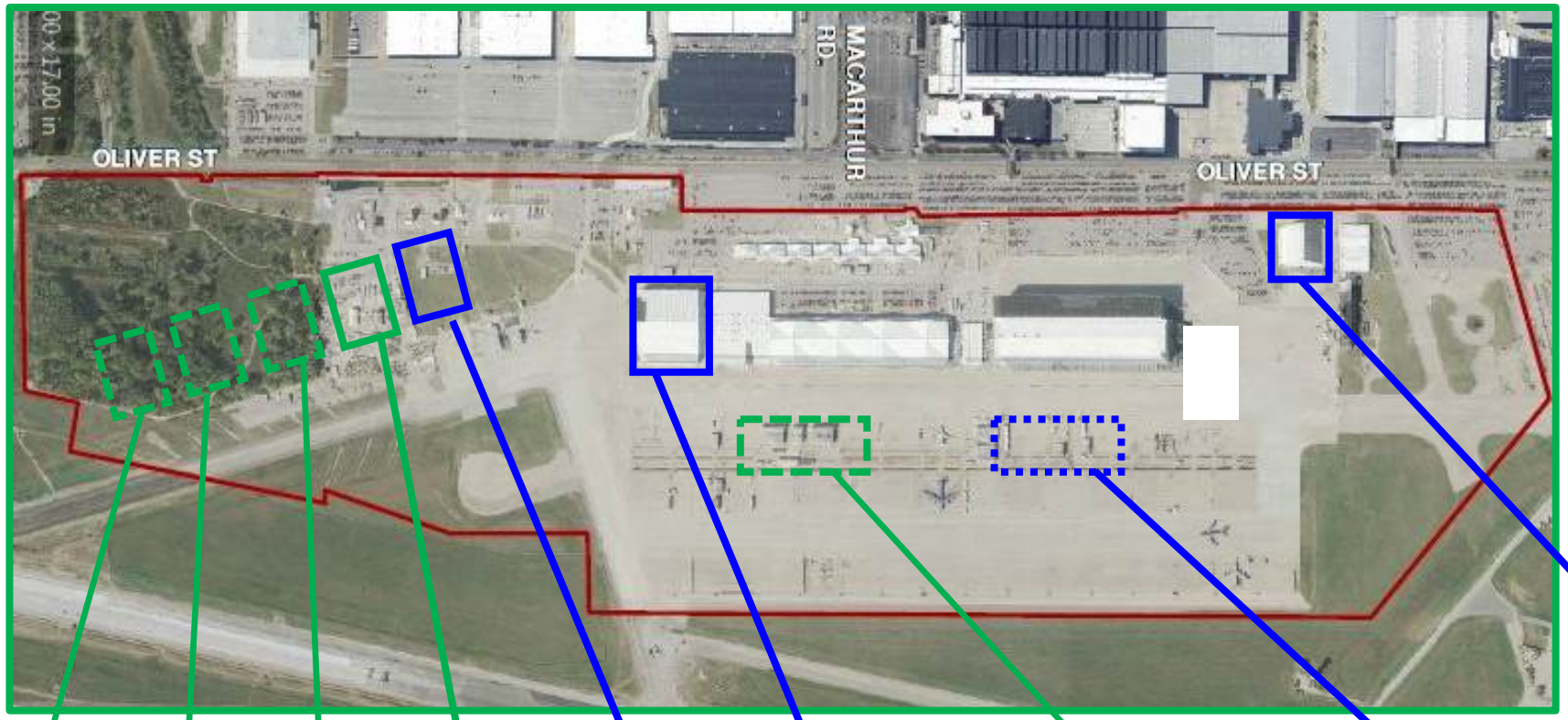








Future Plan Wichita KS



~171N Hangar (Future)

~169N Hangar (Future)

~167N Hangar (Future)

165N Hangar (Paint)

163N Hangar (WERX) 80K sq. ft.

Building 140H (WERX) 111K sq. ft.

~100N Low Bay Hangar (Future)

~75N Hangar 777 (2) (WERX 2024) 142K sq. ft.

