APPENDIX D.4

Alternatives Workshop #4

Alternatives Workshop #4

June 24, 2020

MASTER PLAN **2040**

MKE
MILWAUKEE

Workshop #4 Objectives

- Review 3 shortlisted alternatives
- Review alignment with Master Plan Draft Goals
- Review evaluation criteria and weighting factors
- Gather MKE input on alternatives
- Identify PRELIMINARY preferred alternative
- Review next steps

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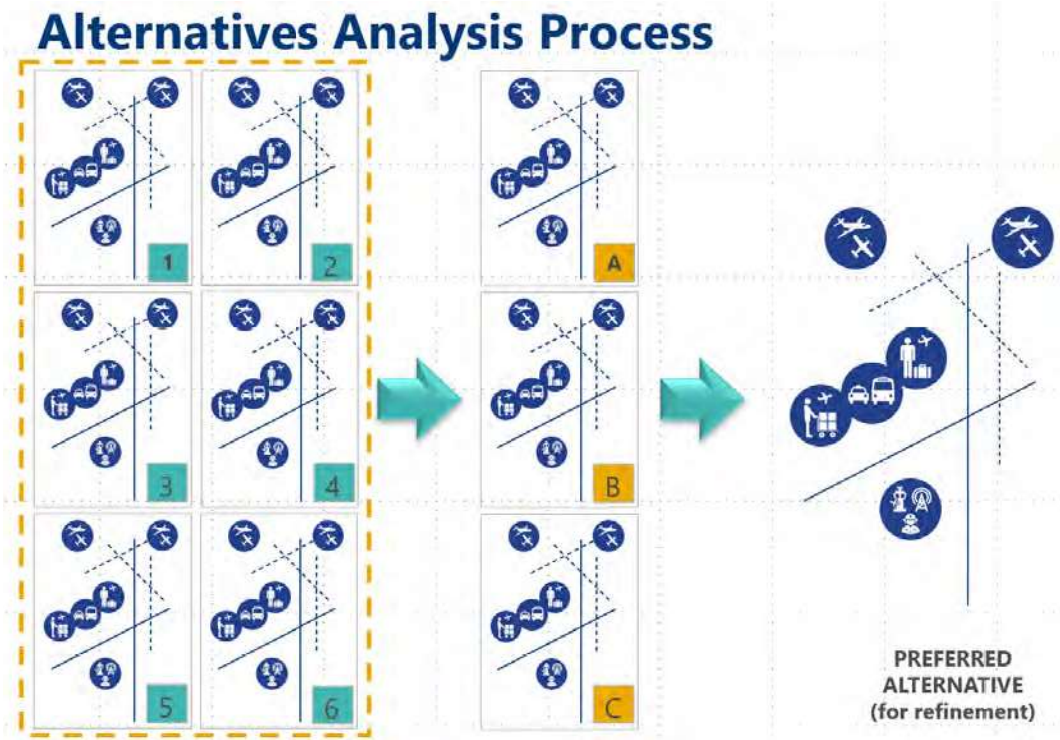
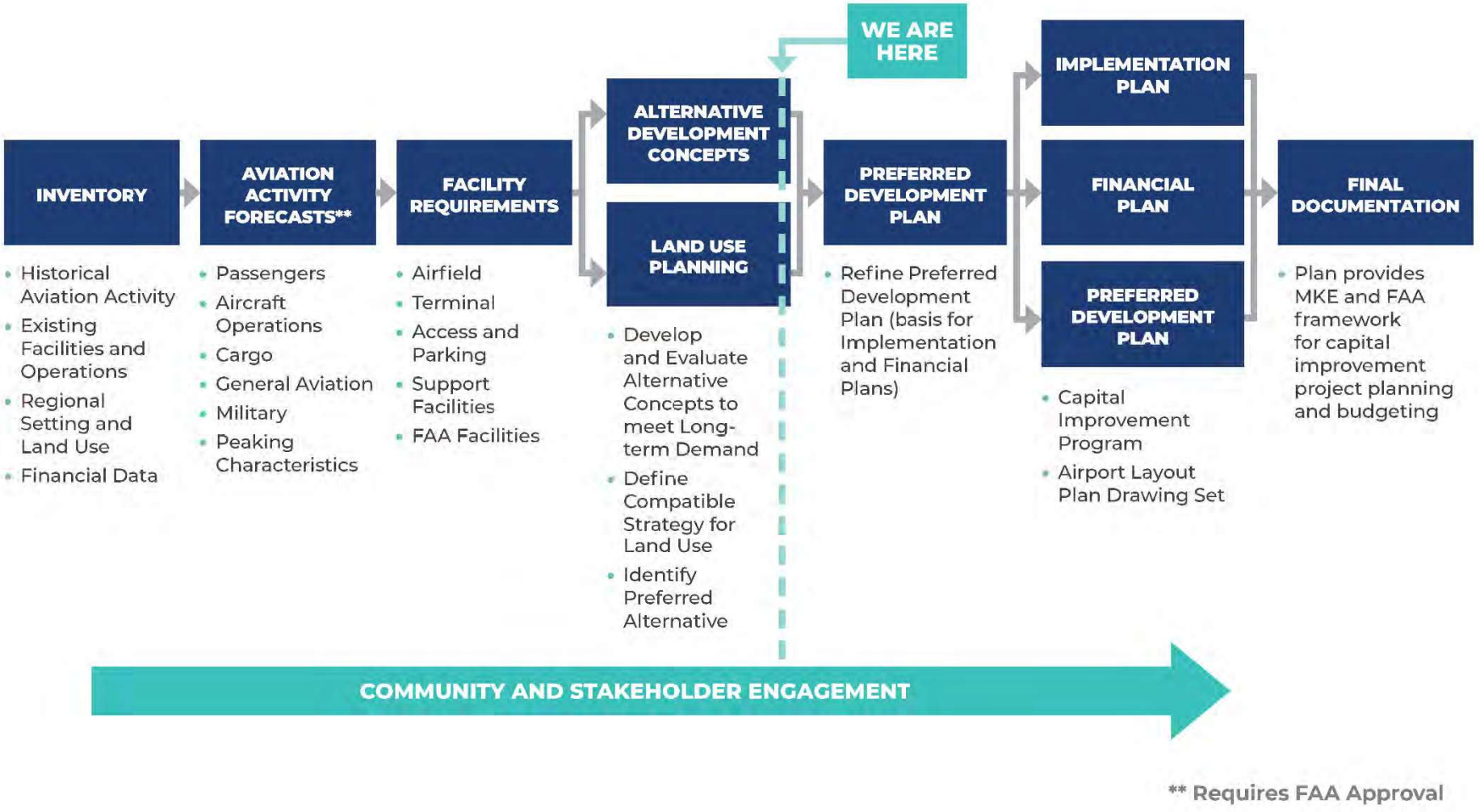


Master Plan Process



** Requires FAA Approval

MKE Input on Alternatives

- MKE input is critical
  - Selection of (preliminary) preferred alternative
  - Refinement of selected alternative
- Feedback will also be gathered from the TAG and SAG

ALTERNATIVE PREFERENCES

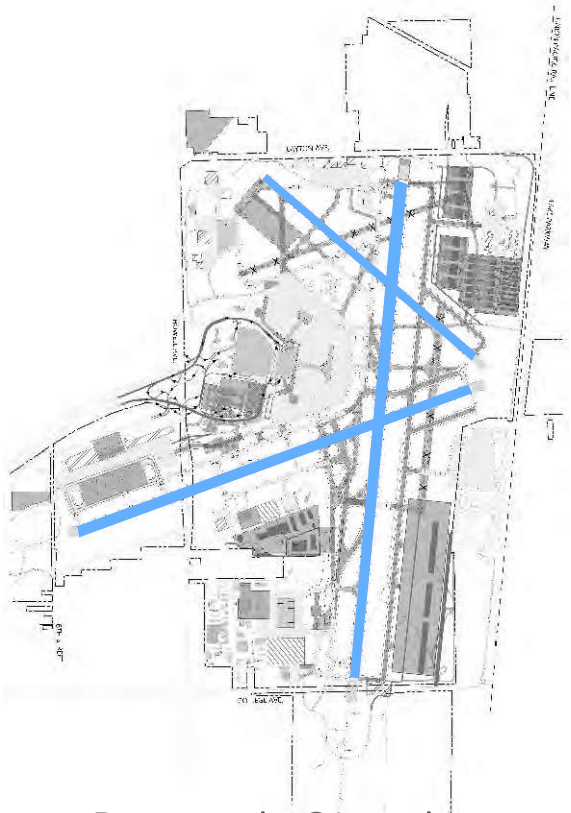
	AIRSIDE						LANDSIDE												TERMINAL			CARGO			GENERAL AVIATION			AIRCRAFT MAINTENANCE			AIRPORT MAINTENANCE		
	AIRFIELD			DEICE FACILITIES			ROADWAY			CURBSIDE			PARKING			RENTAL CAR			TERMINAL														
MKE REPRESENTATIVE	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
C. Baker																																	
K. Berry																																	
K. David																																	
B. Dranzik																																	
G. Failey																																	
J. Forro																																	
D. Gelting																																	
J. Grava																																	
M. Hoffman																																	
J. Martin																																	
H. Mester																																	
S. Nadolny																																	
T. Pearson																																	
P. Rowe																																	
A. Shoemaker																																	
T. Torcivia																																	
J. Trapp																																	
C. Turk																																	
G. Waszak																																	
J. Zsebe																																	
SAMPLE	3	2	1																														
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNT: 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNT: 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNT: 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Spreadsheet to be populated at conclusion of discussion.

Review of Alternatives

Airfield Combinations

Alternative A



Runways in Operation

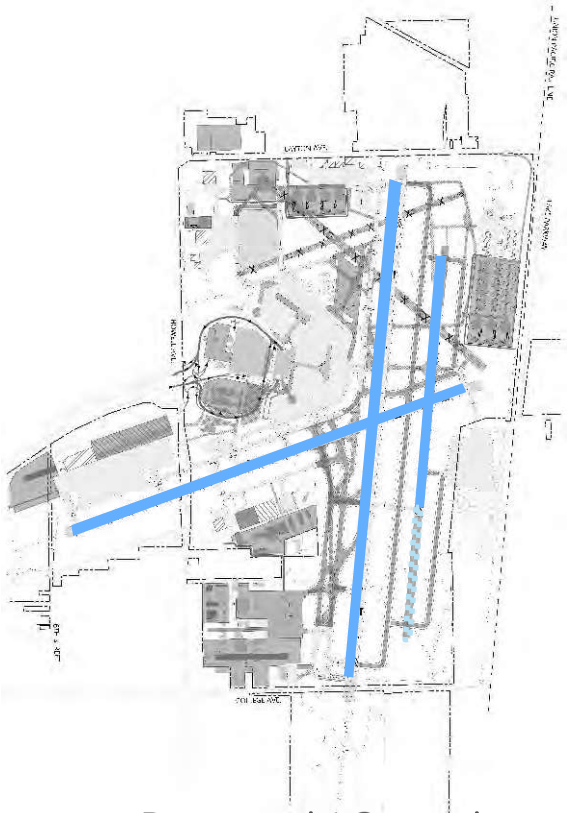
1L-19R | 7R-25L | 13-31

Alternative B

Runways in Operation

1L-19R | 7R-25L | 7L-25R

Alternative C

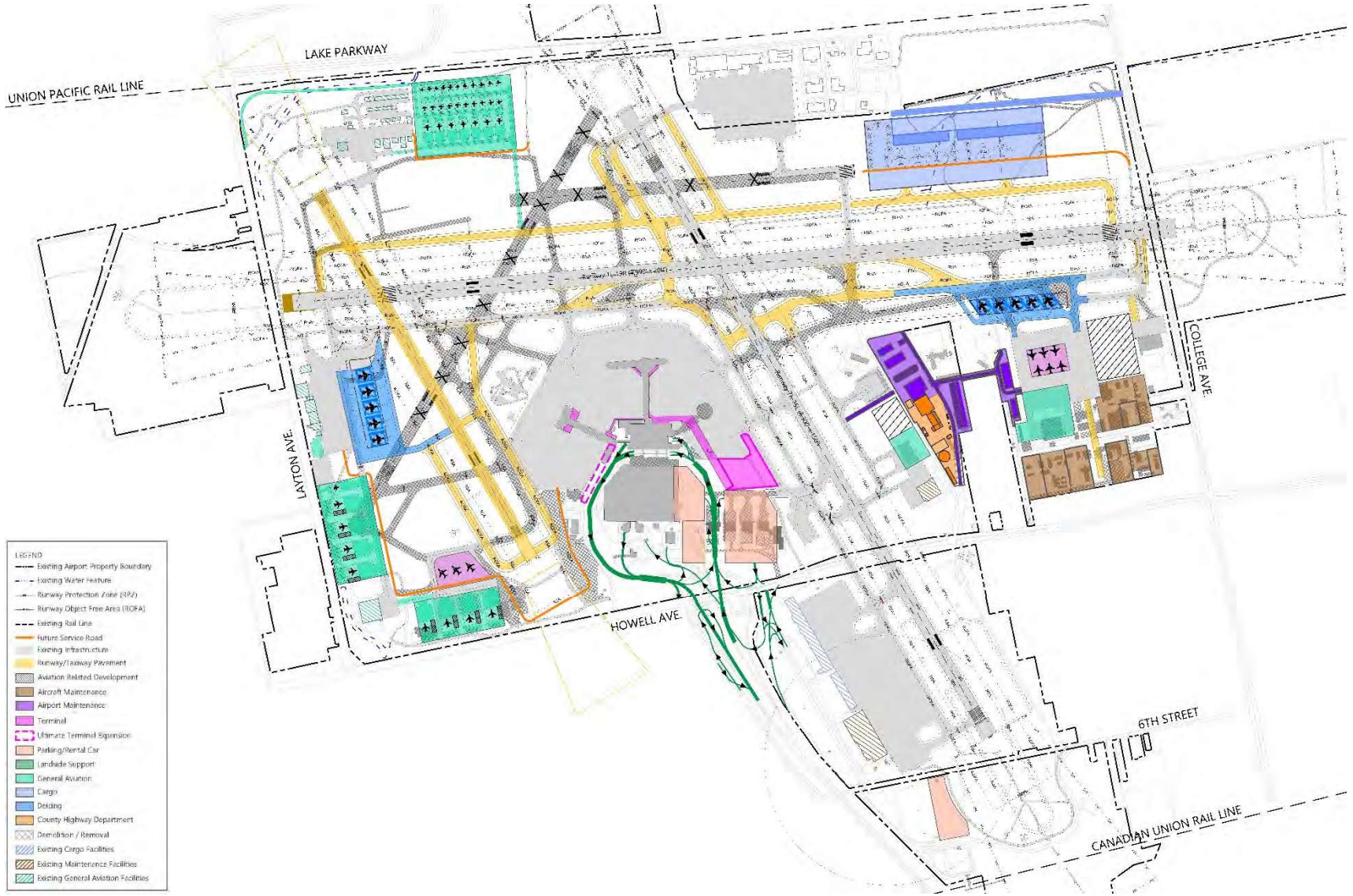


Runways in Operation

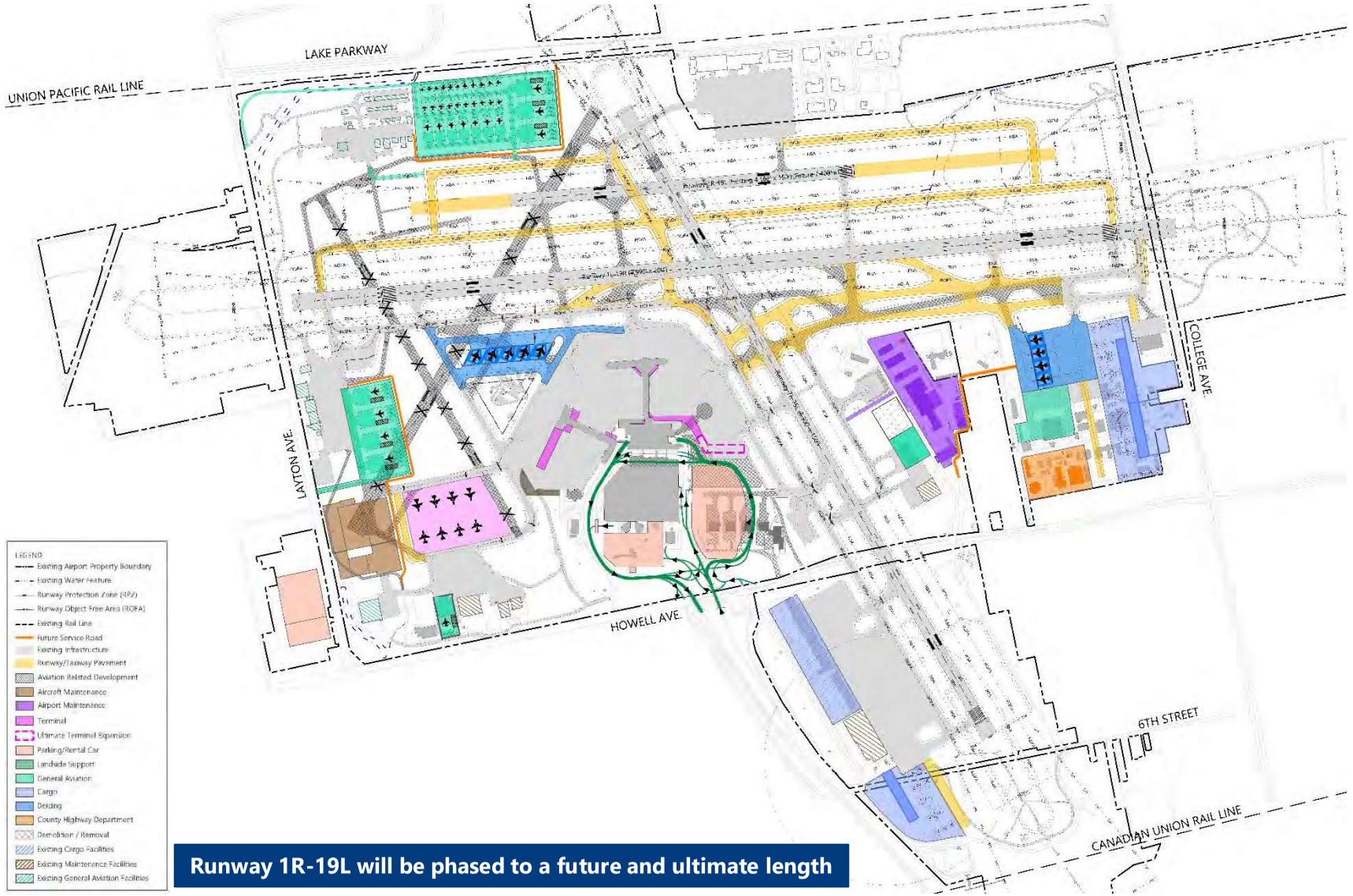
1L-19R | 7R-25L | 1R-19L

Questions on Shortlisted Alternative A

Questions on Shortlisted Alternative B



Questions on Shortlisted Alternative C



Runway 1R-19L will be phased to a future and ultimate length

Draft Master Plan Goals

- Affirm a **future-focused airport** that supports aviation growth in a safe, efficient, and cost-effective manner through an organized and synergistic long-range development plan.
- Recognize opportunities to **enhance the sustainability, resiliency, and environmental sensitivity** with continued growth of MKE.
- Seek opportunities for **enhanced customer and passenger experience**.
- **Optimize infrastructure and resources** in an operationally, financially, and sustainable manner.
- Adopt **scalable development plans** that flexibly accommodate variations in demand and technology over the planning horizon.
- Protect **long range utility** of the Airport (post-2040).
- Recognize opportunities for enhanced **non-aeronautical revenue generation** in the utilization of MKE property and amplify the revenue-generating potential of Airport property.
- Define a long-range development plan that **reflects MKE's role in the community** and recognizes diversity in community stakeholder priorities.

Alignment with Draft Master Plan Goals

DRAFT Master Plan Goal	Alternative A	Alternative B	Alternative C
Affirm a **future-focused airport** that supports aviation growth in a safe, efficient, and cost-effective manner through an organized and synergistic long-range development plan.			
Recognize opportunities to **enhance the sustainability, resiliency, and environmental sensitivity** with continued growth of MKE.			
Seek opportunities for **enhanced customer and passenger experience**.			
Optimize infrastructure and resources in an operationally, financially, and sustainable manner.			
Adopt **scalable development plans** that flexibly accommodate variations in demand and technology over the planning horizon.			
Protect **long range utility** of the Airport (post-2040).			
Recognize opportunities for enhanced **non-aeronautical revenue generation** in the utilization of MKE property and amplify the revenue-generating potential of Airport property.			
Define a long-range development plan that **reflects MKE's role in the community** and recognizes diversity in community stakeholder priorities.			

LEGEND

 Aligns Well with Master Plan Goal

 Aligns with Master Plan Goal

Qualitative Cost Comparison

- Predicted ranking of construction cost (capital expenditure) – full concept implementation
  - Highest: Alternative C
  - Middle: Alternative A
  - Lowest: Alternative B
- Capital investments and potential sources of funds vary by facility type
  - Airport responsibility (e.g., airfield, gates, landside, etc.)
  - Tenant investment (e.g., hangars)
  - Hybrid (e.g., centralized deicing)
- Operating Expenses will be reduced with "right-sizing" (runway decommissioning)
- FAA funding for "third" runway subject to acceptance of justification
  - Eligible for FAA funding: Primary RW, Crosswind RW, Secondary RW
  - Ineligible for FAA funding: Additional RW

Cost Considerations

Table G-1 Runway Types and Eligibility

For the following runway type…	Must meet all of the following criteria…	And is…
a. Primary Runway **RW 1L-19R**	**(1)** A single runway at an airport is eligible for development consistent with FAA design and engineering standards.	Eligible
b. Crosswind Runway **RW 7R-25L**	**(1)** One of the following two criteria are met: **(a)** For the first crosswind, the wind coverage on the primary runway less than 95% **(b)** For more than one crosswind runway, the wind coverage on the primary runway less than 95% and the existing crosswind runway(s) are operating at 60% or more of their annual capacity, which is based on guidance developed by APP-400 as the threshold for considering when to plan a new runway.	Eligible if justified

Source: FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook, February 26, 2019.