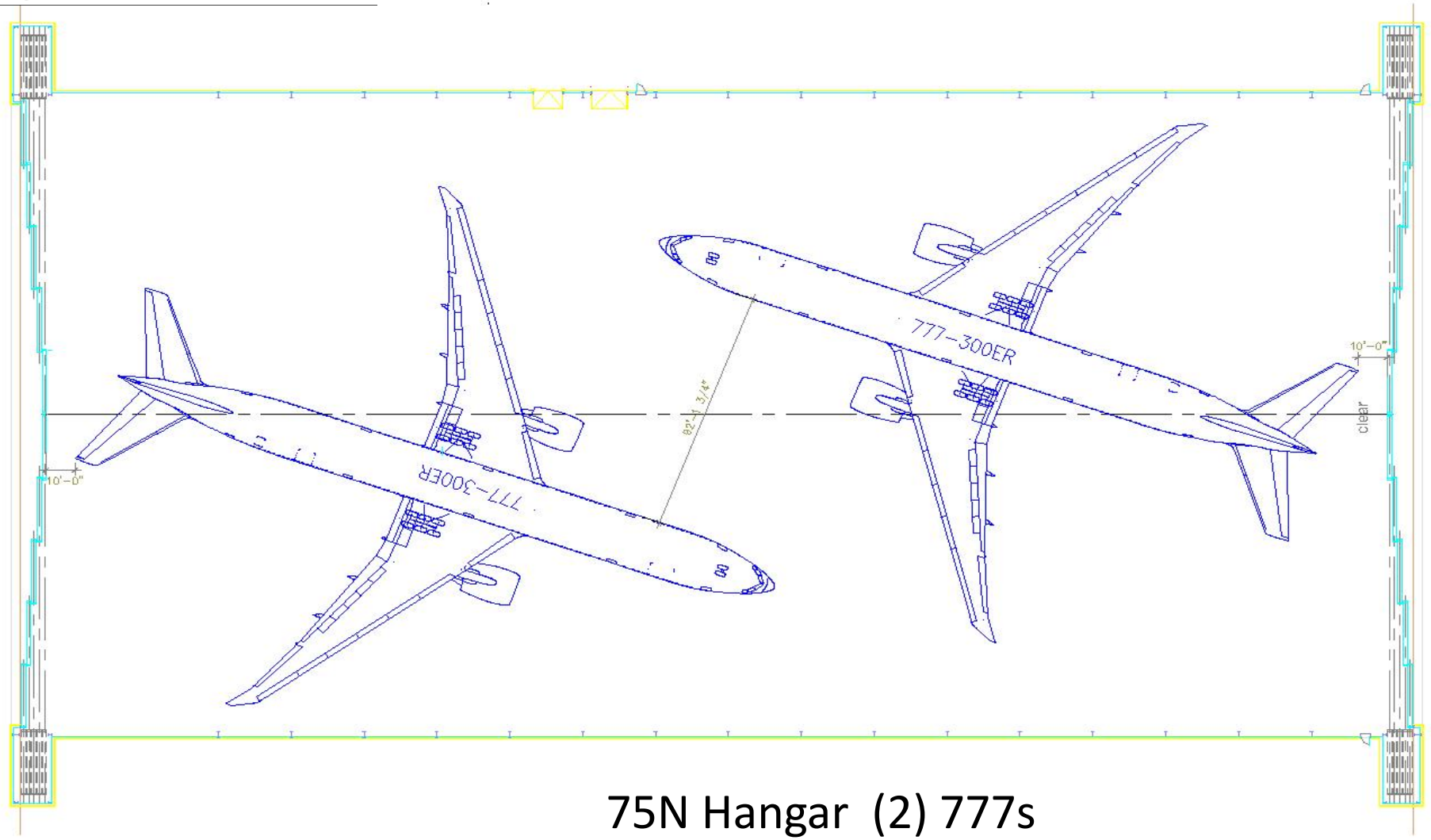
16K Low Bay Hangar WERX 2022 41K sq. ft.