Cost Considerations

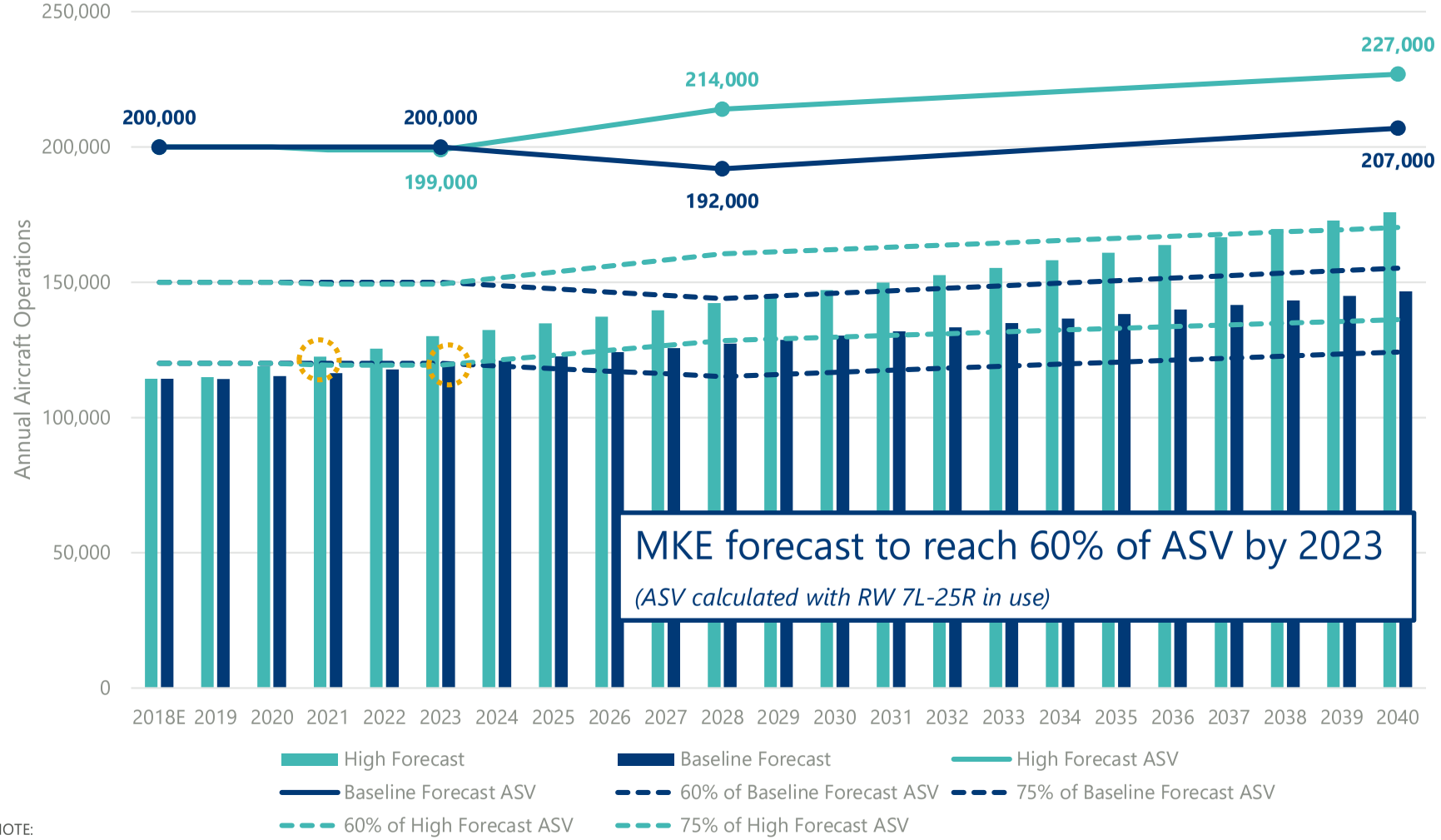
For the following runway type…	Must meet all of the following criteria…	And is…
c. Secondary Runway	**(1)** There is more than one runway at the airport. **(2)** This is not a crosswind runway. **(3)** Either of the following: **(a)** The primary runway (or primary runway AND all secondary runways) is operating at 60% or more of its annual capacity, which is based on guidance developed by APP-400 as the threshold for considering when to plan a new runway. **(b)** APP-400 has made a specific determination that the runway is required for operation of the airfield.	Eligible if justified.
d. Additional Runway	**(1)** There is more than one runway on the airport. **(2)** The ADO has determined that this runway does not meet the requirements to be designated a crosswind runway. **(3)** The ADO has determined that this runway does not meet the requirements to be designated a secondary runway.	Ineligible.

RW XXX

Secondary runway critical aircraft requires FAA approval.

Source: FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook, February 26, 2019.

Annual Airfield Capacity



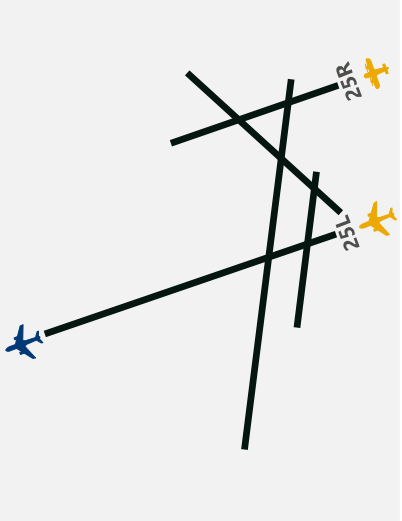
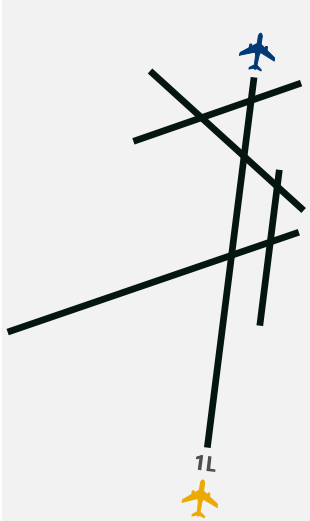
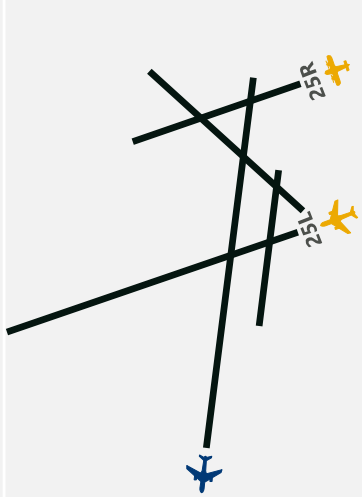
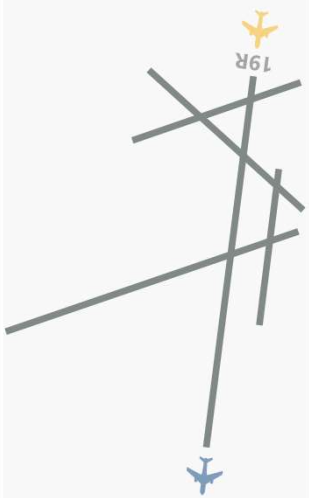
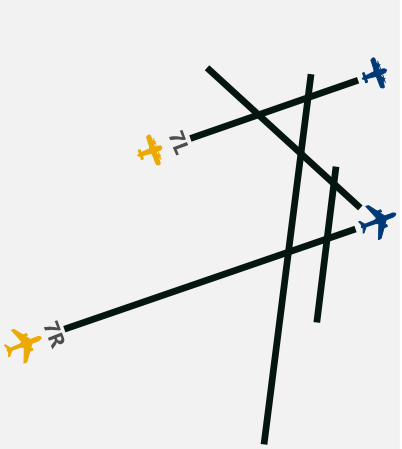
NOTE:
ASV = Annual Service Volume
1 FAA recommends capacity development when activity approaches 60 to 75 percent of annual capacity. Capacity development could be in the form of a new runway, runway extension, additional exit taxiways, aircraft parking aprons, and replacement/supplemental airports.

SOURCES: Federal Aviation Administration Advisory Circular 150/5060-5 Change 2, Airport Capacity and Delay, December 1995; Federal Aviation Administration Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), December 2000; Ricondo & Associates, Inc., June 2019.

Airfield Considerations

Modeled Airfield Operating Configurations

Peak Hour Capacities

West Flow	North Flow	Southwest Flow	South Flow	East Flow
21.1 % VMC	19.6% VMC	16.2% VMC	13.5% VMC	11.2% VMC
2.4% IMC	6.2% IMC	2.0% IMC	4.4% IMC	3.4% IMC
				
68-71 VMC ops/hr	66-67 VMC ops/hr	71-74 VMC ops/hr	66-67 VMC ops/hr	68-74 VMC ops/hr
53-55 IMC ops/hr	54-55 IMC ops/hr	46-47 IMC ops/hr	54-55 IMC ops/hr	54-55 IMC ops/hr
65-67 annualized peak hour aircraft operations				

NOTES:
1/ Airfield operating configurations were modeled in runwaySimulator to determine VMC/IMC hourly capacities and Annual Service Volume.
2/ Hourly capacities associated with South Flow and North Flow are identical, therefore only the North Flow was modeled. The North Flow hourly capacities were then applied to the South Flow configuration.

Legend

- Primary Arrivals
- Prop Arrivals
- Primary Departures
- Prop Departures

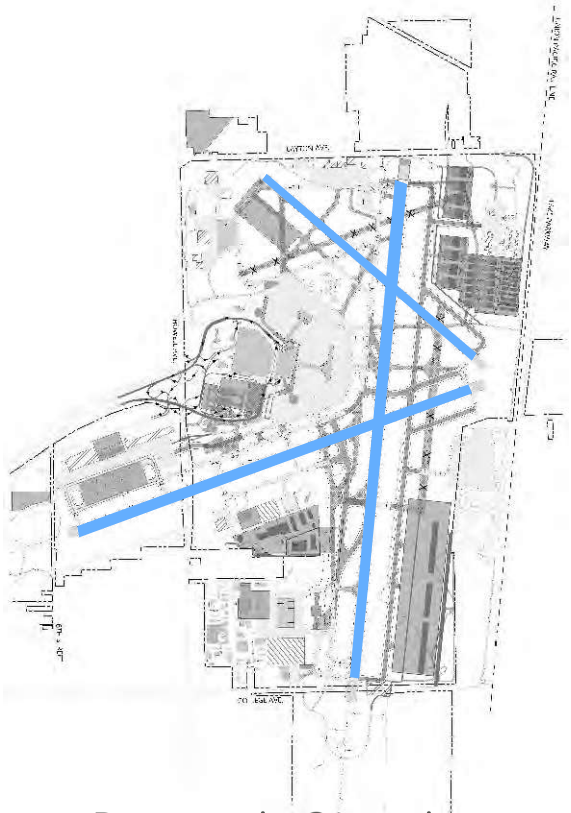
N

not to scale

SOURCES: Federal Aviation Administration, Aviation System Performance Metrics, Airport Efficiency, MKE Daily Weather by Hour Report, January 1, 2008 through December 31, 2017; Ricondo & Associates, Inc., December 2018.

Airfield Combinations

Alternative A



Runways in Operation

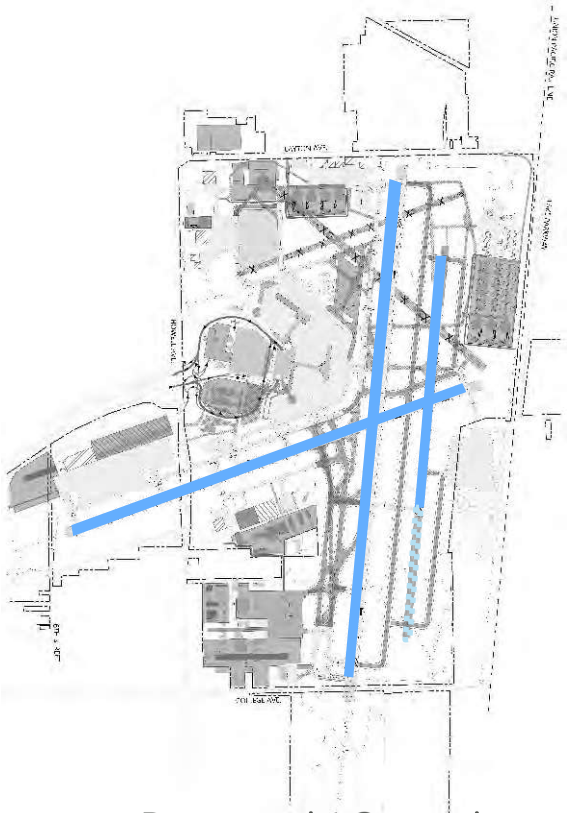
1L-19R | 7R-25L | 13-31

Alternative B

Runways in Operation

1L-19R | 7R-25L | 7L-25R

Alternative C

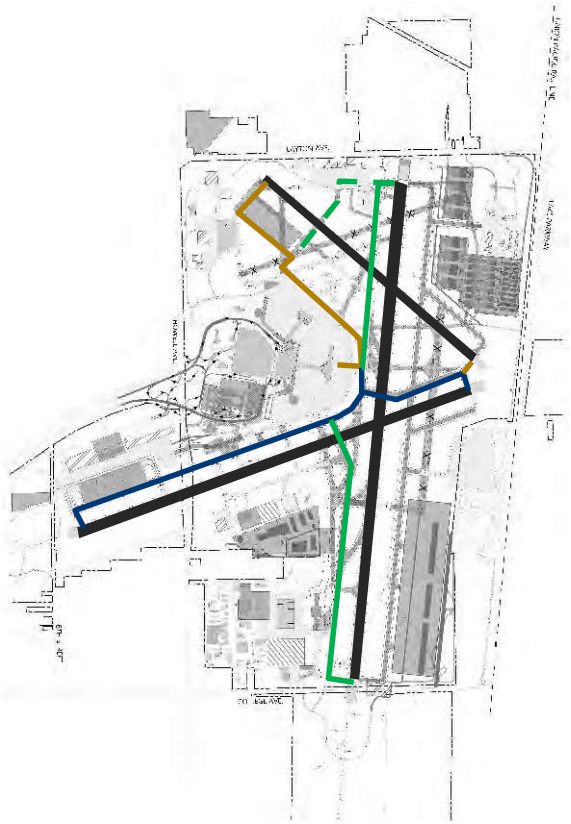


Runways in Operation

1L-19R | 7R-25L | 1R-19L

Airfield Taxi Routing – Terminal Area Aircraft

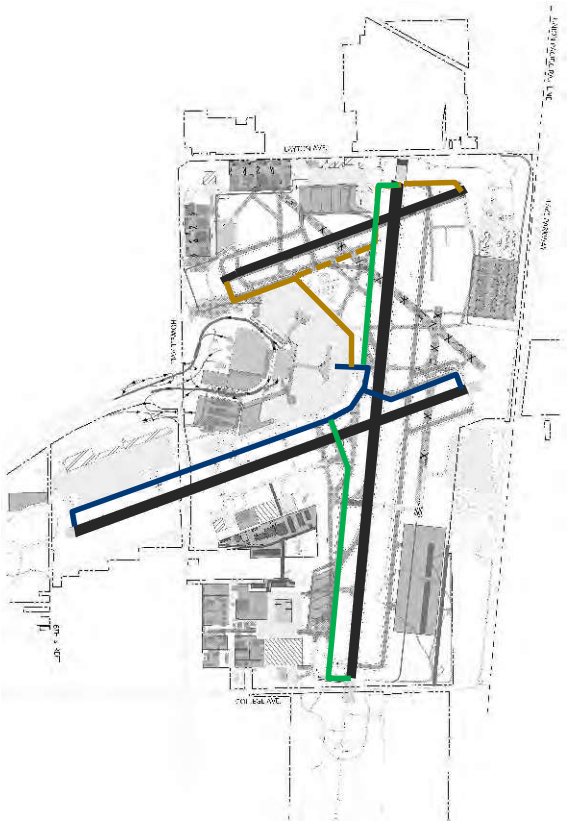
Alternative A



Taxi Flows

13-31 | 7R-25L | 1L-19R

Alternative B



Taxi Flows

7L-25R | 7R-25L | 1L-19R

Alternative C

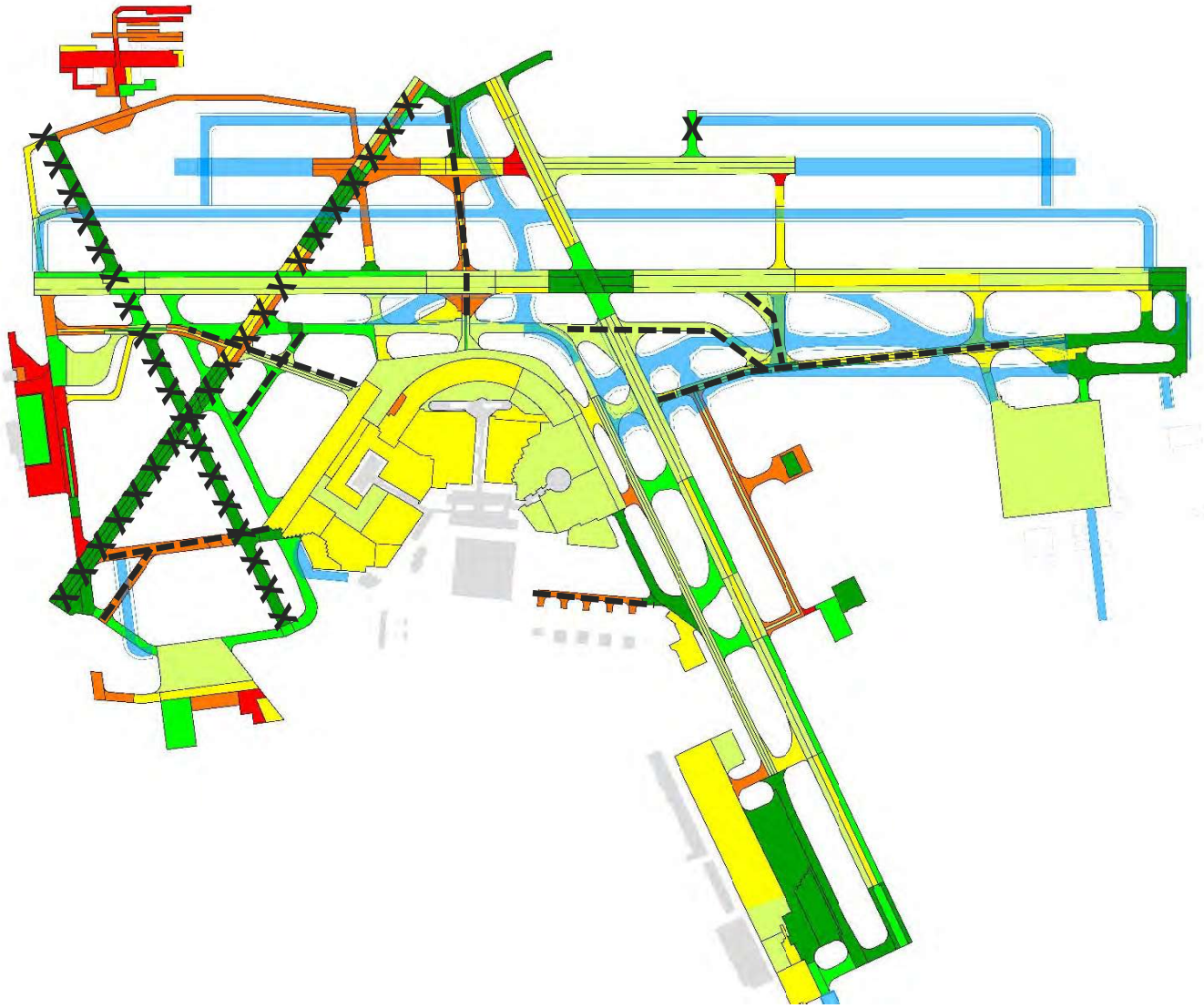
Taxi Flows

1R-19L | 7R-25L | 1L-19R

Airfield Alternative A - PCI Map Overlay

Airfield Alternative B - PCI Map Overlay

Airfield Alternative C - PCI Map Overlay



Runway Usage Statistics

Runway Utilization Summary by Aircraft Type
CY 2017

	RW 1L-19R		RW 7R-25L		RW 7L-25R		RW 13-31		RW 1R-19L		Total	
Jets [1]	57,526	52.82%	35,346	32.45%	678	0.62%	399	0.37%	175	0.16%	94,124	86.42%
Props	6,298	5.78%	5,484	5.03%	2,412	2.21%	444	0.41%	156	0.14%	14,794	13.58%
	63,824		40,830		3,090		843		331		108,918	
Total RW Usage		**58.60%**		**37.49%**		**2.84%**		**0.77%**		**0.30%**		**100.00%**

1/ Jets includes "other" activity recorded in MKE'sANOMS.
Sources: Milwaukee County, General Mitchell International Airport Noise Program Office, L3Harris EnvironmentalVue, Calendar Year 2017; Ricondo & Associates, Inc.

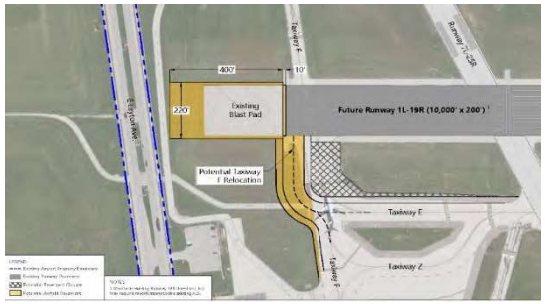
2016-2019 Runway Utilization Summary

- 1L-19R: 55%
- 7R-25L: 40%
- 13-31: under 1%
- 7L-25R: 2-3%
- 1R-19L: under 1%

Sources: BridgeNet Baseline Noise Contour Study Assumptions memo, December 15, 2019; Traffic Flow Management System Counts (TFMSC), https://aspm.faa.gov/tfms/sys/(date accessed 3/3/2020).

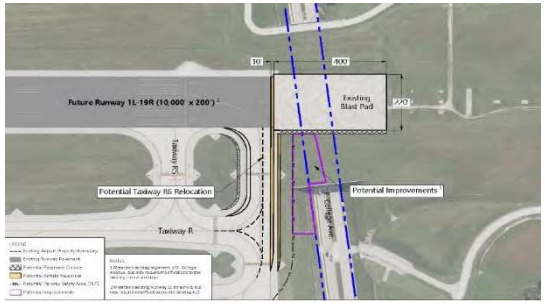
Runway 1L-19R 10 ft Extension Alternatives

NORTH EXTENSION



- ***Accommodates realignment of Taxiway F***
- Additional blast pad area needed to accommodate standard blast pad dimensions (regardless of alternative selected)

SOUTH EXTENSION



- ***Does not require modification of College Avenue tunnel to accommodate shift in TOFA (Taxiway R6)***
- Additional full strength and shoulder pavement needed along south edge of Taxiway R6

- ***Extend full strength runway pavement; no southern shift of Taxiway R6***
- Utilization of additional 10 ft requires modified aircraft taxi entry movement

Deicing Facilities

Alternative A

Alternative B

Alternative C

Terminal Considerations

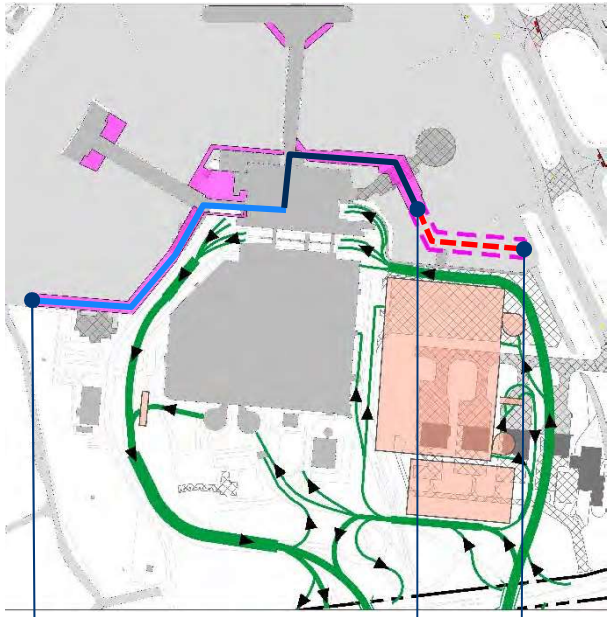
Terminal Considerations

- All alternatives meet 2040 gate requirement (+4 to +10 gates)
- Centralized Security Screening Checkpoint (SSCP) accommodated in all alternatives
- Four gate Concourse E redevelopment common to all alternatives
- Consideration given to post-2040 gate expansion capability (> +10 gates)
- Required baggage room improvements accommodated
- COVID-19 impact may drive changes in terminal planning standards as industry recovery progresses
  - Area requirements
  - Dimensional allowances
  - Uni-directional flows

In a right-sizing environment, the terminal concept (gate expansion) is driven by the airfield configuration.

Terminal Walking Distances

Alternative A



Concourse E: 1,030′

Concourse E (Beyond 2040: 1,640′

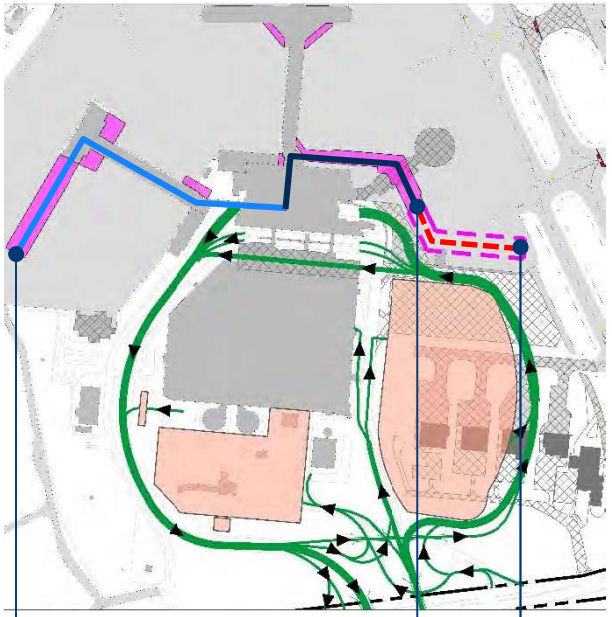
New Concourse: 1,500′

Alternative B

New Concourse (Beyond 2040): 1,280′

Concourse E : 1,750′

Alternative C



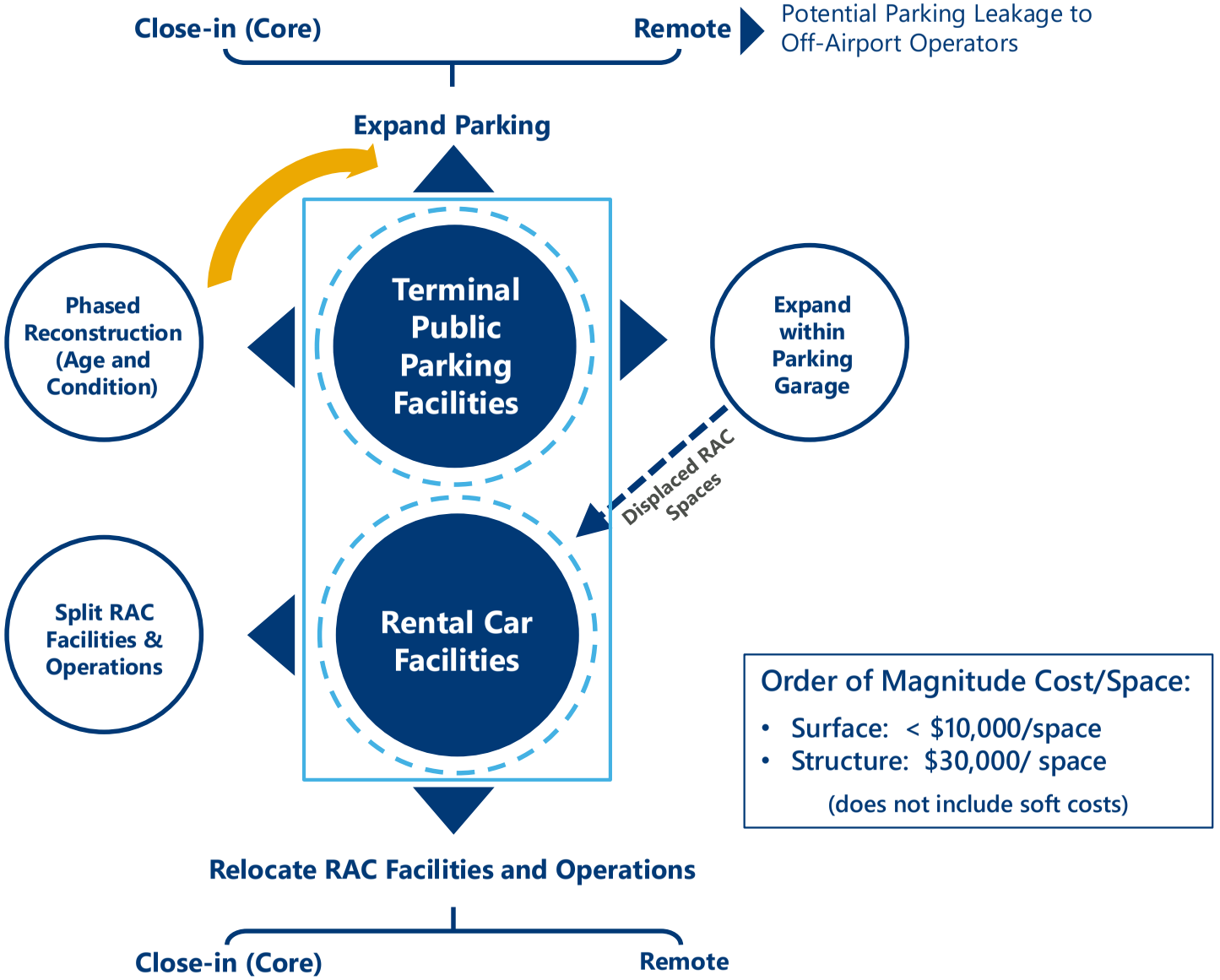
Concourse E: 1,030′

Concourse C Extension: 1,700′

Concourse E (Beyond 2040: 1,640′

Landside Considerations

Landside – Parking and Rental Car

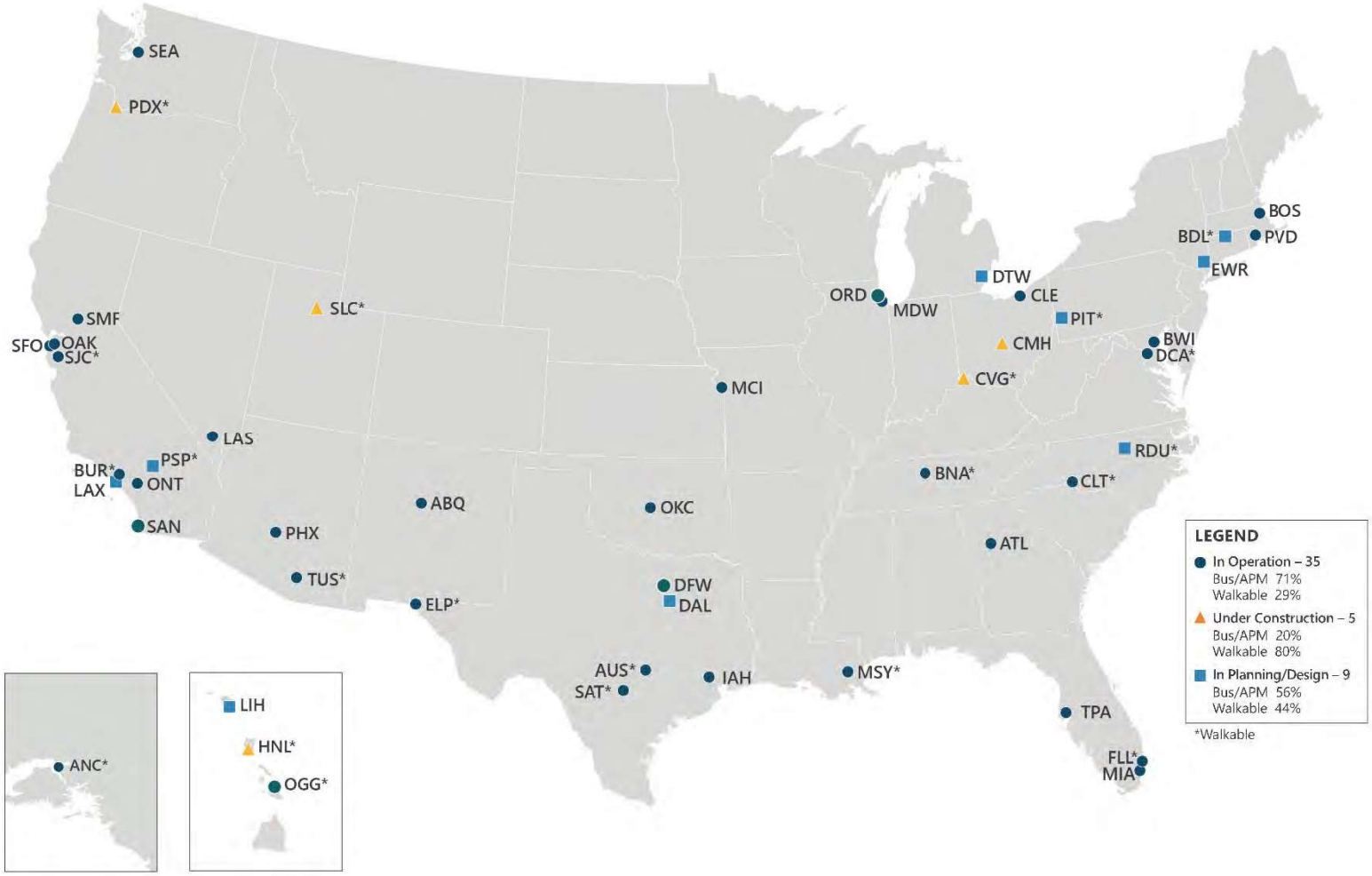


Order of Magnitude Cost/Space:

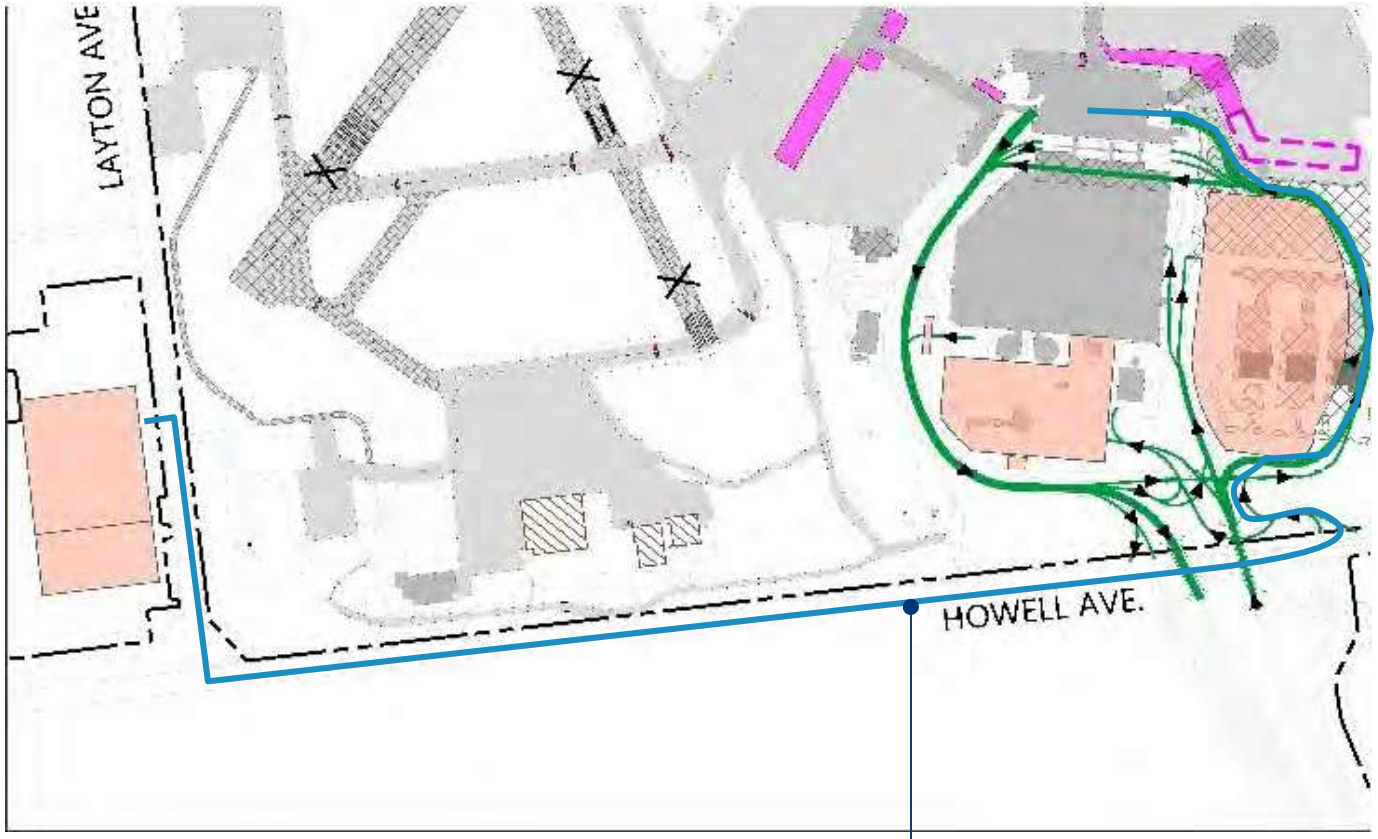
- Surface: < $10,000/space
- Structure: $30,000/ space

(does not include soft costs)

Airports with Stand-alone CONRAC



Landside Considerations – Travel Times to Remote Facility



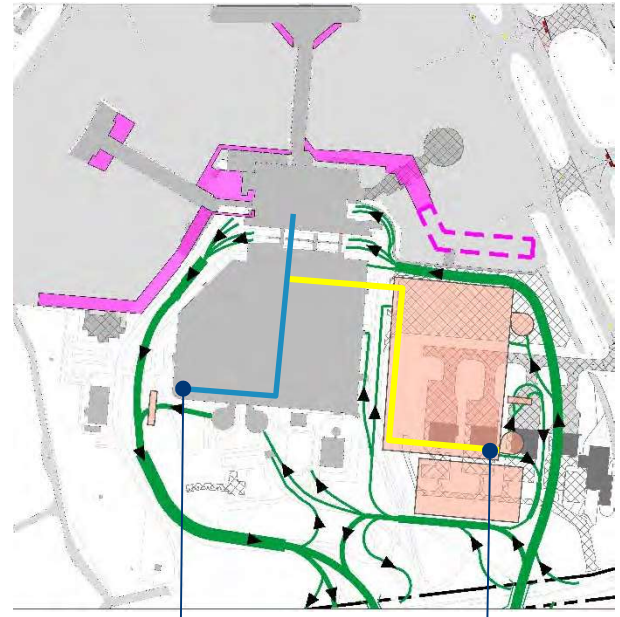
Notes:
Light cycle estimated to be 1 minute (x2)
Average 15 MPH travel to Layton and Howell = 0.97 mins
Average 25 MPH Layton/Howell to Airport Left Turn = 2.04 mins
Average 15 MPH to Curb = 2.4 mins

8,950'
(1.7 Miles)

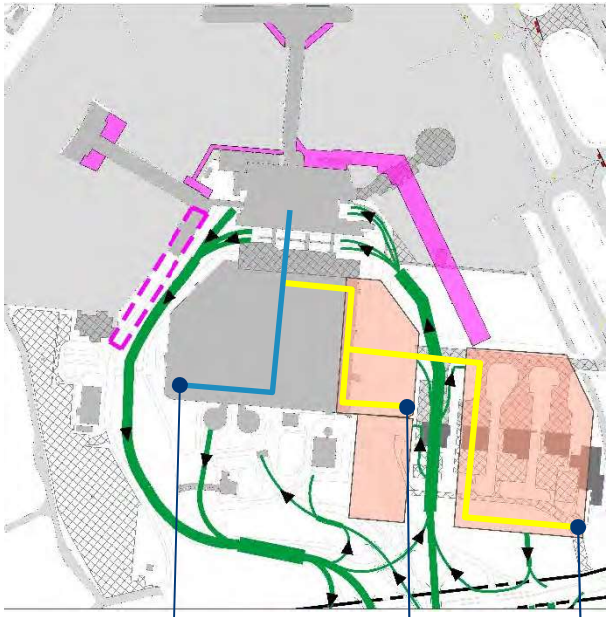
Total Travel Time : 7.5 mins

Representative Maximum Parking Walking Distances

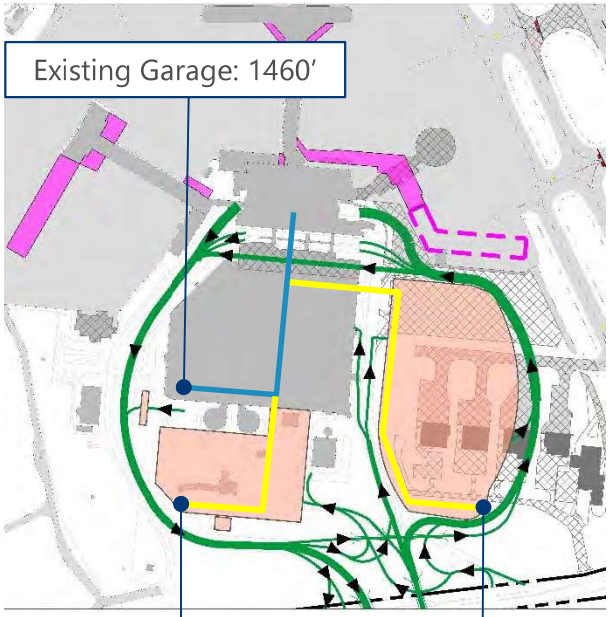
Alternative A



Alternative B



Alternative C



Non-aeronautical Land Use

REVIEW CRITERIA	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Non-Aeronautical Developable Land (by Land Use)			
Industrial	175.2	185.9	171.5
Hotel	6.3	2.8	10.3
Retail	14.4	28.2	14.0
TOTAL	195.8 Acres	216.9 Acres	195.8 Acres
Key Non-Aeronautical Development Sites			
Layton Avenue & Howell (Northeast Corner Site)	This Site has the greatest non-aeronautical development potential, aside from industrial sites. Retail, hospitality, and/or office uses align with Aerotropolis Plan and market feedback. Alternative A reserves a portion of site for non-aeronautical development. It appears that access and visibility from Layout Avenue would be sufficient for small scale retail development.	This Site has the greatest non-aeronautical development potential, aside from industrial sites. Retail, hospitality, and/or office uses align with Aerotropolis Plan and market feedback. Alternative B reserves the entire site for non-aeronautical development, ensuring access and visibility from Layton Avenue and a larger site to accommodate a mix of uses.	Not available in Alternative C
College Avenue & Howell Avenue (Northeast Corner Site)	Acquisition of the College Avenue & Howell Avenue Site will be important for unlocking the long-term redevelopment potential of the MKE Regional Business Park. Given the access and visibility from College and Howell Avenues, there may be potential for industrial and/or retail development.	Not available in Alternative B	Not available in Alternative C
Key Non-Aeronautical Development Goals			
Enhancing the Airport Entrance	Mulitiple non-aeronautical sites along Howell Avenue provide potential for a cluster of hospitality and retail development to enhance the Airport entrances for travelers and employees.	Fewer sites along Howell Avenue offer less potential for a hospitality/retail cluster at the Airport entrance. Instead, non-aeronautical development will likely concentrate near existing hotels on Howell Avenue (south of the Airport entrance) or near the Layton Avenue and Howell Avenue Site (northeast corner).	Mulitiple non-aeronautical sites along Howell Avenue provide potential for a cluster of hospitality and retail development to enhance the Airport entrances for travelers and employees. These sites are largest in Alternative C, offering the most potential at the Airport entrance for non-aeronautical development.