Legend

Low Bay: > than 30’ ceiling height or less
High Bay: < than 30’ Ceiling Height

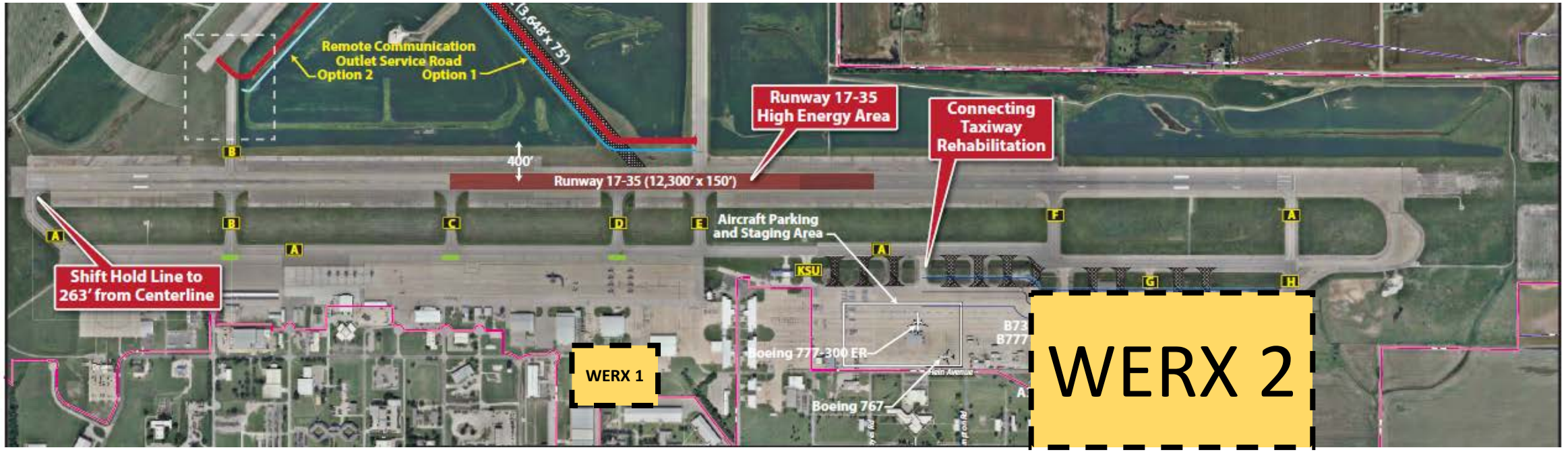
Occupied by WERX
FUTURE WERX Growth

75N HANGAR – Two 777s



75N Hangar (2) 777s
(WERX 2024)
142K sq. ft.