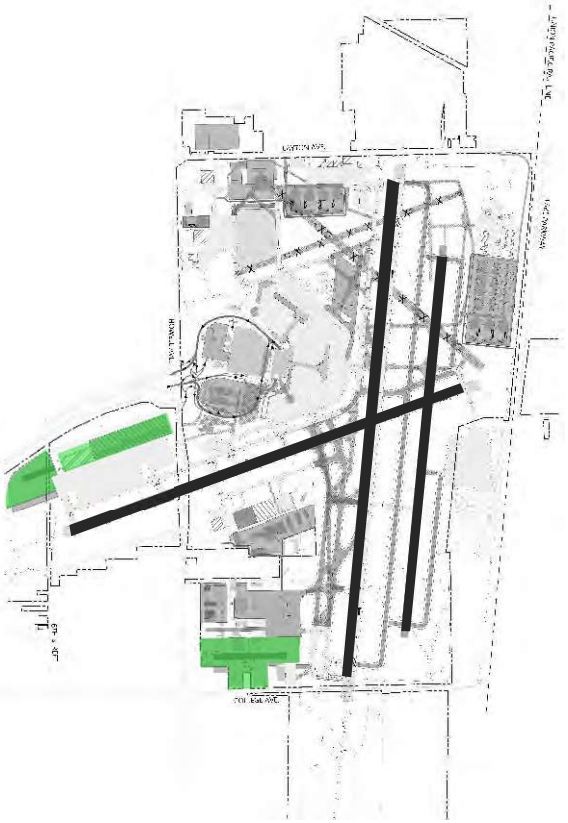
Cargo Considerations

Cargo Locations

Alternative A

Alternative B

Alternative C

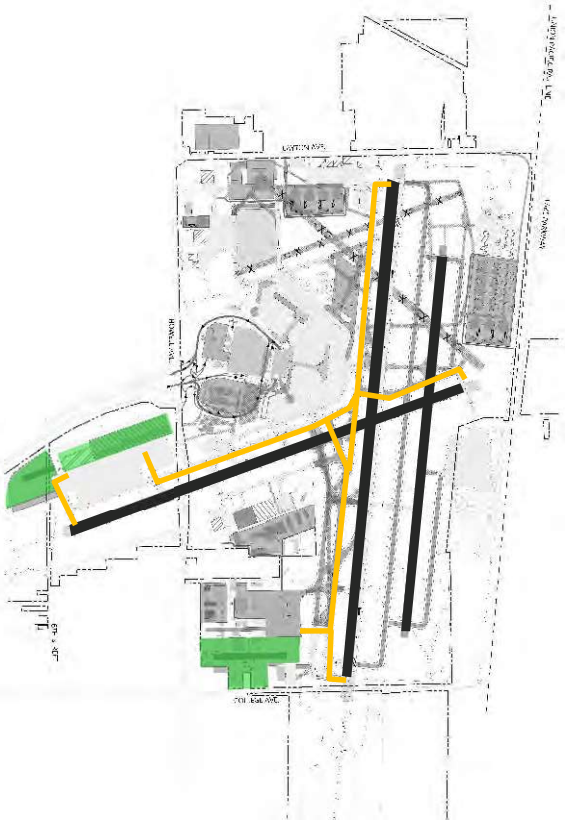


Cargo Taxi Routing

Alternative A

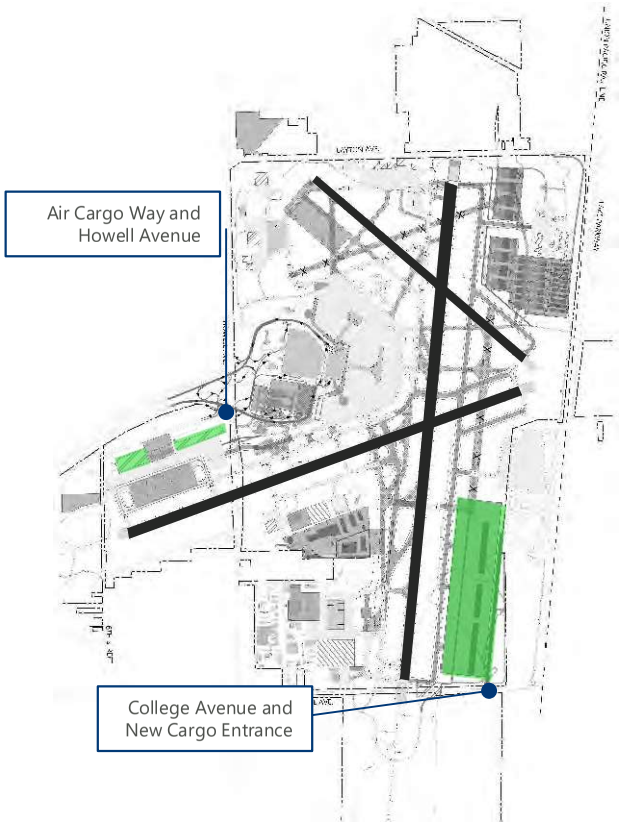
Alternative B

Alternative C

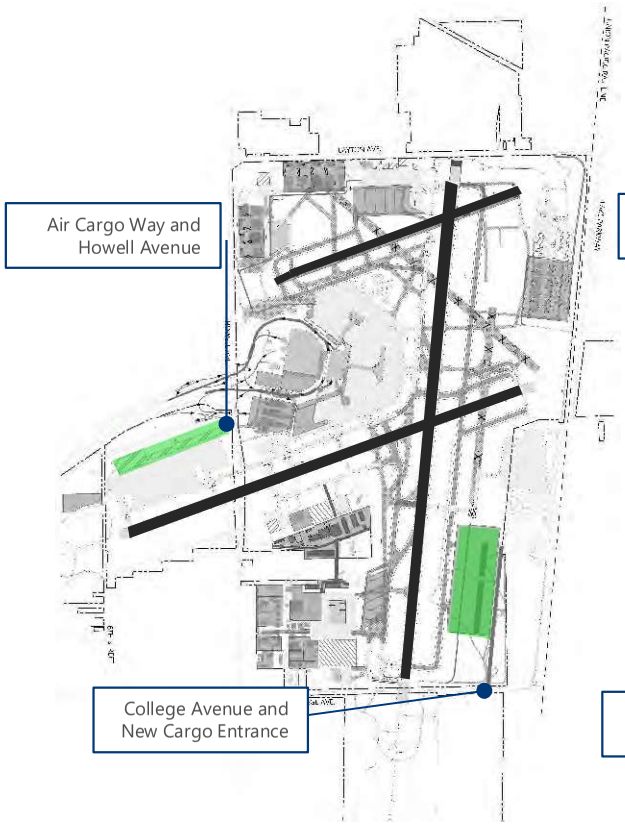


Primary Cargo Access Points

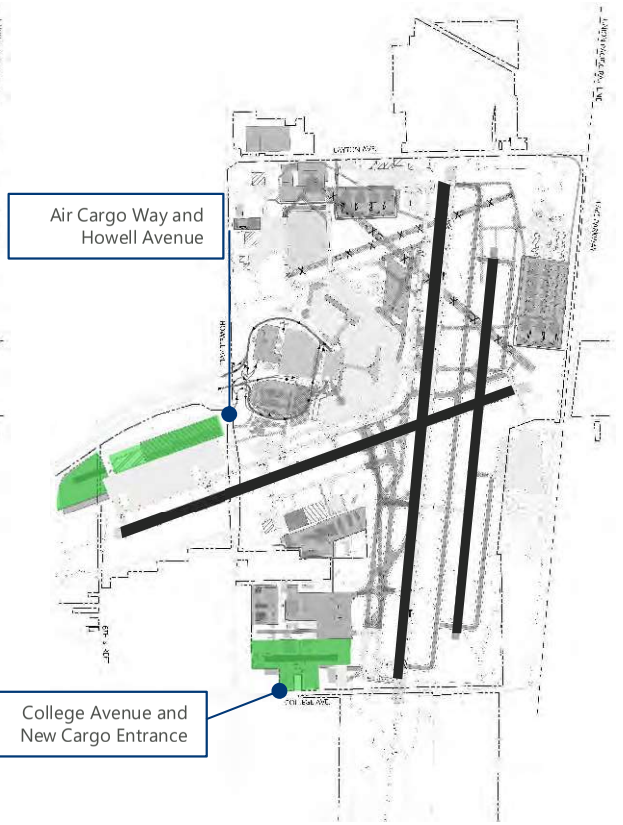
Alternative A



Alternative B



Alternative C



General Aviation Considerations

General Aviation Locations

Alternative A

- Northwest 5%
- Northeast 75%
- Southwest 10%
- Southeast 0%

Alternative B

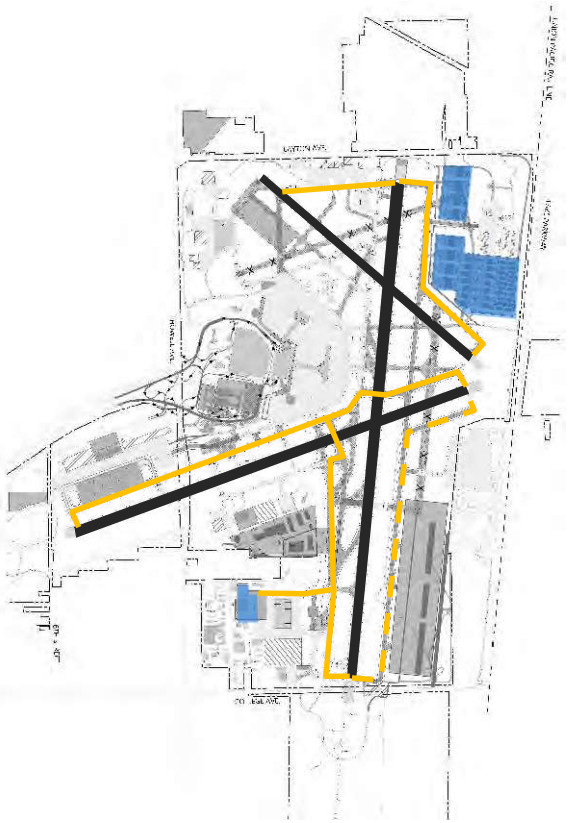
- Northwest 45 %
- Northeast 45%
- Southwest 10%
- Southeast 0%

Alternative C

- Northwest 35%
- Northeast 55%
- Southwest 10%
- Southeast 0%

General Aviation Taxi Flows

Alternative A



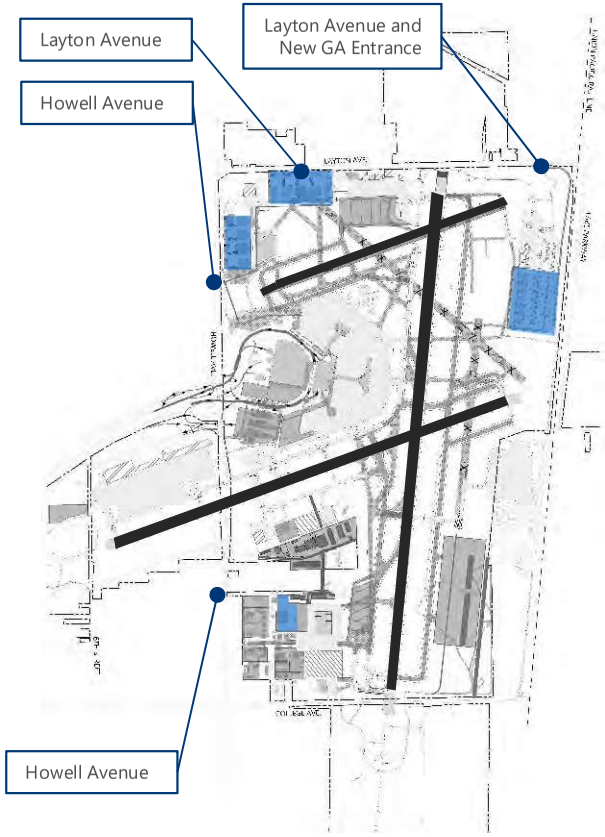
Alternative B

Alternative C

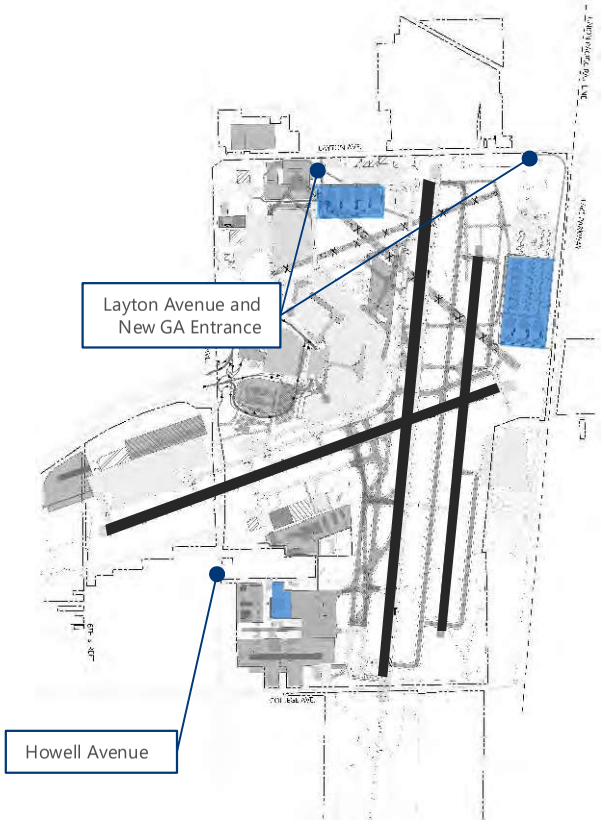
General Aviation Primary Access Points

Alternative A

Alternative B



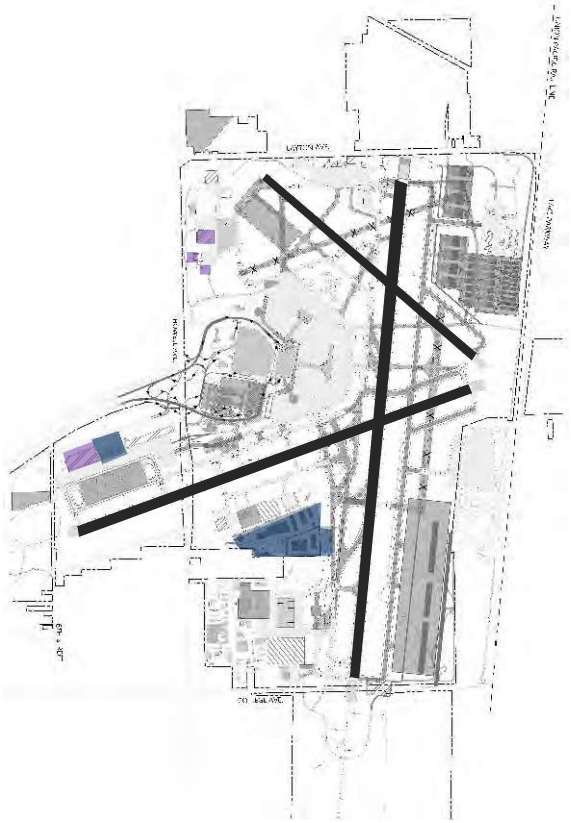
Alternative C



Additional Support Facilities

Aircraft and Airport Maintenance Areas

Alternative A



Alternative B

Alternative C

Legend

Aircraft Maintenance Airport Maintenance

Working Session

Alternative A Review

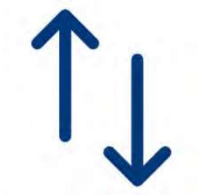
Advantages

- Allows WiANG facility expansion
- Provides enhanced taxi capabilities on east side of airport (military and supports future cargo area)
- Reuses existing deicing facilities (7R pad)
- Allows for diversity of development in MKE Regional Business Park

Disadvantages

- Entails longer taxi distances from deice pads
- Relies on land exchange with WiANG
- Potential WiANG facility expansion may increase noise exposure (additional aircraft operations)
- Dual parallel Taxiways R/Q (ultimate) would require relocation of SRE staging area and compass pad
- Requires eastward extension of College Ave. tunnel (VSR reroute and future taxiway OFA)
- Limited airfield capacity when RW 13-31 in use
- Howell Avenue bridge relocation required (1 of 2)
- Upgrade of RW 13-31 to ADG C-III (greater that 500 annual operations) requires use of declared distances

Alternative A Review



Tradeoffs

- New Cargo development (SE Quadrant) **versus** Redevelopment of MKE Regional Business Park
- Ultimate terminal development potential **versus** ultimate airfield capacity
- RW 13-31 alignment has limited but valuable utility **versus** long-term airfield capacity
- Dedicated use of 7R deice pad **versus** taxiway and service road bridge structure required for efficient use of deice pad
- Consolidated joint use (rental car & parking) facility in core area **versus** relocation of surface parking component to Layton/Howell parcel (limits commercial development, requires busing operation, competitive environment with private parking operators)

Alternative B Review

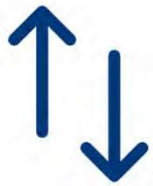
Advantages

- Allows WiANG facility expansion
- RW 7L availability supports segregation of GA traffic (current ATC preference)
- Parcel at Howell/Layton available for revenue-generating development
- Configuration has potential for growth in long-term airfield capacity
- Campus-type development allows for incremental expansion of clustered activity

Disadvantages

- Potential WiANG facility expansion may increase noise exposure (additional aircraft operations)
- Dual parallel Taxiways R/Q constrained by south deicing pad
- SE Cargo aircraft RW 1L departures can't utilize full length runway departure (~300-foot reduction due to taxiway configuration)
- Howell Avenue bridge relocation required (1 of 2)
- Alternative with most limited gate potential for ultimate capacity
- Air Cargo Way egress to I-94 circulates via Grange Avenue

Alternative B Review



Tradeoffs

- Maintenance/MRO campus consolidates similar activities **versus** other redevelopment of MKE Regional Business Park (aeronautical versus non-aeronautical)
- Ultimate airfield capacity (post 2040) **limited** by physical constraint of Howell Avenue (capability limited to aircraft that can utilize ~5,100 feet)
- MKE Regional Business Park is fully redeveloped, **limits** the ability to accommodate "Next Big Thing"

Alternative C Review

Advantages

- Maximum achievable ultimate airfield capacity
- Maximum achievable runway length potential
- Separation of Airport Maintenance from County Highway Department facilities/operations
- Remote CONRAC does not impose traffic burden on terminal roadway system
- Relocation of parking garage exit plaza allows for metered traffic flow on terminal exit roadway
- RON parking positions adjacent to terminal apron
- Runway configuration well suited for predominant winter operations (North Flow)

Disadvantages

- RTR relocation required by centralized deice facility (and fuel farm roadway)
- Aircraft originating in NW corner must circulate adjacent to terminal area due to landside road connection to Layton Ave (GA vehicle traffic)
- Long walking distances to expanded parking garage area

Alternative C Review

Tradeoffs

- Cargo campus consolidates similar activities **versus** other redevelopment of MKE Regional Business Park (aeronautical versus non-aeronautical)
- Relocation of County Highway Department allows for consolidated maintenance campus **versus** limits potential future development in MKE Regional Business Park
- Parking expansion in core area **drives** relocation of rental car facilities out of core area
- Consolidated rental car facility **versus** non-aeronautical development of Layton/Howell parcels

Discussion of Concept Preferences

(switch to spreadsheet)

Alternative Preferences

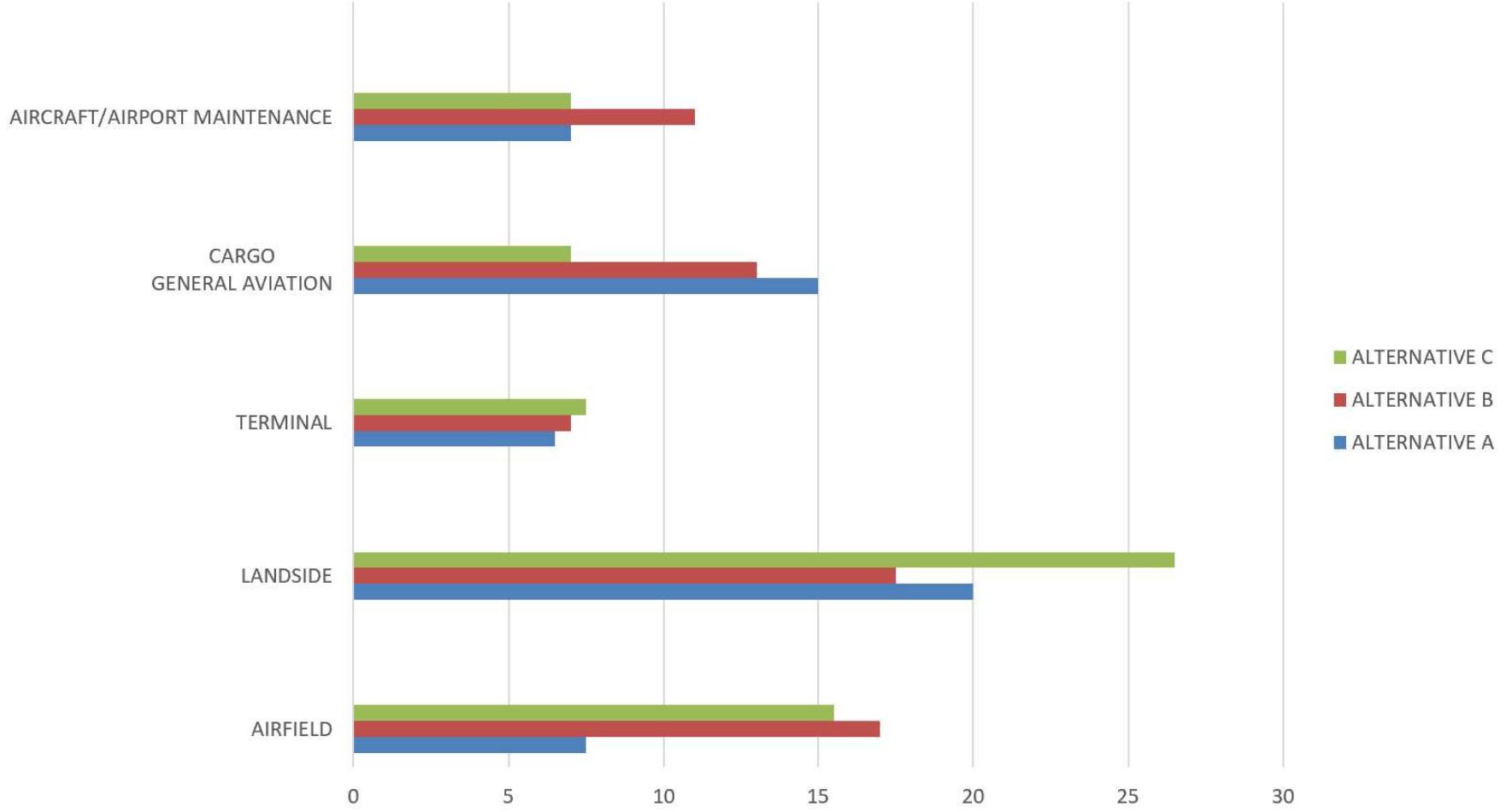
- Primary drivers of alternative selection
  - Airside (runways and supporting taxiway network)
  - Landside Facilities
- Selected Preferred Alternative can vary from the "best scoring" option

ALTERNATIVE PREFERENCES

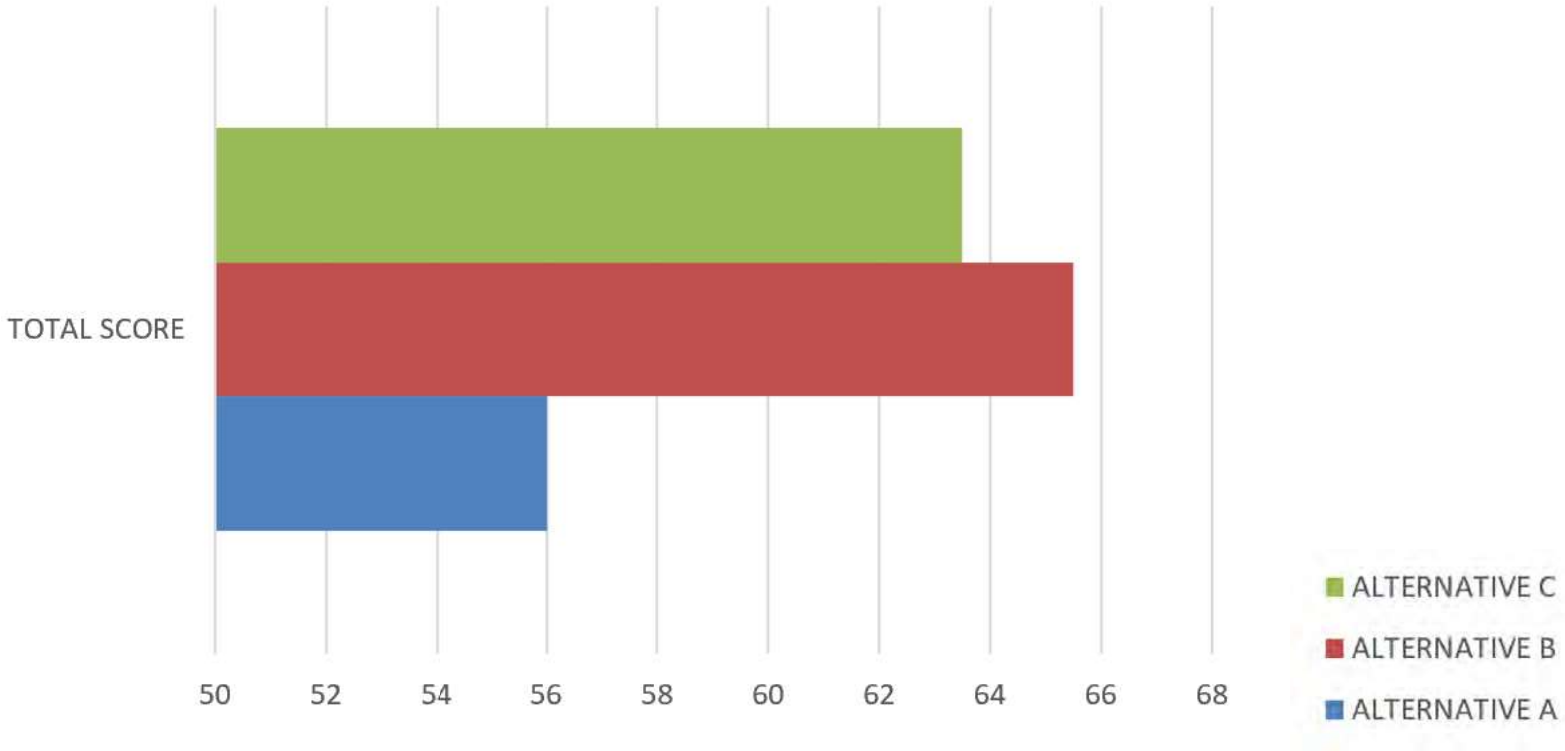
	AIRSIDE						LANDSIDE												TERMINAL			CARGO			GENERAL AVIATION			AIRCRAFT MAINTENANCE			AIRPORT MAINTENANCE		
	AIRFIELD			DEICE FACILITIES			ROADWAY			CURBSIDE			PARKING			RENTAL CAR			TERMINAL														
MKE REPRESENTATIVE	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
C. Baker																																	
K. Berry																																	
K. David																																	
B. Dranzik																																	
G. Failey																																	
J. Forro																																	
D. Gelting																																	
J. Grava																																	
M. Hoffman																																	
J. Martin																																	
H. Mester																																	
S. Nadolny																																	
T. Pearson																																	
P. Rowe																																	
A. Shoemaker																																	
T. Torcivia																																	
J. Trapp																																	
C. Turk																																	
G. Waszak																																	
J. Zsebe																																	
SAMPLE	3	2	1																														
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNT: 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNT: 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNT: 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Example → Switch to separate spreadsheet