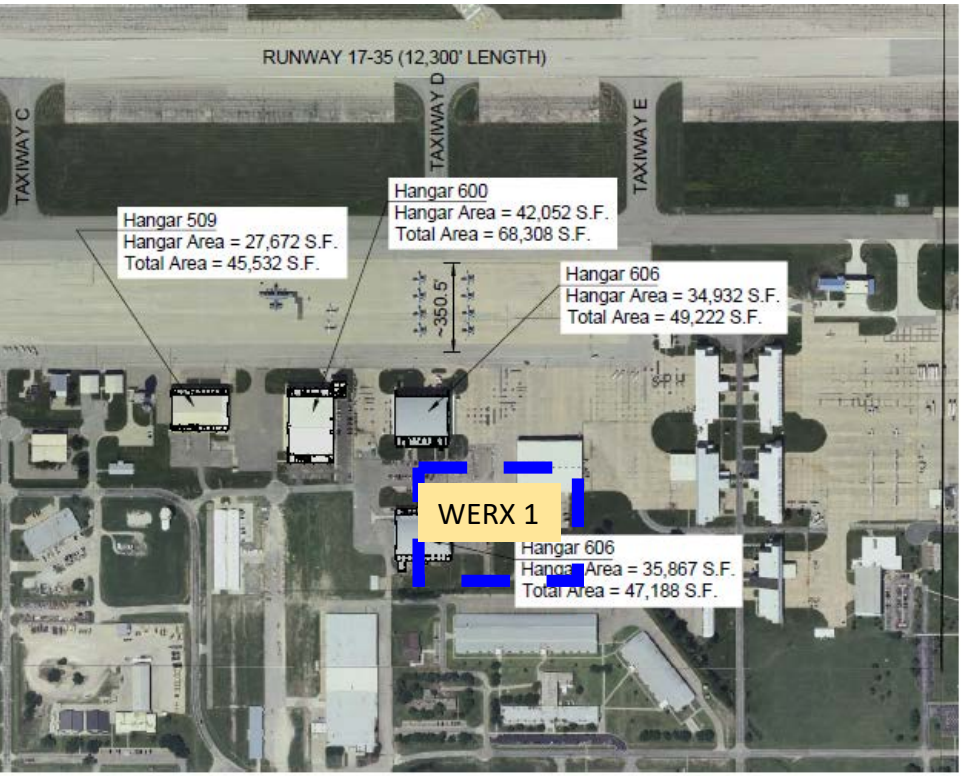
Future Plans Salina KS

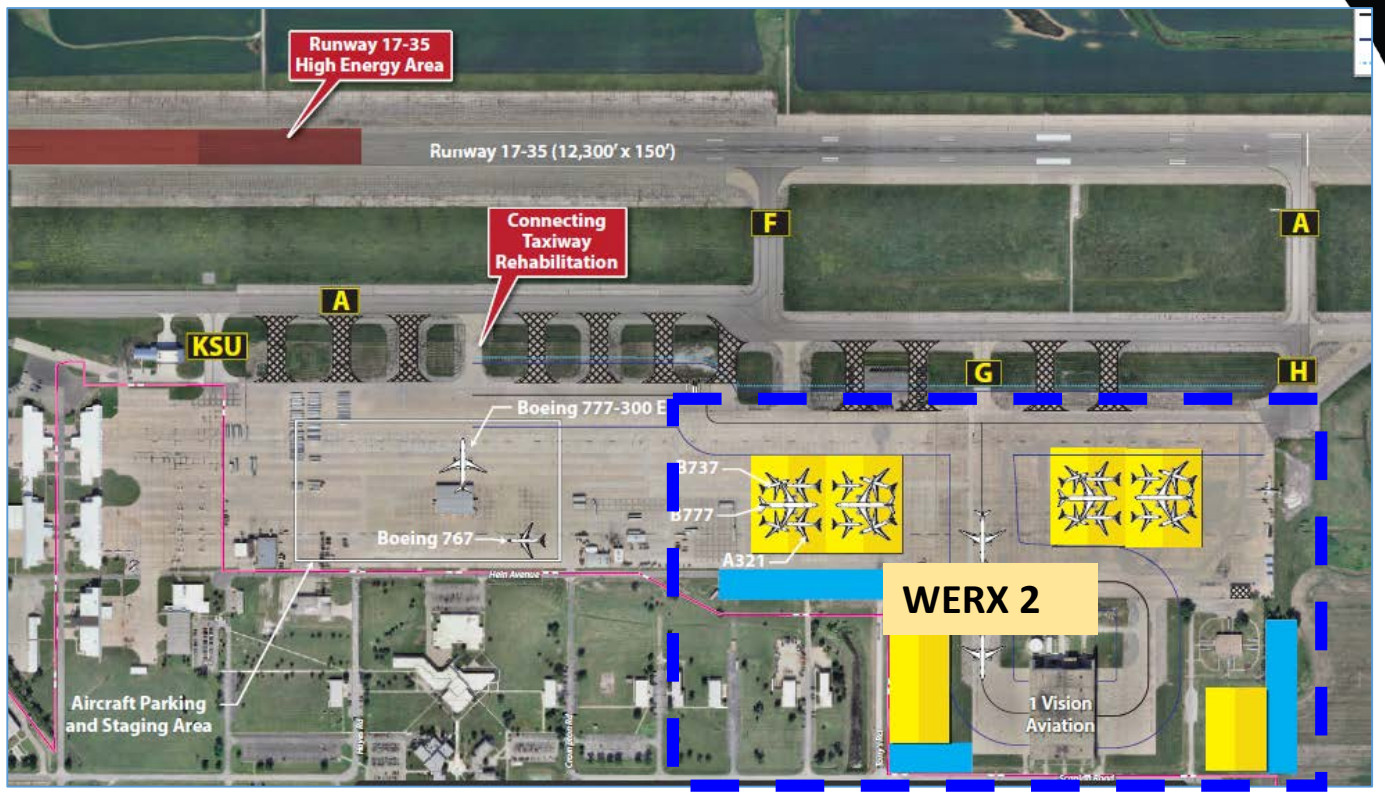


Salina Expansion

- WERX 1 – Hangar 35K sq. ft. - Only up to 737 size
- WERX 2 – Hangar 142K sq. ft. – Fits up to (2) 777s

Closer Look at Salina KS





Salina Expansion

- WERX 1 – Hangar 35K sq. ft. - Only up to 737 size
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GET TO WERX

Get To WERX is a three-year earn & learn program that offers full-time, paid employment with NIAR WERX while progressing through WSU Tech's Aviation Maintenance Technology program and simultaneously earning credits towards the Bachelor of Applied Sciences degree in Organizational Leadership and Learning at Wichita State University.

- 9 semesters (3 years)
- 2 cohorts annually
- NIAR WERX Pays: Wages and Tuition*
- Eligible to sit for FAA Certifications in Airframe & Powerplant

*Tuition reimbursement upon successful completion of each semester

WSU TECH | WSU | WICHITA STATE UNIVERSITY | NIAR WERX AT WICHITA STATE UNIVERSITY

Requesting your Support

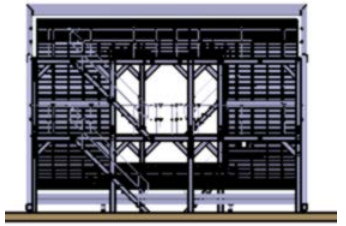
Wichita – $20M (current need)

- New 2 position 777 Hangar leveraging Private Equity
- Tooling for Mod and GSE for servicing and handling
- MRO Software and process development
- Flight and Ground Test Equipment

New Hangar (2) 777s
142K sq. ft.

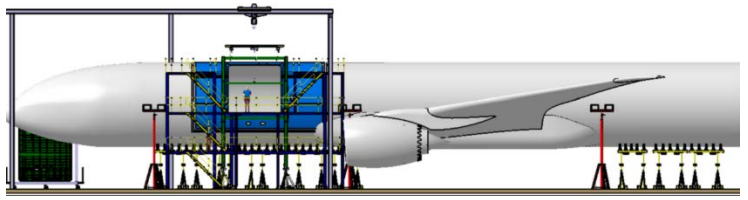
Salina - $15M (current need)

- New 2 position 777 Hangar leveraging Private Equity
- Tooling for Mod and GSE for servicing and handling



Topeka - $15M (now or later)

- New 2 position 777 Hangar leveraging Private Equity
- Tooling for Mod and GSE for servicing and handling



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WICHITA STATE UNIVERSITY

Appendix D

SALINA JOURNAL ARTICLE, JAN. 26, 2022

College urges hangar investment for Wichita, Topeka and Salina

Jason Tidd

Topeka Capital-Journal | USA TODAY NETWORK

Wichita State University aviation research officials say a $50 million state investment in building hangars could secure $3 billion in economic activity for Kansas.

The hangars would be a boon for Wichita, Salina and Topeka as the city airports attract lucrative work modifying passenger planes for growing air cargo needs.

“I would like you to see this not as a Wichita State ask,” said John Tomblin, the WSU senior vice president for industry and defense programs and executive director of the university’s National Institute for Aviation Research.

“It’s a state program,” he told the House Commerce, Labor and Economic Development Committee on Monday. “It provides a target of opportunity that is right at our doorstep. My hope is that you see the same opportunity that I see and then we go grab it as a state.”

Topeka, Salina and McConnell Air Force Base in Wichita have what Tomblin called “three underutilized airports with very long runways.” His proposal would use those three airports to “address an international need that the world has for cargo freighter aircraft.”

Passenger to freighter modification

The plan is to make Kansas a hub for converting Boeing 777 passenger aircraft into freighters. The university is working with Kansas Modification Center, a Wichita-based startup company.

Boeing made more than 800 of the aircraft, but most are not being used amid a drop in overseas routes and the introduction of newer models.

“I’m telling you today, there are about 450 of these aircraft parked in the desert, never to return to service,” Tomblin said.

demand for shipping induced by greater online retail sales during the COVID-19 pandemic has FedEx, UPS, Amazon and Alibaba in need of freighters, Tomblin said.

The existing air freighter fleet of primarily 757s and 767s is “getting extremely old,” Tomblin said, “so there is a need for 200-plus of these 777s being converted from a passenger to a freighter aircraft.”

See HANGAR, Page 3A

Wichita State University aviation researchers want Kansas to spend $50 million to help build new hangars in Wichita, Salina and Topeka to house a program that will convert Boeing 777 passenger airplanes into cargo freighters.

EVERT NELSON/THE CAPITAL-JOURNAL

John Tomblin, Wichita State University’s senior vice president for industry and defense programs, addresses a legislative committee at the Statehouse. JASON TIDD/TOPEKA CAPITAL-JOURNAL

Meanwhile, an increased

Hangar

Continued from Page 1A

One such Boeing 777-300ER passenger-to-freighter conversion is already underway at NIAR WERX. The program has received past support from Gov. Laura Kelly and U.S. Sen. Jerry Moran.