Summary Evaluation (by Facility Type)



Summary Evaluation (Overall Concept)



Next Steps

- Following this working session
  - Present three shortlisted alternatives to TAG and SAG for feedback
  - Present three shortlisted alternatives and Preferred Alternative to the public (Public Open House #4)
  - Refine Preferred Alternative

- Master Plan Process
  - Prepare implementation plan
  - Prepare environmental overview
  - Draft Capital Improvement Program (CIP)
  - Prepare ALP and Narrative Report (FAA signs and approves ALP)
  - FAA ALP review period: up to 180 days
  - Finalize and submit Master Plan report

Workshop #4 Conclusion Review

August 25, 2020

MASTER PLAN **2040**

MKE
MILWAUKEE
Mitchell International Airport

Objectives

- Review conclusions of component preferences
- Final input
- Confirmation of preferred alternative (subject to refinement)
- Template: presentation of facility conclusions

Primary Advantages

1 XXX

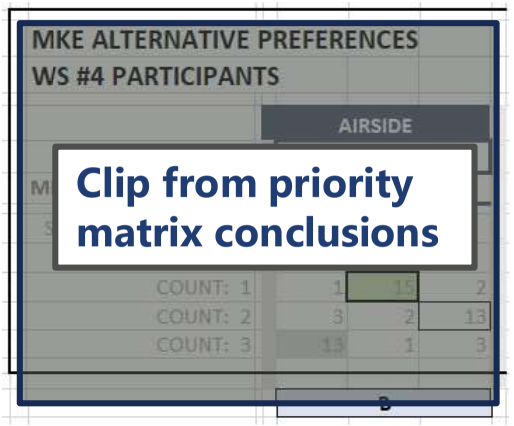
Primary Challenges

1 XXX

2 YYY

Trade-offs (if selecting Alt __)

1 XXX



Airfield and Deice Pad Results

Airfield Conclusion – Alternative A

Primary Advantages

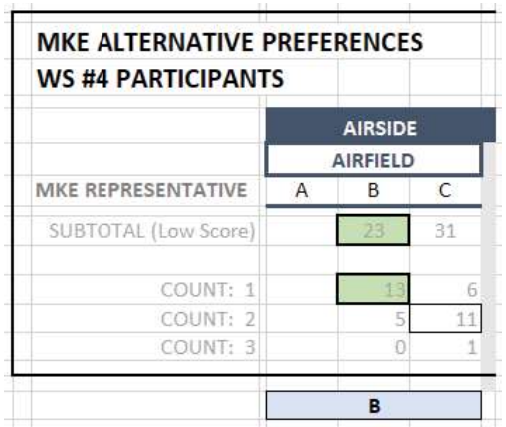
1. Operational flexibility during limited but specific weather conditions
2. Accommodates deice pad in north airfield
3. Decommissioned RW 1R-19L has lowest PCI values

Primary Challenges

1. No long-term capacity potential
2. Without availability of RW 7L-25R, reduction in current capacity (ASV)
3. Post-2040, future capacity likely to require substantial land acquisition (future parallel RW 7-25)
4. More regular and intensive use of runway (>500 annual operations) may affect critical aircraft designation and required dimensional and operational standards

Trade-offs (if selecting Alt A)

1. Reduced (existing) capacity and long-term capacity constraint are significant limitations balanced against limited utility of Runway 13-31



MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRSIDE		
	AIRFIELD		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)		23	31
COUNT: 1		13	6
COUNT: 2		5	11
COUNT: 3		0	1
		B	

Airfield Conclusion – Alternative B

Primary Advantages

1. Maintains existing capacity (annual service volume (ASV))
2. With on-airport extension to 5,100 feet (RW 7L-25R), incremental capacity gain anticipated
3. Supports operational segregation of GA traffic
4. Accommodates deice pad in north airfield (runway crossing required)
5. RW 7L-25R: favorable PCI values

Primary Challenges

1. Post-2040, future capacity likely to require land acquisition (extension over Howell Ave or future parallel RW 7-25)
2. Limited 7L-25R extension capability (on-airport)

Trade-offs (if selecting Alt B)

1. Long-term capacity increase limited without land acquisition (to accommodate air carrier aircraft)

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

MKE REPRESENTATIVE	AIRSIDE AIRFIELD A	B	C
SUBTOTAL (Low Score)		23	31
COUNT: 1		13	6
COUNT: 2		5	11
COUNT: 3		0	1
		B	

Airfield Conclusion – Alternative C

Primary Advantages

1. Provides maximum long-term capacity
2. Allows incremental RW extensions to meet fleet evolution
3. Deicing adjacent to terminal gate area

Primary Challenges

1. Condition of RW 1R-19L pavement (capital investment needed) → reconstruct aging asset
2. Parallel TW needed between 1-19 runways (significant capital investment)
3. Limits adjacent land uses (WiANG)
4. RW crossing for component of GA activity

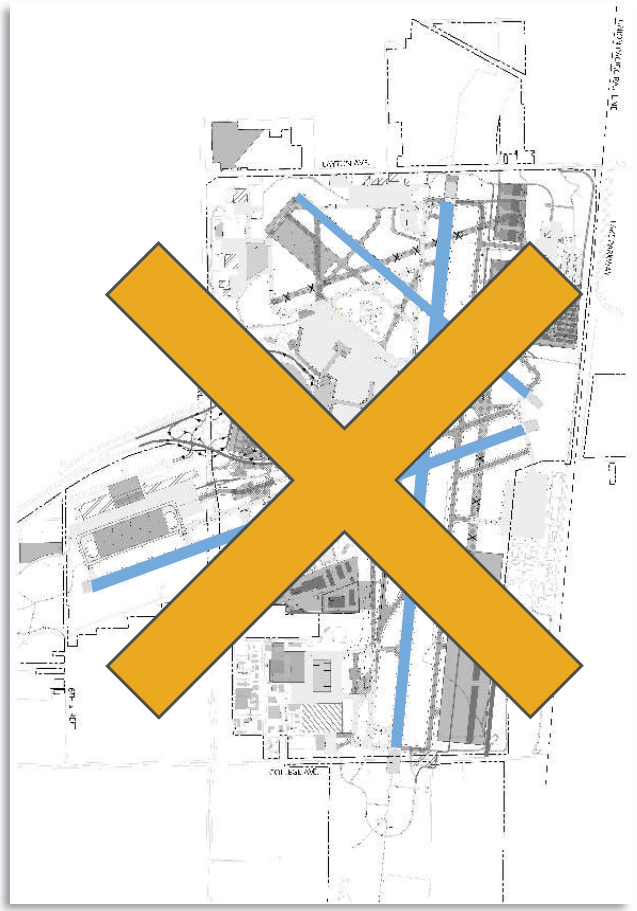
Trade-offs (if selecting Alt C)

1. Significant near-term capital investment required; protects long-term capacity growth potential

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRSIDE		
	AIRFIELD		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)		23	31
COUNT: 1		13	6
COUNT: 2		5	11
COUNT: 3		0	1
		B	

Airfield Conclusion



Alternative A

Alternative B

Alternative C

NOTE: 10-foot extension of RW 1L-19R (10,000-foot total runway length) at north end is preferred (WS #4) and will be incorporated into concept.

Deice Pad

Deice Pad Conclusion – Alternative A

Primary Advantages

1. 7R deice pad is existing with deicing fluid collection system

Primary Challenges

1. Efficient use of 7R deice pad requires TW bridge over Howell Ave and relocation of compass pad (substantial cost driver)
2. No dedicated deice pad at RW 1L (a primary winter departure runway)
3. North deice pad requires modification to accommodate Airfield Alternative B

Trade-offs (if selecting Alt A)

1. Significant capital investment needed for efficient use of 7R deice pad (taxiway bridge, VSR bridge over Howell Ave)

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRSIDE DEICE FACILITIES		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	46	22	37
COUNT: 1	1	15	2
COUNT: 2	3	2	13
COUNT: 3	13	1	3
		B	

Deice Pad Conclusion – Alternative B

Primary Advantages

1. Deice pads at both ends of RW 1L-19R (primary winter runway)

Primary Challenges

1. South deice pad configuration constrains options for future dual parallel taxiway (R and Q) to support RW 1L-19R and MKE Regional Business Park (if developed for aeronautical uses)
2. Proximity of north deice pad to residential area (north of Layton Ave) anticipated to create community concern

Trade-offs (if selecting Alt B)

1. Future dual parallel taxiway to support RW 1L-19R constrained by future south deice pad
2. Anticipated community opposition to north deice pad

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRSIDE DEICE FACILITIES		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	46	22	37
COUNT: 1	1	15	2
COUNT: 2	3	2	13
COUNT: 3	13	1	3
		B	

Deice Pad Conclusion – Alternative C

Primary Advantages

1. Deicing adjacent to terminal gate area
2. Accommodates future dual parallel taxiway system to RW 1L (TWs R and Q)

Primary Challenges

1. Limited capacity of south deice pad (potential to expand with future relocation of burn pit)
2. North deice pad requires modification to accommodate Airfield Alternative B (reduction in size/capacity)

Trade-offs (if selecting Alt C)

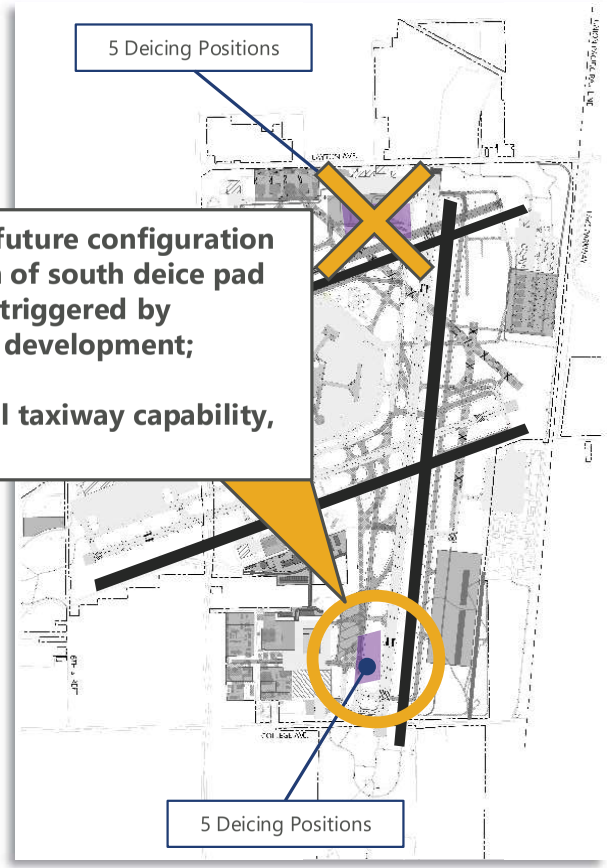
1. Modification to north deice pad
2. Restricted development potential in portion of MKE Regional Business Park

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRSIDE DEICE FACILITIES		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	46	22	37
COUNT: 1	1	15	2
COUNT: 2	3	2	13
COUNT: 3	13	1	3
		B	

Deicing Facilities Conclusion

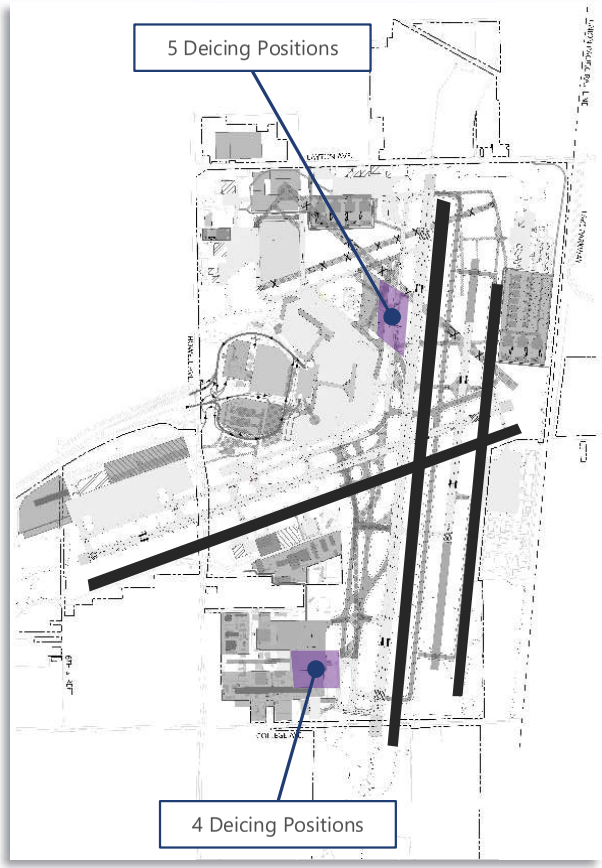
Alternative A



Alternative B

Incorporate future configuration or expansion of south deice pad into Alt C as triggered by demand and development;

Preserve dual taxiway capability, if possible



Alternative C
(Modified)

Terminal

Terminal Results

Terminal Conclusion – Alternative A

Primary Advantages

1. Minimal dependency on roadway improvements (timing/phasing advantage)
2. Compatible with Landside Alternatives B and C (flexibility)

Primary Challenges

1. Requires modification (expansion of Conc. E) to accommodate Airfield Alternative B (RW 7L-25R); reduces long-term gate capability
2. Operational complexity in the area of Conc. C and Conc. B when paired with Airfield Alternative B (RW 7L-25R)
3. Requires relocation or reconstruction of Airport Admin facility (third level of future concourse); reduces phasing flexibility

Trade-offs (if selecting Alt A)

1. Reduction in long-term gate expansion capability if (RW 7L-25R limits gate expansion)
2. Relocation or reconstruction of Airport Admin Facility increases capital need without improving capacity or operational efficiency

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	TERMINAL		
	TERMINAL		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	35	35	35
COUNT: 1	5	8	5
COUNT: 2	6	3	9
COUNT: 3	6	7	4
		B	

Terminal Conclusion – Alternative B

Primary Advantages

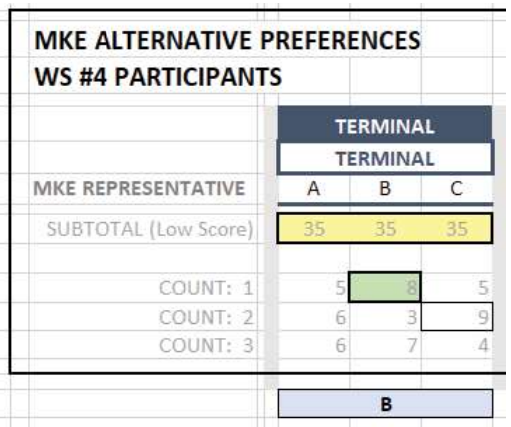
1. General compatibility with existing roadway and landside facilities
2. Allows incremental (demand driven) expansion of Concourse E gates
3. Concentrates new gates on south side of terminal complex, closer to primary runways used by air carriers

Primary Challenges

1. Not compatible with Landside Alternatives A or C without significant modification
2. Displaces DL GSE building

Trade-offs (if selecting Alt B)

1. Impact to footprint of landside facilities (parking and/or rental car)



MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	TERMINAL		
	TERMINAL		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	35	35	35
COUNT: 1	5	8	5
COUNT: 2	6	3	9
COUNT: 3	6	7	4
		B	

Terminal Conclusion – Alternative C

Primary Advantages

1. Compatible with Landside Alternatives A and B (flexibility)
2. Allows incremental RW extensions to meet anticipated fleet evolution
3. Provides maximum terminal expansion potential
4. Deicing adjacent to terminal gate area

Primary Challenges

1. Puts additional passenger circulation demand on Concourse C "stem"; potential for widening concourse to accommodate circulation demand
2. Operational complexity in the area of extended Conc. C when paired with Airfield Alternative B (RW 7L-25R)
3. Concourse C gates taken out of service during construction

Trade-offs (if selecting Alt C)

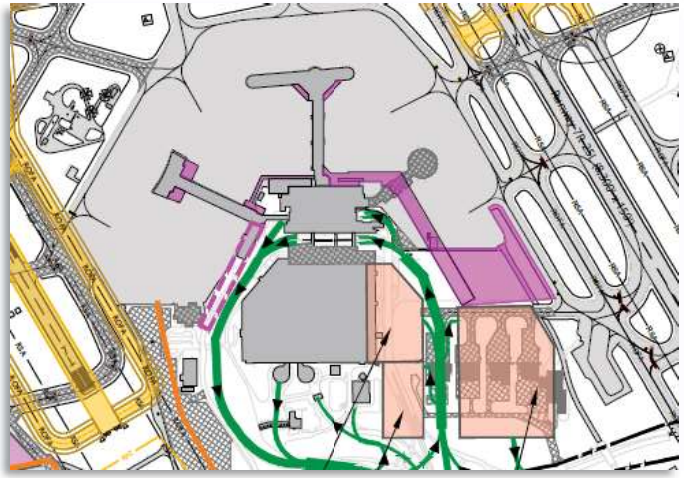
1. Footprint of expanded Concourse C requires modification to accommodate Airfield Alternative B (RW 7L-25R)

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

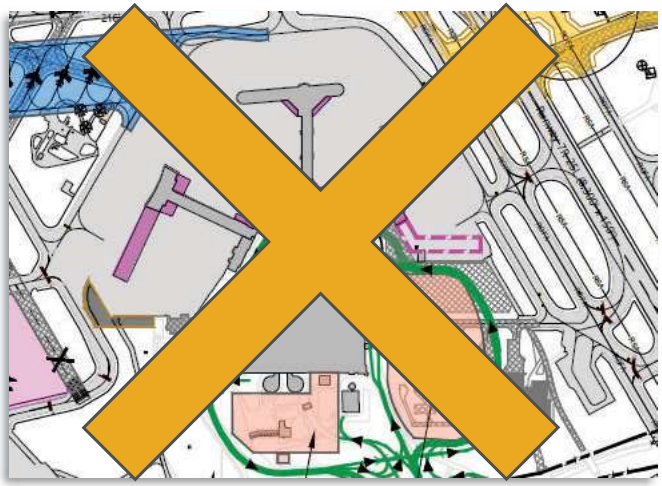
	TERMINAL		
	TERMINAL		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	35	35	35
COUNT: 1	5	8	5
COUNT: 2	6	3	9
COUNT: 3	6	7	4
		B	

Terminal Conclusion

Alternative A



Alternative B



Alternative C

Roadway

Landside Results

Roadway

Roadway Conclusion – Alternative A

Primary Advantages

1. Enhanced segregation of inbound traffic (increased decision times and longer weave distances
2. Roadway improvements west of Howell Ave allow roadway elements to be more widely dispersed

Primary Challenges

1. Affordability of bridging Howell Ave and Air Cargo Way; increased on-Airport roadway lengths
2. Impact to Super Saver B Lot (limited reduction in parking capacity)
3. Implementation timing given the coordination necessary for modifications to Airport Spur (bridging over Howell Ave) and roadway improvements west of Howell Ave
4. Circuitous roadway routings
5. Limited incremental phasing opportunities (commitment to bridge and roadway configuration required)

Trade-offs (if selecting Alt A)

1. Increased roadway footprint and traffic segregation challenges affordability
2. Timing and cost uncertainties for roadway modifications off MKE property
3. Large-scale "program" necessary (financial commitment) due to inability to incrementally construct

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE ROADWAY		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	35	36	34
COUNT: 1	5	7	6
COUNT: 2	6	4	8
COUNT: 3	6	7	4

	B	C

Roadway Conclusion – Alternative B

Primary Advantages

1. Reduced complexity of Air Cargo Way and Howell Ave intersection (southward shift)
2. Main truck route from Air Cargo Way to Airport Spur improved (all right-hand turns, simplified entrance)

Primary Challenges

1. Affordability (widening of inbound Airport Spur bridge)
2. Required modification of Super Saver Lot A reduces available revenue-generating spaces

Trade-offs (if selecting Alt B)

1. Timing and cost uncertainties for roadway modifications off MKE property

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE		
	ROADWAY		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	35	36	34
COUNT: 1	5	7	6
COUNT: 2	6	4	8
COUNT: 3	6	7	4

	B	C

Roadway Conclusion – Alternative C

Primary Advantages

1. No impact to Airport Spur bridges
2. All roadway improvements are on-Airport
3. Relocated parking garage revenue/exit plaza enhances merge onto airport exit roadway
4. Implementation flexibility
5. Affordability (flyover bridge for recirculation is major cost item)

Primary Challenges

1. Expanded surface parking exits onto inbound terminal roadway putting all exiting vehicles through the core area
2. Limited improvement to intersection of Air Cargo Way and Howell Ave
3. Reuse of roadway elements limits entrance road geometry (turn radii, speeds)
4. Requires modification to accommodate Terminal Alternative B

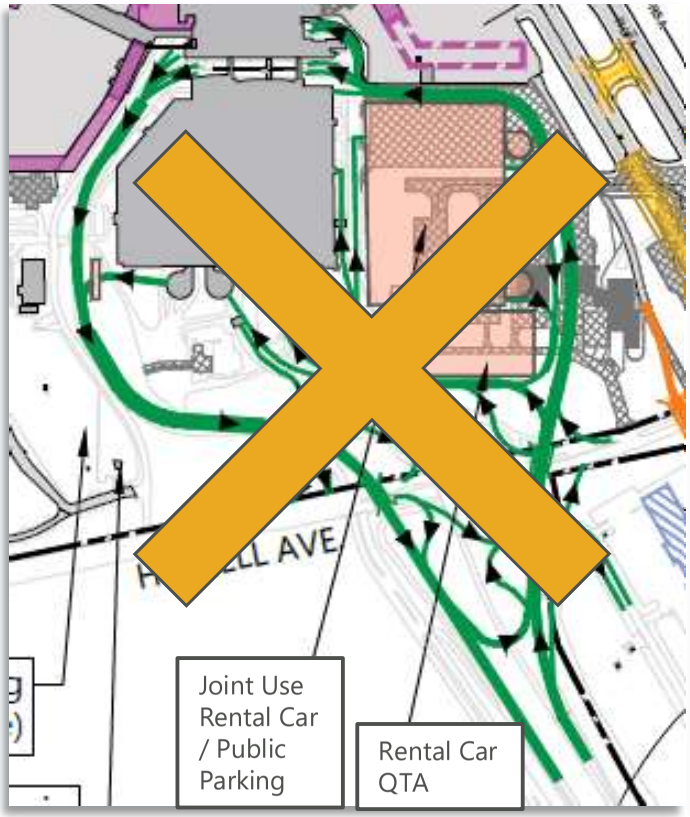
Trade-offs (if selecting Alt C)

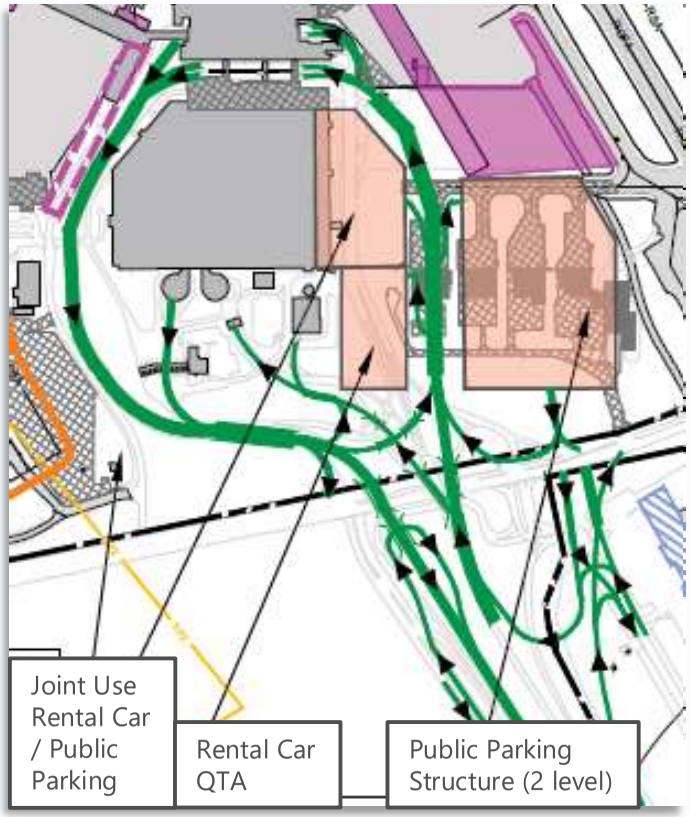
1. Enhanced affordability limits scope of roadway adjustments (tight turn radii)
2. Modification required to accommodate Terminal Alternative B (convert surface parking to structure)

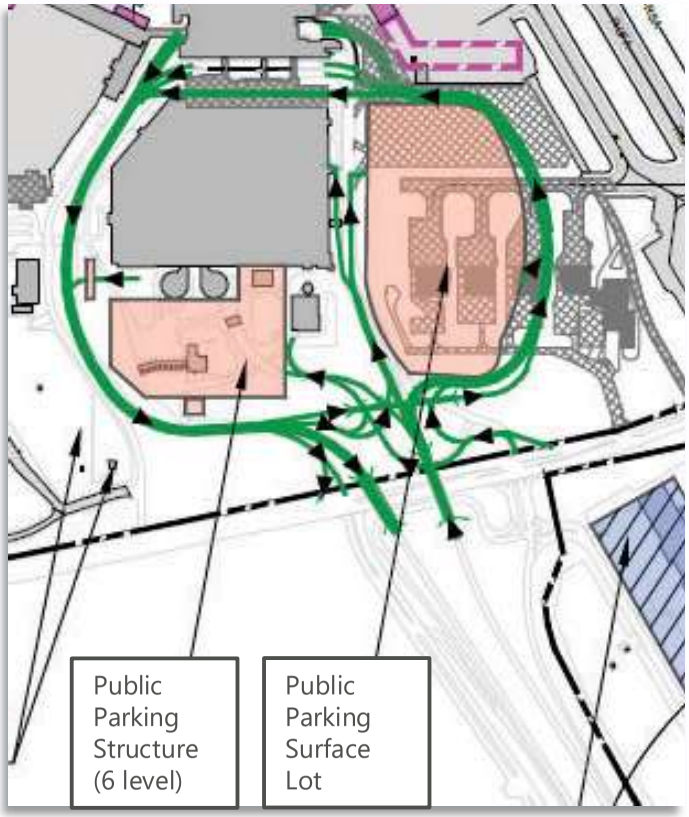
MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE ROADWAY		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	35	36	34
COUNT: 1	5	7	6
COUNT: 2	6	4	8
COUNT: 3	6	7	4
		B	C

Roadway Conclusion







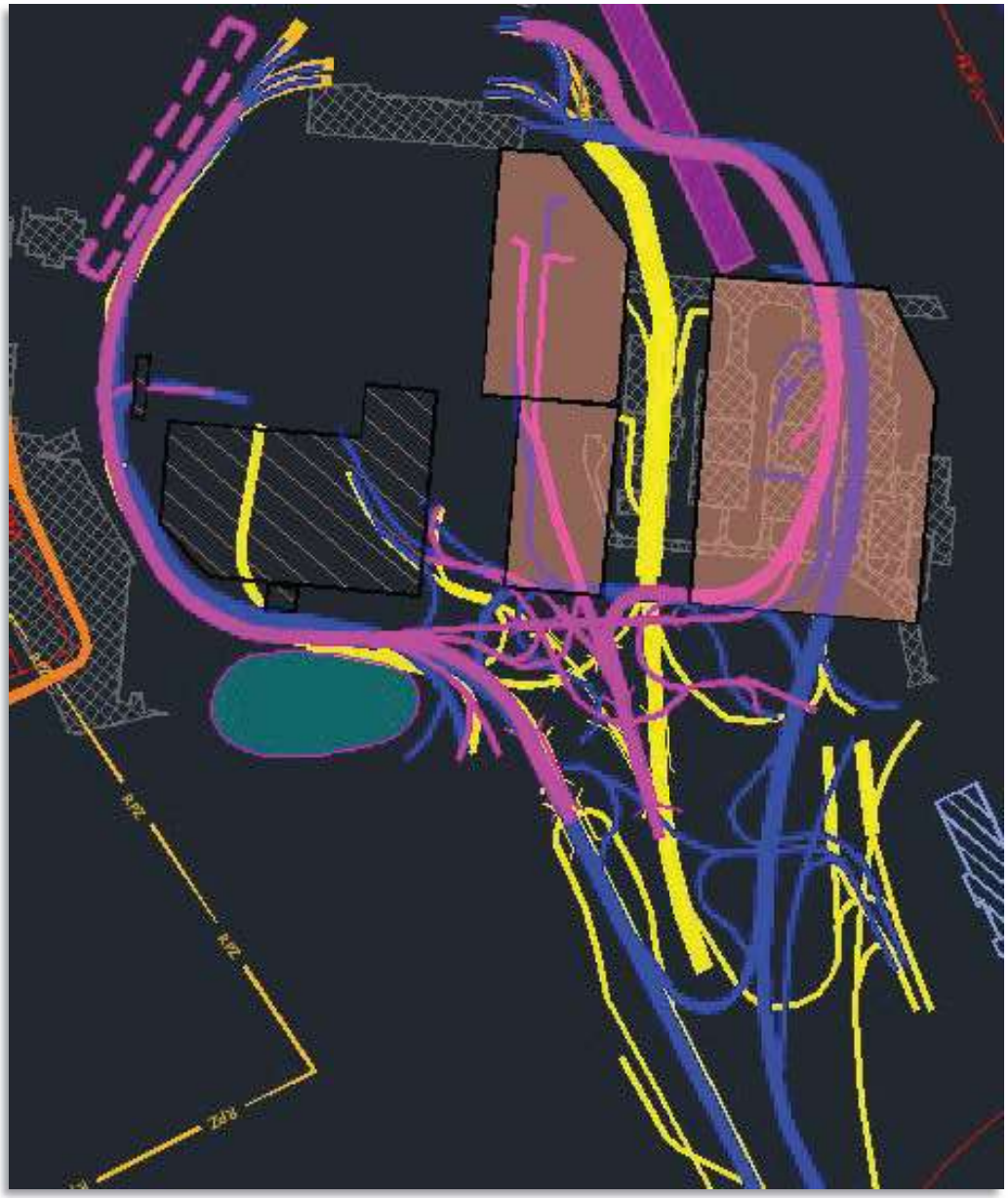
Alternative A

Alternative B

Alternative C

Parking

Roadway Overlay – Alternatives A, B, and C



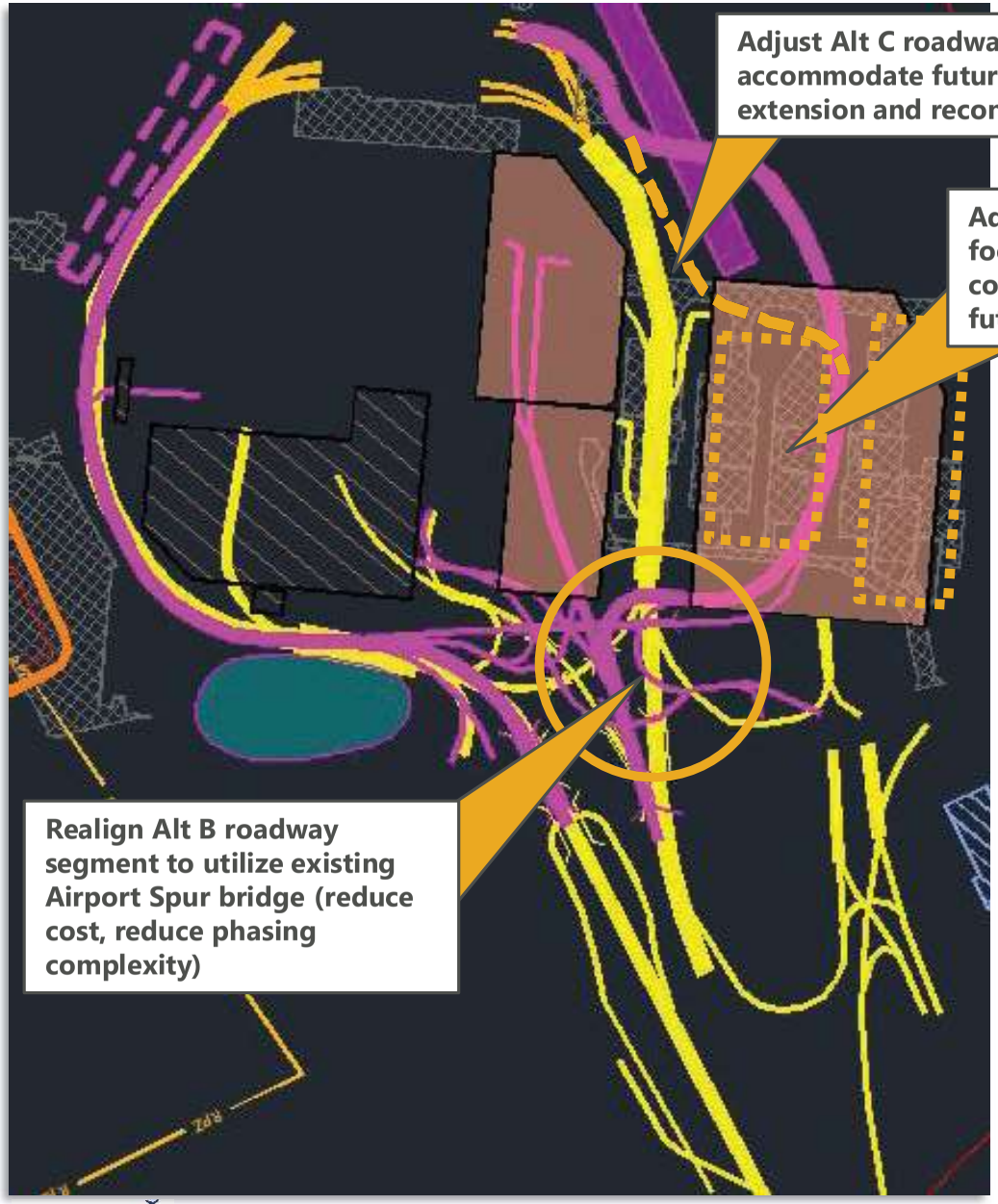
- Consider opportunities to adjust elements of roadway concepts to provide flexibility among concepts over long-term
- Timing of potential Airport Spur modifications limits ability to implement Alternative A in near- or mid-term
- Affected facilities
  - Terminal entrance roadway
  - Parking/rental car footprint
  - Air Cargo Way intersection

Alternative A

Alternative B

Alternative C

Roadway Overlay – Alternatives B and C

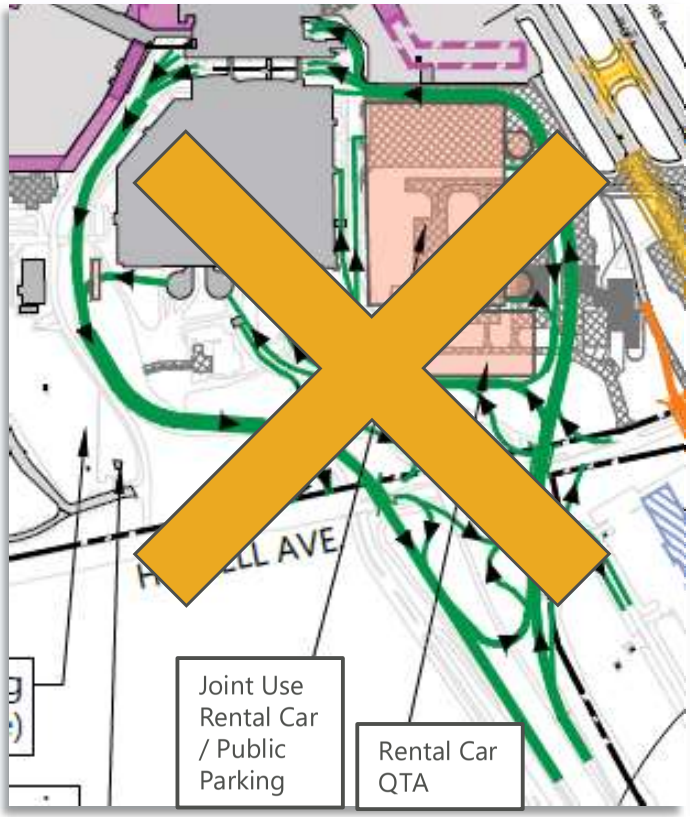


- Phase parking alternative to accommodate Alt B or Alt C when improvement is triggered (separated structure(s))
- Protect ability to adjust roadway configuration to Alternative A if long-range WisDOT plans allow

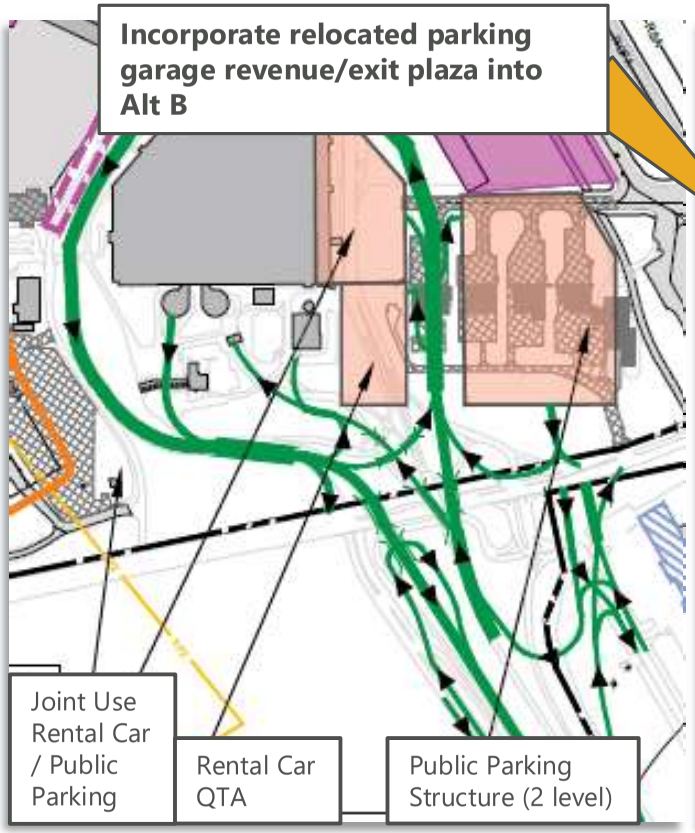
Alternative B

Alternative C

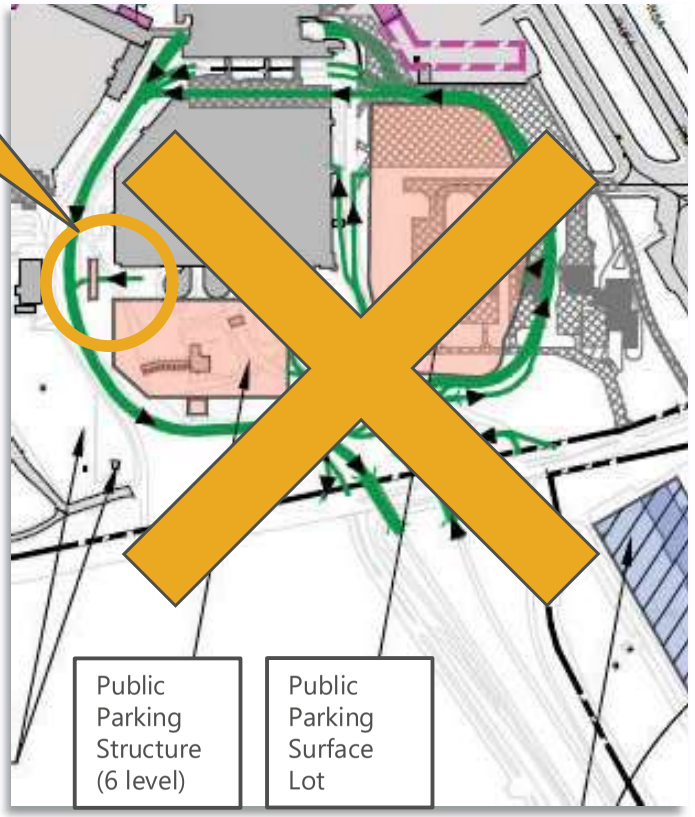
Roadway Conclusion



Alternative A



Alternative B
(Modified)



Alternative C

Parking

Parking Results

Public Parking

Parking Conclusion – Alternative A

Primary Advantages

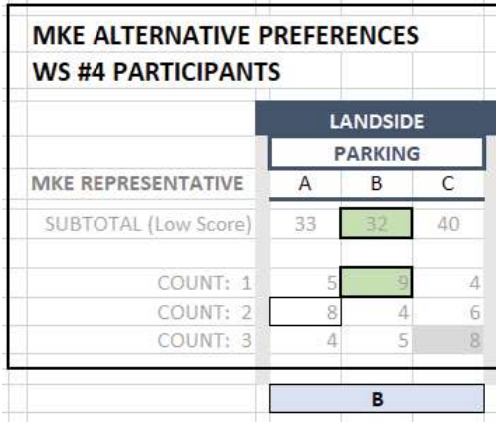
1. Proximity to terminal of significant portion of future public parking
2. Expanded remote surface parking increases economy parking (price sensitive users)

Primary Challenges

1. Affordability
2. Limited ability for incremental development or flexible phasing to respond to demand triggers (large-scale program driven by bridge relocation)
3. Large-scale landside program requires substantial financial commitment with potential to extend implementation duration
4. Prioritizes rental car capacity over parking capacity in terminal core (drives additional remote parking)
5. Joint use facility requires modification to accommodate Terminal Alternative B

Trade-offs (if selecting Alt A)

1. Affordability: large-scale landside program anticipated, dependent on bridge relocation
2. Competition with private parking operators (leakage) given expanded remote parking facilities
3. Integration with rental car structure creates project dependencies



MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE PARKING		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	33	32	40
COUNT: 1	5	9	4
COUNT: 2	8	4	6
COUNT: 3	4	5	8

B

Parking Conclusion – Alternative B

Primary Advantages

1. Proximity to terminal of significant portion of future public parking
2. Expanded remote surface parking increases economy parking (price sensitive users)
3. Parking improvements (2-level structure) can be implemented independent of roadway configuration (temporary connections)

Primary Challenges

1. Limited parking expansion capability beyond 2040 horizon (challenging to expand structure vertically; height limits due to ATC line-of-sight)
2. Roadway relocation required to accommodate joint rental car/parking facility
3. Affordability
4. Walking distance to terminal entrance stretches convenience (may require shuttle)
5. Remote surface parking not compatible with preferred Cargo Alternative C (requires additional replacement spaces)

Trade-offs (if selecting Alt B)

1. Phasing/implementation flexibility can be balanced with overall financial capability
2. Integration with rental car structure creates project dependencies

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE PARKING		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	33	32	40
COUNT: 1	5	9	4
COUNT: 2	8	4	6
COUNT: 3	4	5	8
		B	

Parking Conclusion – Alternative C

Primary Advantages

1. Proximity to terminal of all additional public parking
2. Parking facilities can be implemented largely independent of roadway improvements
3. Flexibility in parking facility phasing and implementation timing (align with demand)
4. Relative affordability

Primary Challenges

1. Height of expanded parking structure is limited (maximum 5 levels) by preferred Airside Alternative B (maintain runway 7L-25R in operation)
2. Surface parking facility requires modification to accommodate preferred Terminal Alternative B and supporting roadway
3. Affordability

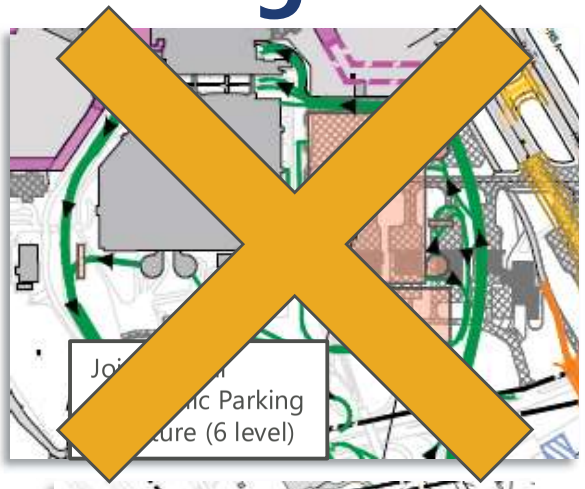
Trade-offs (if selecting Alt C)