The conversions are complex as they must cut a new door, plug all the windows and make it airworthy.

“It’s more than just taking all the seats out of the aircraft and stuffing it full of packages,” said Tomblin, who is also an aerospace engineering professor.

He projects a 10-year backlog of modification work, given that only two other companies in the world that can do the work — one in Israel and one in the U.S.

Aviation workers at WSU are already working on getting Federal Aviation Administration approval for the conversion.

Last week, WSU and Kansas Modification Center announced the submission of a certification plan for the supplemental type certificate to the FAA. The filing represents the work of more than 80 engineers, thousands of hours of work and millions of dollars invested, said David Jones, executive director of NIAR WERX.

That process is expected to be completed by early 2024, “and that’s when the planes will just start lining up,” Tomblin said.

Once funding is available, it takes about a year to build the hangars, he said. But pandemic-related delays, especially for steel, could complicate the timeline.

Hangars and workforce are key hurdles

The Wichita site is already operational, but WSU wants to expand capacity in the Air Capital of the World.

deal for the freight companies.”

Additionally, the 777 has 25% more capability in volume, Jones said, which is important for shipping packages that contain more air than product.

“More Amazon packages are about a third of the cost of a new one, so it’s pretty much a no brainer for the freight companies,” he said.

WSU projects creating 1,000 jobs within 10 years, with 250 in engineering services and 750 in modification work and related services.

“Workforce, that is a problem,” Tomblin said. “I don’t think we have enough.”

To build up the workforce needed for the modifications, NIAR WERX has a three-year program that combines full-time employment with reimbursed tuition for night classes at WSU Tech’s aviation maintenance technology program. The training program can add 25 people every six months.

Tomblin said a Kansas company started the work and they want to stay in the state. But by March, Wichita’s existing location will have a second plane, putting it at capacity. That is why the hangars are the biggest hurdle to securing the work.

“We have the runways, so we have the big part done,” Tomblin said. “But the work is going to go where the hangers are. ... It will go to Tulsa, as they have hangars available. It will go to Dallas, and it will go to San Antonio. Without the capacity, there’s nothing we can do about it.”

Rep. Francis Awerkamp, R-St. Marys, noted that at $30 million per plane and 200 planes needing modification, it would be about a $6 billion industry. A $50 million state investment would be less than 1% of potential sales.

“And you’re struggling to find investors to do the project?” he asked.

Tomblin and Jones said investors would likely look outside of Kansas, where they could expect greater

The request calls for $20 million primarily to help build a new142,000 square foot hangar in Wichita that is large enough to hold two 777s at a time. Similar hangar and related equipment and tooling requests for Salina and Topeka would come in at $15 million each.

“Not only do you need a hanger capacity, but you need tooling to support this,” Tomblin said.

He said the governor’s budget proposal included the $20 million for Wichita.

The eventual expectation is for Wichita’s facilities to modify six aircraft per year while Salina and Topeka each complete two.

Tomblin hopes the state could produce 10 per year for 10 years, or 100 total. The modification price is about $30 million per plane.

That cost is much lower than buying new planes, Jones said.

A new plane would cost between $150 million and $180 million. Used, leased planes that are eight to 12 years old would have about $100 million on the books while being valued between $30 million and $40 million.

Taking a plane valued at $30 million and doing a $30 million modification means “you’re getting a freighter-capable (plane) at around $60 million versus $180 million,” Jones said. “Pretty good financial benefits from vacant hangars.

Sean Tarwater, R-Stilwell and committee chair, said WSU essentially owns the program.

“You’ve got the expertise, you’re working with the FAA to get these planes certified,” he said. “And once that happens, you kind of own the market. So these these jobs will be in demand. WSU will train them. It’s a matter of whether or not after WSU trains them ... they live in Wichita, Salina and Topeka or they live in Tulsa or Dallas.”

“We’re talking about a lot of jobs,” Tarwater said. “We’re talking about a lot of money and good highpaying wages.”

Tarwater said he is hopeful that HB 2328 will make it to the House floor. The bill, which passed out of committee last year, provides income tax credits to aerospace program graduates with the intention of keeping aviation workers in the state.

Rep. Kristey Williams, R-Augusta, called the plan a “great long-term investment” and suggested using federal pandemic aid.

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