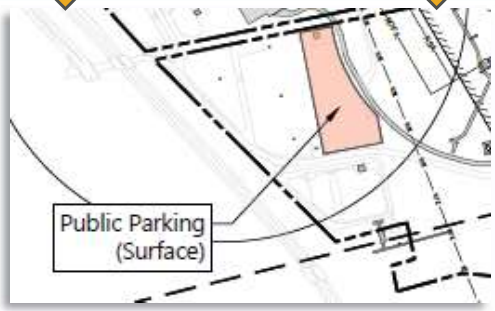
1. Prioritizes public parking proximity over rental car proximity
2. Concentrating public parking in core provides flexibility in scope and timing of improvements (financial feasibility)

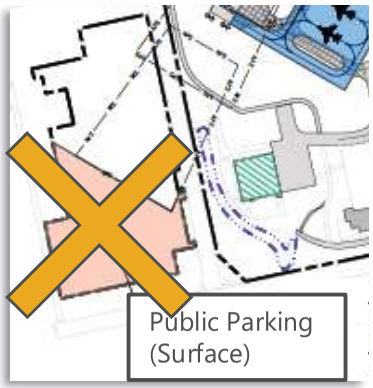
MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE		
	PARKING		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	33	32	40
COUNT: 1	5	9	4
COUNT: 2	8	4	6
COUNT: 3	4	5	8
		B	

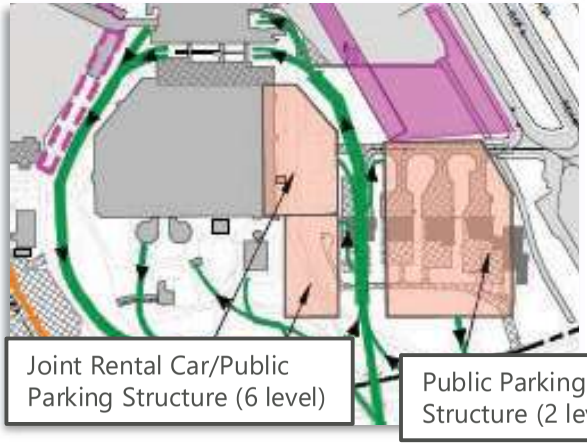
Parking Conclusion







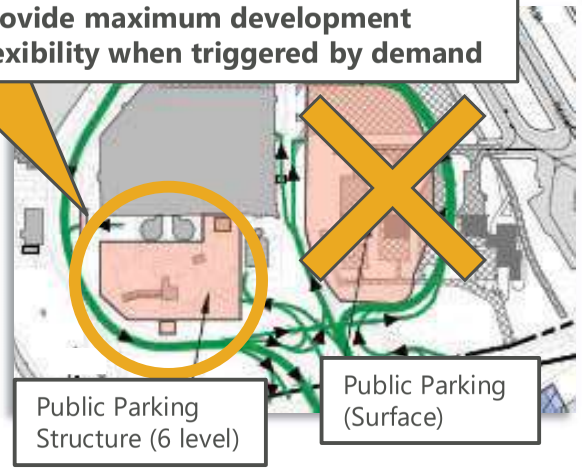
Alternative A



Alternative B

(Modified)

Incorporate expansion of existing parking structure into Alt B to provide maximum development flexibility when triggered by demand



Alternative C

Rental Car

Landside Results

Rental Car

Rental Car Facilities Conclusion – Alternative A

Primary Advantages

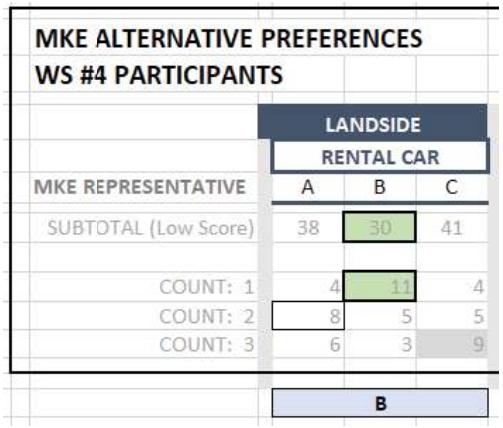
1. Proximity to terminal of rental car facilities
2. On-site QTA reduces vehicle traffic (on terminal roadway and Howell Ave; currently shuttling to remote QTA)

Primary Challenges

1. Not compatible with preferred Terminal Alternative B (modification opportunity [increased height] limited by line-of-sight considerations)
2. Large-scale landside program requires substantial financial commitment with potential to extend implementation duration
3. Affordability

Trade-offs (if selecting Alt A)

1. Rental car facilities reduce long-term parking capacity in terminal core → more remote parking in competitive environment
2. Integration with parking structure creates project dependencies (timing may not align with demand)



MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE		
	RENTAL CAR		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	38	30	41
COUNT: 1	4	11	4
COUNT: 2	8	5	5
COUNT: 3	6	3	9
		B	

Rental Car Facilities Conclusion – Alternative B

Primary Advantages

1. Proximity to terminal of rental car facilities
2. On-site QTA reduces vehicle traffic (on terminal roadway and Howell Ave; currently shuttling to remote QTA)

Primary Challenges

1. Affordability
2. Large-scale landside program requires substantial financial commitment with potential to extend implementation duration
3. Proximity of QTA (vehicle fueling) to ATCT (blast mitigation, other security measures may be required → cost drivers)

Trade-offs (if selecting Alt B)

1. Rental car facilities reduce parking capacity in terminal core → more remote parking in competitive environment
2. Integration with parking structure creates project dependencies (timing may not align with demand)

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE		
	RENTAL CAR		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	38	30	41
COUNT: 1	4	11	4
COUNT: 2	8	5	5
COUNT: 3	6	3	9
		B	

Rental Car Facilities Conclusion – Alternative C

Primary Advantages

1. Allows 2040 parking demand to be accommodated at close-in location
2. Rental car activity not on terminal roadway network; introduce rental car shuttles as new vehicle mode in landside environment
3. Avoids project dependencies between rental car and parking facilities
4. Simplified construction phasing (site outside of terminal core allows more efficient construction) → cost driver

Primary Challenges

1. Travel time/convenience to remote facility (weakens rental car location as differentiator)
2. Desirability of designated remote location for other revenue generating uses *(NOTE: Remote CONRAC may be accommodated on other remote sites)*

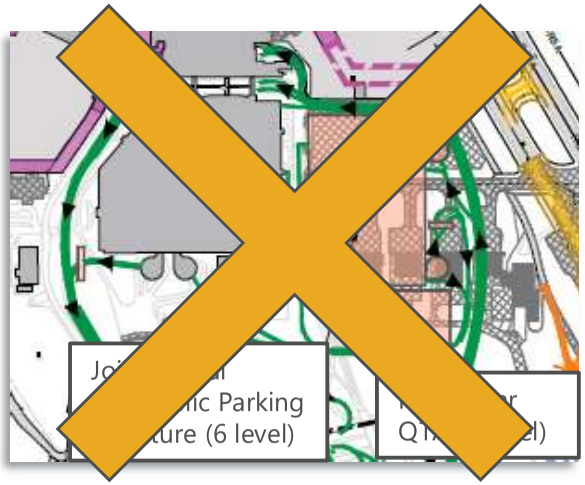
Trade-offs (if selecting Alt C)

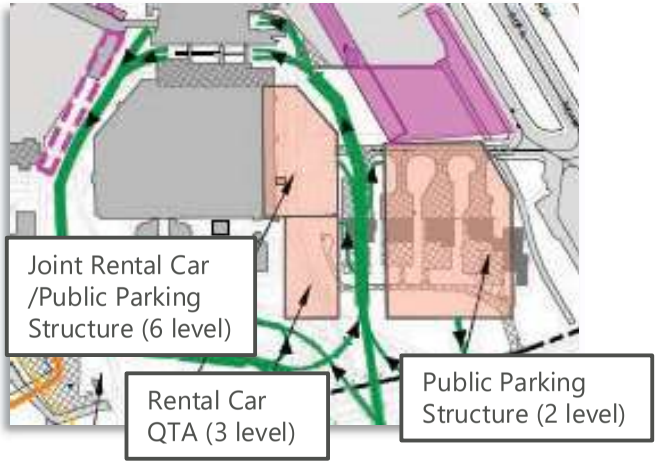
1. Minimize dependency on roadway and parking facility projects (timing and cost)
2. Remote parcel (irrespective of location) not available for alternative revenue-generating development/uses

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

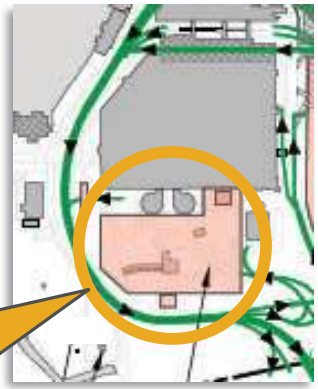
	LANDSIDE		
	RENTAL CAR		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	38	30	41
COUNT: 1	4	11	4
COUNT: 2	8	5	5
COUNT: 3	6	3	9
		B	

Rental Car Conclusion





(NOTE: Remote CONRAC may be accommodated on other remote sites)



Incorporate expansion of existing parking structure into Alt B to provide maximum development flexibility when triggered by rental car or parking demand

Alternative A

Alternative B
(Modified)

Alternative C

Landside Results

Curbside

Curbside Conclusion – Alternative A/B

Primary Advantages

1. Affordability – linear extension and allocation of curb may require canopy/enclosed space
2. Consistency with current operation
3. Linear curbside extension flexibility is maximized by full single-level roadway system; facilitates incremental expansion

Primary Challenges

1. Curbfront management necessary to protect roadway throughput capacity

Trade-offs (if selecting Alt A or Alt B or hybrid)

1. Management of curbside (policy), reallocating curbside among modes, maintains level of service with minimal infrastructure investment

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	LANDSIDE		
	CURBSIDE		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	30	30	30
COUNT: 1	4	6	5
COUNT: 2	7	3	5
COUNT: 3	4	6	5
		B	

Curbside Conclusion – Alternative C

Primary Advantages

1. Maximizes terminal roadway capacity with limited infrastructure investment
2. Allows for segregation of traffic modes

Primary Challenges

1. Limitation on vehicle types that can utilize remote curbside (vertical clearance); *(Note: vertical limitation can be mitigated by demo of 1-2 bays of existing parking structure when reconstructed)*
2. Remote curb users have longer walk than current; multiple vertical transitions to cross terminal roadway
3. Aging garage structure rehabilitation (or reconstruction) could impact remote curb
4. Displaces existing rental car customer counters and operations

Trade-offs (if selecting Alt C)

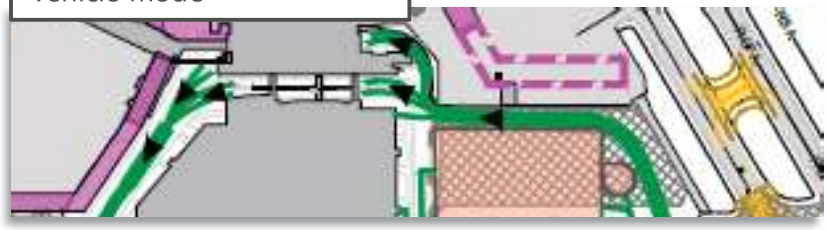
1. Efficient curbside environment increases passenger vertical transitions to use remote curb
2. Requires construction of CONRAC facility prior to implementation of interior garage remote curb

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

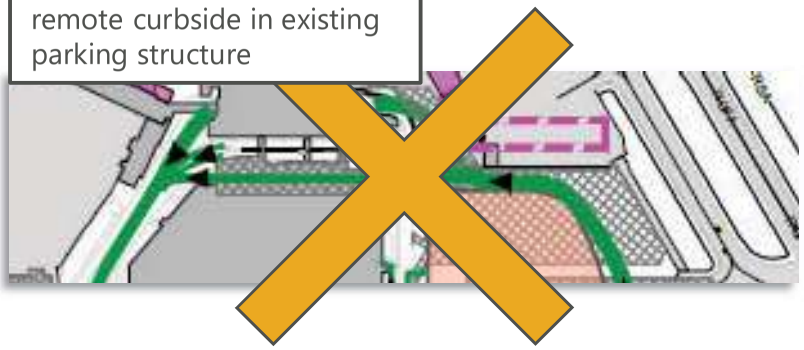
	LANDSIDE		
	CURBSIDE		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	30	30	30
COUNT: 1	4	6	5
COUNT: 2	7	3	5
COUNT: 3	4	6	5
		B	

Curbside Conclusion

Curbside reallocation by vehicle mode



Curbside reallocation and remote curbside in existing parking structure



Alternative A/B

(Modified – curbfront reallocation by mode as triggered by demand)

Alternative C

Support Facilities

Cargo Results

Cargo Facilities Conclusion – Alternative A

Primary Advantages

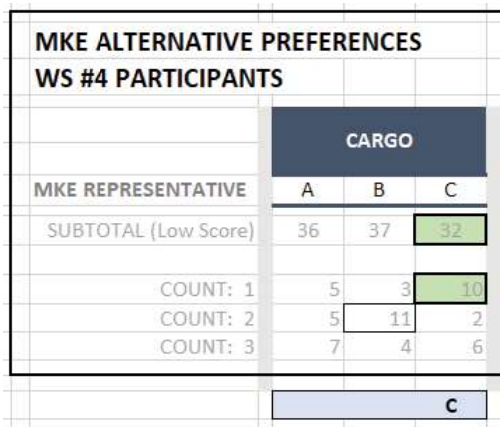
1. Incremental expansion potential in response to demand
2. Dedicated cargo campus reduces cargo-related traffic at Air Cargo Way and Howell Ave intersection
3. MKE Regional Business Park remains available for revenue generating uses

Primary Challenges

1. Affordability – significant airfield infrastructure required to support new cargo campus
2. Undeveloped land is primary drainage area for watershed (significant drainage and potential environmental mitigation required to develop)
3. Not compatible with ultimate protection of RW 1R-19L airspace

Trade-offs (if selecting Alt A)

1. Substantial capital cost
2. Cargo development not compatible with RW 1R-19L protection (ultimate condition)



MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

MKE REPRESENTATIVE	CARGO A	CARGO B	CARGO C
SUBTOTAL (Low Score)	36	37	32
COUNT: 1	5	3	10
COUNT: 2	5	11	2
COUNT: 3	7	4	6
			C

Cargo Facilities Conclusion – Alternative B

Primary Advantages

1. Incremental expansion potential in response to demand
2. Dedicated cargo campus reduces cargo-related traffic at Air Cargo Way and Howell Ave intersection
3. Post-2040 expansion capability

Primary Challenges

1. Affordability – significant airfield infrastructure required to support new cargo campus
2. Undeveloped land is primary drainage area for watershed (significant drainage and potential environmental mitigation required to develop)
3. Not compatible with ultimate protection of RW 1R-19L airspace

Trade-offs (if selecting Alt B)

1. Substantial capital cost
2. Cargo development not compatible with RW 1R-19L protection (ultimate condition)

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	CARGO		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	36	37	32
COUNT: 1	5	3	10
COUNT: 2	5	11	2
COUNT: 3	7	4	6
			C

Cargo Facilities Conclusion – Alternative C

Primary Advantages

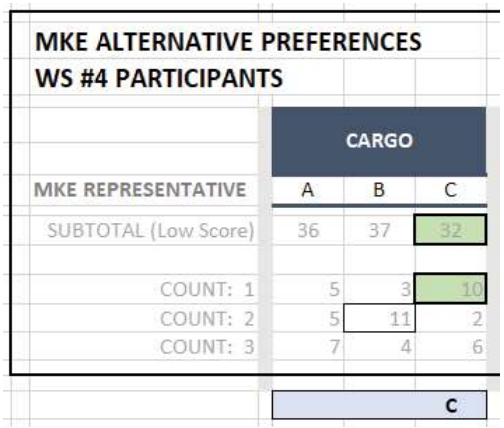
1. Incremental expansion potential in response to demand
2. Redevelopment of majority of MKE Regional Business Park for aeronautical use
3. Relative affordability

Primary Challenges

1. Phased redevelopment/upgrade of existing west cargo facilities is operationally challenging

Trade-offs (if selecting Alt C)

1. Relatively affordable cargo development (avoids substantial airfield/taxiway investment)



MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	CARGO		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	36	37	32
COUNT: 1	5	3	10
COUNT: 2	5	11	2
COUNT: 3	7	4	6
			C

Cargo Locations

Alternative A

Alternative B

Alternative C

General Aviation Results

General Aviation Facilities Conclusion – Alt. A

Primary Advantages

1. Incremental expansion potential in response to demand
2. Development concentrated in area with limited utility for other types of development
3. xxx

Primary Challenges

1. Facilities configuration requires adjustment to accommodate preferred Airfield Alternative B
2. Corporate GA facilities not segregated from small GA facilities
3. Not compatible with ultimate protection of RW 1R-19L airspace

Trade-offs (if selecting Alt A)

1. Consolidation of GA facilities does not facilitate segregation of corporate GA development
2. GA development not compatible with RW 1R-19L protection (ultimate condition)

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	GENERAL AVIATION		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	38	29	38
COUNT: 1	4	11	3
COUNT: 2	5	3	10
COUNT: 3	8	4	5
		B	

General Aviation Facilities Conclusion – Alt. B

Primary Advantages

1. Incremental expansion potential in response to demand
2. Compatible with ultimate RW 1R-19L
3. Segregation of corporate GA facilities from small GA facilities

Primary Challenges

1. Corporate GA development abutting Layton Ave may cause community concern
2. Displaces existing aircraft maintenance facilities

Trade-offs (if selecting Alt B)

1. Segregation of corporate GA facilities (abutting Layton Ave) may not be compatible with community preferences

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	GENERAL AVIATION		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	38	29	38
COUNT: 1	4	11	3
COUNT: 2	5	3	10
COUNT: 3	8	4	5
		B	

General Aviation Facilities Conclusion – Alt. C

Primary Advantages

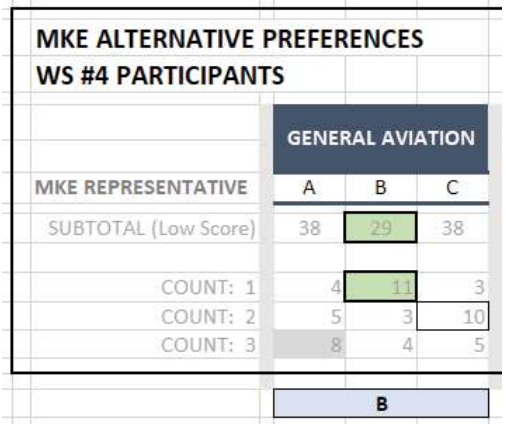
1. Incremental expansion potential in response to demand
2. Limited segregation of corporate GA facilities from small GA facilities
3. Development concentrated in area with limited utility for other types of development

Primary Challenges

1. Corporate GA facilities in north quadrant require adjustment to accommodate preferred Airfield Alternative B

Trade-offs (if selecting Alt C)

1. Limited segregation of corporate GA facilities necessary to avoid development abutting Layton Ave

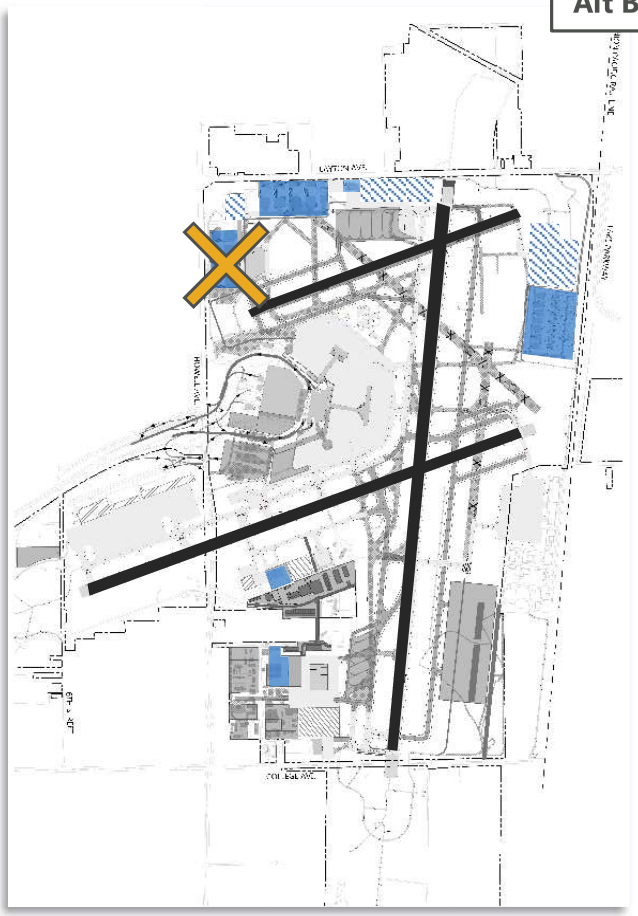


MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	GENERAL AVIATION		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	38	29	38
COUNT: 1	4	11	3
COUNT: 2	5	3	10
COUNT: 3	8	4	5
		B	

General Aviation Locations

Alternative A



Alternative B

(Modified)

Alternative C

Maintenance Facilities Results

Maintenance Facilities Conclusion – Alt. A

Primary Advantages

1. County Highway Department remains in existing facilities
2. Consolidated Airport maintenance facilities
3. Snow removal vehicle staging accommodated on roadway (no longer staged on TW Y)

Primary Challenges

1. Land exchange with WiANG required for Airport Maintenance Facility development (Guard West parcel)
2. Development of Guard West parcel influenced by future dual parallel TW R/TW Q configuration

Trade-offs (if selecting Alt A)

1. Land exchange/transaction to maintain consolidated and contiguous facilities

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRPORT MAINTENANCE		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	33	35	31
COUNT: 1	6	2	9
COUNT: 2	3	12	2
COUNT: 3	7	3	6
			C

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRCRAFT MAINTENANCE		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	40	27	38
COUNT: 1	1	12	5
COUNT: 2	9	3	6
COUNT: 3	7	3	7
			B

Maintenance Facilities Conclusion – Alt. B

Primary Advantages

1. County Highway Department remains in existing facilities
2. Snow removal vehicle staging accommodated on roadway (no longer staged on TW Y)
3. Aircraft maintenance campus accommodates incremental/phased expansion
4. Redevelopment of majority of MKE Regional Business Park for aeronautical use

Primary Challenges

1. Airport maintenance facilities partially dispersed
2. With deicing pad, concentration of aircraft maintenance facilities may require dual parallel taxiway with increased activity

Trade-offs (if selecting Alt B)

1. Dispersed Airport maintenance facilities does not require land transaction

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRPORT MAINTENANCE		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	33	35	31
COUNT: 1	6	2	9
COUNT: 2	3	12	2
COUNT: 3	7	3	6
			C

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

	AIRCRAFT MAINTENANCE		
MKE REPRESENTATIVE	A	B	C
SUBTOTAL (Low Score)	40	27	38
COUNT: 1	1	12	5
COUNT: 2	9	3	6
COUNT: 3	7	3	7
		B	

Maintenance Facilities Conclusion – Alt. C

Primary Advantages

1. Consolidated Airport maintenance facilities
2. Snow removal vehicle staging accommodated on roadway (no longer staged on TW Y)
3. Aircraft maintenance campus accommodates incremental/phased expansion

Primary Challenges

1. Relocation to County Highway Department facilities to MKE Regional Business Park parcel (not available for revenue generating development)
2. Aircraft maintenance development abutting Layton Ave may cause community concern

Trade-offs (if selecting Alt C)

1. Relocation of County Highway Department is not highest and best use of MKE Regional Business Park land
2. Consolidated aircraft maintenance campus location (along Layton Ave) may cause community concern

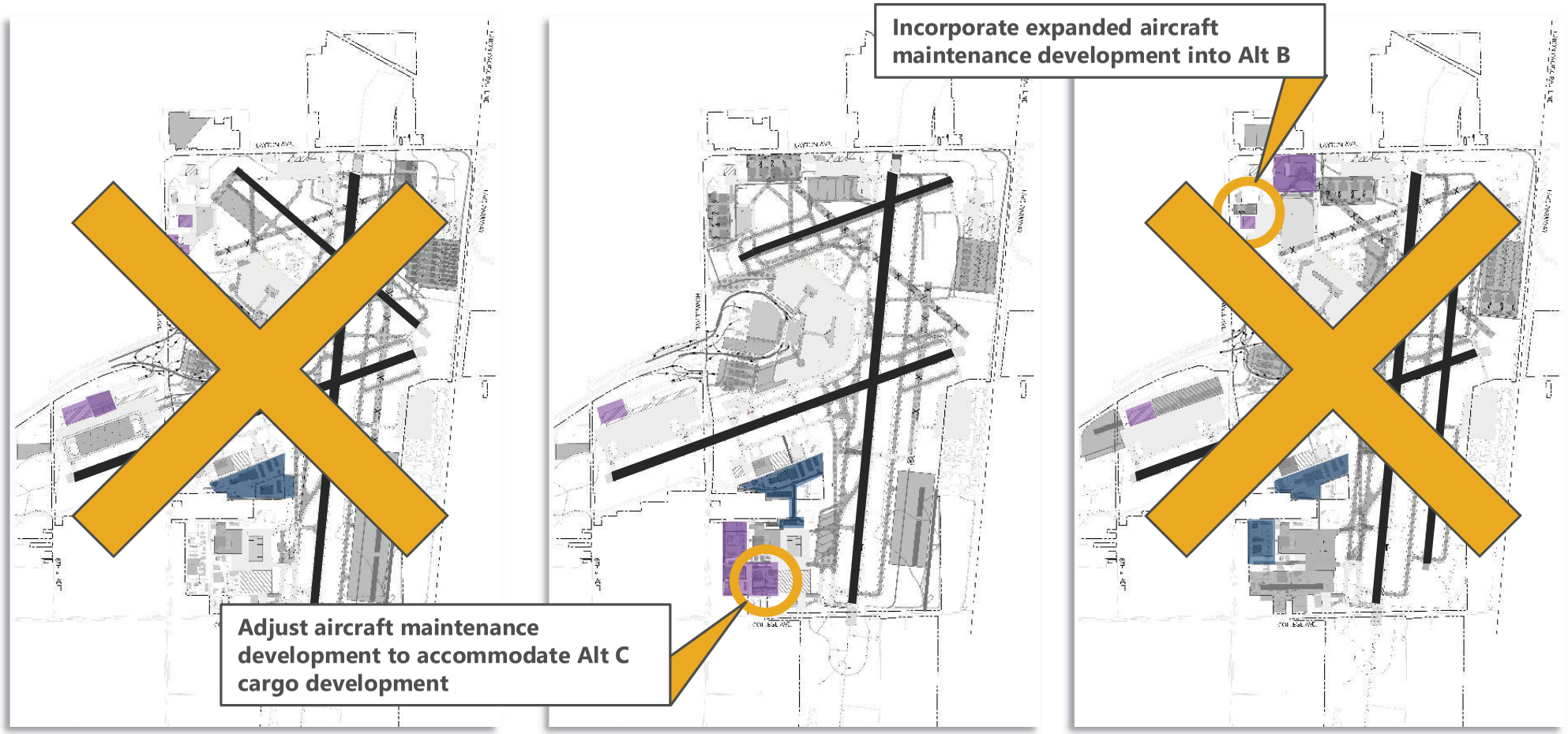
MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

MKE REPRESENTATIVE	AIRPORT MAINTENANCE A	B	C
SUBTOTAL (Low Score)	33	35	31
COUNT: 1	6	2	9
COUNT: 2	3	12	2
COUNT: 3	7	3	6
			C

MKE ALTERNATIVE PREFERENCES
WS #4 PARTICIPANTS

MKE REPRESENTATIVE	AIRCRAFT MAINTENANCE A	B	C
SUBTOTAL (Low Score)	40	27	38
COUNT: 1	1	12	5
COUNT: 2	9	3	6
COUNT: 3	7	3	7
			B

Aircraft and Airport Maintenance Areas



Alternative A

Alternative B
(Modified)

Alternative C

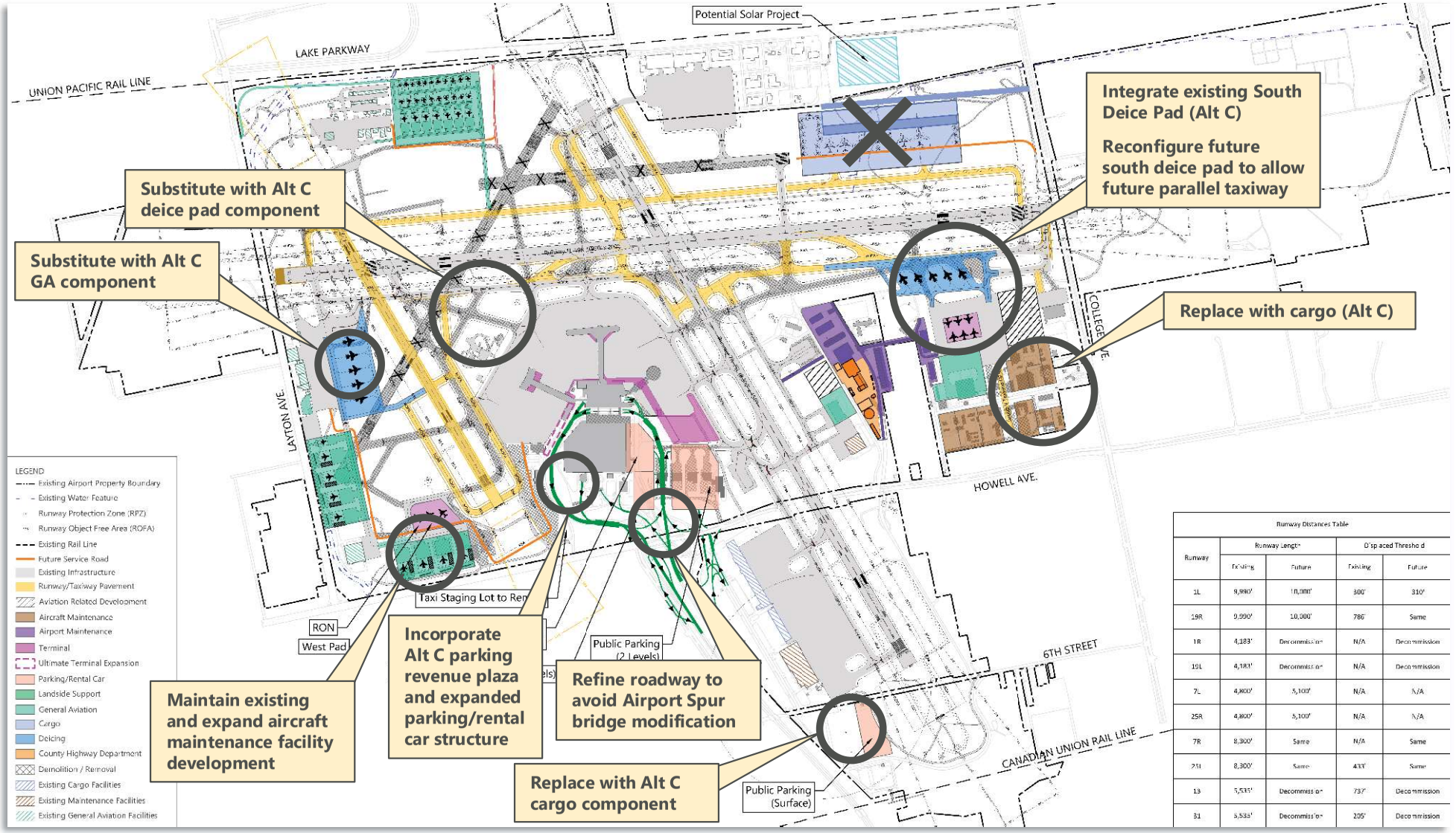
Legend

Aircraft Maintenance Airport Maintenance

Preferred Alternative

Requires Concept Refinement

Preferred Alternative (refinements identified)



Next Steps

- TAG/SAG Meeting (scheduled, September 25, 2020)
  - Review alternatives shortlisting and evaluation
  - Present Preliminary Preferred Alternative for feedback
- Refine preferred alternative
  - MKE input (comments discussed today)
  - TAG/SAG input
- Upcoming (triggered) tasks
  - Cost estimating
  - Implementation planning
  - Financial analysis / CIP
  - Environmental Overview & Noise analysis
  - Airport Layout Plan preparation

APPENDIX D.5

Evaluation Matrix

		Constraints (reduces runway intersections, does not increase runway	Segregation (in operating configurations)	Operational Flexibility/Redundancy (provides parallel	Long-Term Runway Capacity (Post 2040)	Potential (relative to the existing terminal area)	Construct	Winter Operations	Additional Taxi Capability	Departure Runway Ends in Winter Operations	future exp additional positi
		0 Alternative reduces runway intersections, but maintains converging runway configuration.	0 Alternative does not allow traffic segregation (runway configurations are dependent).	0 Alternative does not provide a parallel runway configuration.	0 Alternative does not facilitate long-term capacity benefits (no parallel runways).	0 Alternative maintains Runway 7L-25R limiting the development opportunity to the immediate north.	0 Alternative would require significant runway and taxiway construction costs.	0 Deice pad locations create compatibility issues to adjoining facilities (both Runway 1L & 19R)	0 Deice Pad Location does not provide a direct route between Terminal and Runway (for both 1L & 19R)	0 Does not provide deicing positions in proximity to either Runway 1L or 19R	0 Does not provi deicing positio Runway 1L or 1
		1 Alternative reduces runway intersections, but would increase runway crossings.	1 Alternative allows traffic segregation with runway dependencies (closely spaced	1 Alternative does provide parallel runways with the second parallel being limited in length.	1 Alternative does facilitate long-term capacity benefits with limitations.	1 Alternative maintains Runway 13-31 enhancing the development opportunity to the immediate	1 Alternative would have minimal runway and taxiway construction costs.	1 Deice Pad locations may introduce jet blast or deice spray concerns to one end (1L or 19R)	1 Requires an indirect route from Terminal to Deice Pad to Runway (for either 1L or 19R)	1 Provides deicing positions in proximity to Runway 1L or 19R, but not both	1 Provides space positions at Ru but not both
		2 Alternative reduces runway intersections and crossings.	2 Alternative allows traffic segregation with no runway dependencies (widely spaced parallel runways).	2 Alternative does provide parallel runways with the second parallel providing a length of up to 7,500'.	2 Alternative does facilitate long-term capacity benefits.	2 Alternative maximizes the development opportunity to the immediate north decommissioning both Runway 13-31 and 7L-25R	2 Alternative would be limited to taxiway construction costs.	2 Deice Pad locations do not impose jet blast or deicing spray concerns onto adjoining facilities	2 Provides direct taxi route from Terminal-to Deice Pad- to Runway (for both 1L & 19R)	2 Provides deicing positions in good proximity to both Runway 1L & 19R	2 Provides space positions at bo 19R
	WEIGHTING FACTOR: 0.5 to 2.0	1.00	1.50	1.00	0.50	0.50	2.00	1.00	1.00	1.00	1.00
ow for he ation.		0	0	0	0	1	2	2	0	0	0
w for and he ation.		2	2	1	2	0	1	1	2	2	1
w for he		1	1	2	2	2	0	1	2	2	1

		Expandability Beyond 2040	Requires Relocation of Existing Gates	Construction Complexity	Impact to MKE Admin Space	Consolidation of Operations	Location of RON	Expand in,
		0 Terminal does not have additional expansion area beyond 2040 planning horizon	0 Many (2+) gates will be closed or relocated during construction	0 Requires connections and rebuild of existing, rework of pavement	0 Relocation Needed to MKE Admin Space	0 Large number of separated concourses ; Small groupings of gates on each concourse	0 RON remote from terminal area	0 Limi
		1 Terminal can expand beyond 2040 planning horizon, expansion area limited	1 Few (1 or 2) gates will be closed or relocated during construction	1 Limited rebuild of existing	1 Limited Relocation needed of MKE Admin Space	1 Concourse with useable number of gates	1 Some RON near terminal Area	1 Som
ON		2 Multiple areas of potential ultimate expansion	2 No gates will be closed or relocated during construction	2 All new build on open sites no rework of pavement	2 No Relocation Needed to MKE Admin Space	2 Fewer concourses with high density of gates	2 RON near from terminal area	2 No L
	WEIGHTING FACTOR: 0.5 to 2.0	1.00	1.00	2.00	1.00	1.00	1.00	0.50
oncourse E		0	1	2	0	0	1	
B area (Stem of		1	2	1	1	1	0	
course C es dates 6		2	0	0	1	2	2	

		Expandability Beyond 2040	Requires Relocation of Existing Gates	Construction Complexity	Impact to MKE Admin Space	Consolidation of Operations	Location of RON	Expand in,
		0 Terminal does not have additional expansion area beyond 2040 planning horizon	0 Many (2+) gates will be closed or relocated during construction	0 Requires connections and rebuild of existing, rework of pavement	0 Relocation Needed to MKE Admin Space	0 Large number of separated concourses ; Small groupings of gates on each concourse	0 RON remote from terminal area	0 Limi
		1 Terminal can expand beyond 2040 planning horizon, expansion area limited	1 Few (1 or 2) gates will be closed or relocated during construction	1 Limited rebuild of existing	1 Limited Relocation needed of MKE Admin Space	1 Concourse with useable number of gates	1 Some RON near terminal Area	1 Som
ON		2 Multiple areas of potential ultimate expansion	2 No gates will be closed or relocated during construction	2 All new build on open sites no rework of pavement	2 No Relocation Needed to MKE Admin Space	2 Fewer concourses with high density of gates	2 RON near from terminal area	2 No L
	WEIGHTING FACTOR: 0.5 to 2.0	1.00	1.00	2.00	1.00	1.00	1.00	0.50
oncourse E		0	1	2	0	0	1	
B area (Stem of		1	2	1	1	1	0	
course C es dates 6		2	0	0	1	2	2	

RIPTION	Relative Cost to Construct	Implementation Complexity	Impact to Airport Spur Bridges (single or multiple locations)	Visibility to Terminal Core Area	Segregates Traffic Based on Destination	Operational Impact of Construction	Benefits to Air Cargo Way Circulation	Mitigates Line of Sight Impacts and Improves Wayfinding	Increases Volume of Curbside Traffic	Expandable Beyond 2040 Horizon
	0 High cost to construct	0 Most Complex, Many Phases of Construction and detours	0 Multiple Bridges impacted or rebuilt	0 Traffic seems to be diverting in directions not visibly linear to destination	0 More or frequent decisions needed to wayfinding to destination	0 Most complex construction impacts	0 Does the least to improve traffic issues at Air Cargo Way	0 Least early lane separation for Departures/Arrivals /GT Traffic	0 Large increase of curbside volume	0 Curbside has little room t expand
	1 Average construction cost relative to other alternatives	1 Average Complexity to	1 Single new Bridge required and may require widening of an existing bridge	1 Some Terminal Core Visibility, with some structures obstructing view	1 Some Binary Decisions, but more frequent choices need to be made	1 Some phasing of construction requiring detours	1 Improves Air Cargo Way access	1 Some early lane separation for Departures/Arrivals /GT Traffic	1 Some increase to landside volume	1 Curbside has flexibility to in length toward Concour
	2 low relative cost to construct	2 Least amount of road detours and phases of construction	2 No Bridges impacted, but may require shoulder narrowing to allow for extra lanes	2 Natural Flow of traffic to Terminal Core Area	2 Easy Binary Decisions based on Parking vs. Terminal options	2 Construction has little impact on roadways or Terminal construction	2 Most innovative solution to Air Cargo Way Circulation	2 Best Early Lane separation for Departures/Arrivals/GT Traffic	2 limited or no increase to curbside column	2 Curbside has flexibility to in length toward Concour and expand behind ConR Counters into garage
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
elocate Airport Spur Bridges segregation of parkers and terminal Way, d west of Howell Ave.	0	0	0	2	2	1	1	2	1	1
arking Expansion of Existing Garage ccommodate parking garage expansion Ave. expanded and location modified Cargo Way	1	0	1	1	0	1	1	1	1	1
ance Road South of Parking Expansion erminal entrance road cations	1	1	2	0	2	2	0	1	0	1

	Parking	BEST USE OF LAND	Walking Distances (close-in parking)	(future parking areas)	Construct (structure vs surface; all landside components)	Complexity	Complexity	New Exit Plaza for Parking Garage to Meter Traffic Flow onto Exit Roadway			Use of Land	Complexity	Between Ready/Return Area and Service Area	
0			0 High increase in walking distances	0 Majority of facilities require shuttling	0 High cost to construct	0 High construction complexity	0 More challenging operational complexity	0 No new exit plaza to meter traffic flow onto exit roadway	0 Extremely difficult to expand facilities to accommodate requirements beyond 2040	0 All facilities require shuttling		0 High construction complexity		0 Ex…
1			1 Moderate increase in walking distances	1 Some facilities require shuttling	1 Average construction cost relative to other alternatives	1 Average construction complexity	1 Average operational complexity	1 New exit plaza to somewhat meter traffic flow onto exit roadway	1 Somewhat difficult to expand facilities to accommodate requirements beyond 2040	1 Facilities are walkable, but also provide a shuttle		1 Average construction complexity		1 So…
2			2 No increase in walking distances	2 No facilities require shutting	2 low relative cost to construct	2 Low construction complexity	2 Low operational complexity	2 New exit plaza to adequately meter traffic flow onto exit roadway	2 Not difficult to expand facilities to accommodate requirements beyond 2040	2 No facilities require shutting		2 Low construction complexity		2 No…
	1.00	1.00	1.00	2.00	1.00	1.50	1.50	1.50	1.50	2.00	1.00	1.00	1.00	1.50
acility (Structure)			0	0	1	1	1	1	1	1		0		
rking Structure South of			1	1	0	0	0	0	1	2		0		
e for Public Parking, New			0	1	1	1	1	1	2	0		2		

		Creates a Campus Environment (Consolidation)	Impact to Existing Facilities	Compatibility with Roadway Network	Implementation Complexity	Airside Operational Complexity	Creates a Campus Environment (Consolidation)	Corporate Aviation Visibility and Consolidation	Access Locations	Allows for Expansion Beyond 2040 Need
		0 Multiple cargo facilities mixed with a single function non-cargo facility	0 Major impact on facilities. Relocation more difficult.	0 Major impact on facilities. Relocation more difficult.	0 Major facility relocation prior to implementation	0 Major constraints to airside access and cargo campus functionality	0 Multiple GA facilities mixed with a single function non-GA facility	0 Location(s) removed from roadways with poor visibility ; corporate facilities in multiple areas of the airfield.	0 Limited proximity to existing landside and/or major road infrastructure improvements needed.	0 Constrained but possible expansion with major facility relocation or property acquisition
		1 Consolidates all activity into two separate campuses	1 Some impact on facilities, with potential relocation of facilities	1 Some impact on facilities, with potential relocation of facilities	1 Minor facility relocation prior to implementation	1 Minor constraints to airside access and cargo campus functionality	1 Consolidates all activity GA into two separate campuses	1 Provides landside visibility to some corporate hangars but not others. Corporate facilities	1 Proximity to landside with minor road infrastructure improvements needed.	1 Slightly constrained, possible expansion with minor facility relocation or property
		2 Consolidates all cargo activity into a single campus	2 Minimal impact	2 Minimal impact	2 Available for immediate deployment or expansion	2 No constraints to taxiway and runway access. No interference with cargo	2 Consolidates all GA activity into a single campus	2 Location provides good visibility and access from public roadways. Good consolidation of	2 Immediate access and proximity to landside	2 Unconstrained
	WEIGHTING FACTOR: 0.5 to 2.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ed southeast on		2	2	1	2	2				
ed southeast		1	1	1	1	2				
ated south		1	0	2	1	1				
							2	1	1	1
nsion							1	2	1	2
nsion							0	0	0	1

	Creates A Campus Environment (Consolidation)	Impact to Existing Facilities	Proximity to GRE	Provides Space for Future Growth and / or Consolidation	Requires Land Transaction with WiANG	Relocates Highway Department Facilities	Allows for Staging of SRE off taxiway	Landside/Airside split accommodates extended Per. Service Road	M
	0 Maintenance operations occurring within three or more regions of the Airport	0 Requires relocation of some existing maintenance facilities and future site(s) require additional facility relocations.	0 Future maintenance operations shown remotely located from GRE	0 Does not provide space for future growth or expansion	0 Requires land transaction with WiANG	0 Requires complete displacement of County Highway Department Facilities	0 Does not provide staging of SRE equipment off movement area taxiways	0 Resulting perimeter road alignment accommodates smaller service vehicles, but challenging for larger equipment to negotiate	0 Air sca be 44
	1 Creates opportunity to clusters aircraft maintenance operations	1 Requires relocation of some existing maintenance facilities.	1 Some maintenance facilities remotely located from GRE, but	1 Provides room for either growth or consolidation	1 Does not require land transaction with WiANG	1 Requires some relocation of Highway Department Facilities	1 Provides staging of SRE equipment off movement area	1 Provides a perimeter service road with some minor curves,	1 Gro ma
	2 Consolidates all maintenance activity into a single campus	2 No impact to existing facilities	2 All maintenance operations within close and direct taxi distance to GRE	2 Provides room for future growth and consolidation		2 Does not impact County Highway Department Facilities		2 Provides a perimeter service road alignment easily negotiated by SRE & Maintenance equipment	2 Pro ma car
WEIGHTING FACTOR: 0.5 to 2.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
xpansion	1	1	1	1					
)	2	0	2	2					
cilities remain in	1	1	0	1					
Property, County					0	1	0	1	
of County					1	1	0	2	
ace, Operations					1	0	1	0	

Alternative						SCOR
RNATIVE A	7.5	20	6.5	15	7	56
RNATIVE B	16	17.5	7	13	11	64.
RNATIVE C	12.5	26.5	7.5	7	7	60.