Chapter 1.0 Purpose and Need

1.1 Introduction

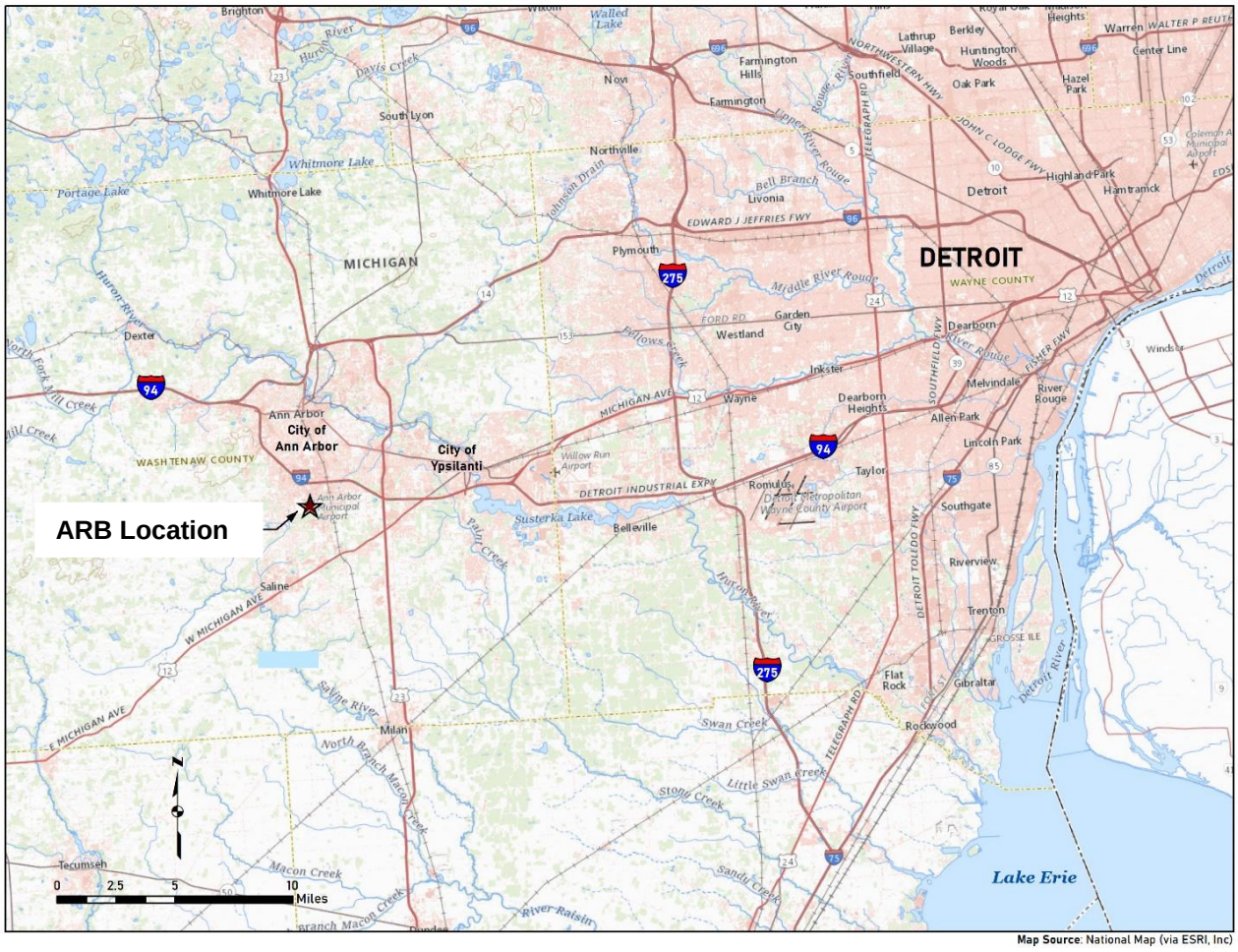
The Ann Arbor Municipal Airport (ARB or Airport) is a public-use, general aviation airport owned and operated by the City of Ann Arbor. The Airport is within Pittsfield Charter Township, Washtenaw County, in southeastern Michigan (**Figure 1.0 Location Map**). Locally, ARB is approximately four miles south of downtown Ann Arbor, approximately 40 miles west of Detroit, and 10 miles west of Ypsilanti (**Figure 1.1 Vicinity Map**).

Figure 1.0 Location Map

Source: Mead & Hunt, 2020

Ann Arbor and the surrounding area is home to many prominent businesses and institutions with the University of Michigan being the area's largest employer. Manufacturing, health care, automotive, information technology, and biomedical research companies account for the major employers in the region.

Figure 1.1 Vicinity Map



Source: Mead & Hunt, 2020

With many technological-driven industries and sports attractions, there is often a need for air transportation to bring workers, clients, suppliers, customers, and time sensitive parts/supplies to and from the region. These businesses operate a combination of small turboprop and business jet aircraft. ARB is considered a vital transportation link and an economic driver for the community.

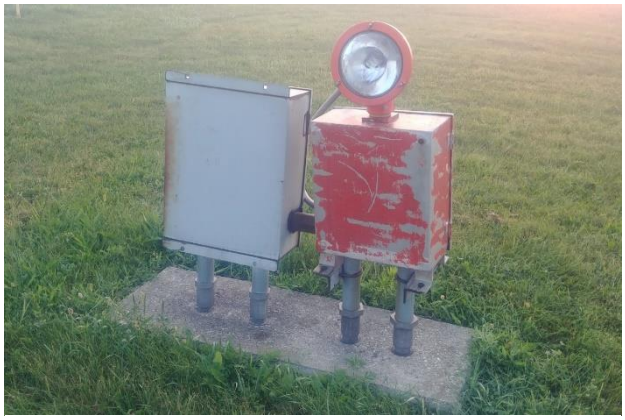
Typical University of Michigan Football Weekend at ARB

The Airport is also included in the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS). This designation is indicative of its significance in the national air transportation system. At the state level, the Michigan Department of Transportation Office of Aeronautics (MDOT AERO) classifies the Airport as a Tier-I, general aviation airport. Tier-I airports represent essential and critical

state airport system goals and according to MDOT AERO should be developed to their full and appropriate extent.[1]

Active Day at the Airport - August 8, 2020

The Airport's primary runway, Runway 6/24, is paved and has a length of 3,505 feet with a width of 75 feet and is oriented in a northeast/southwest direction. ARB also has a turf runway, Runway 12/30, that is 2,750 feet in length and 110 feet in width and is oriented in a northwest/southeast direction. Runway 12/30 is used when weather permits and is not utilized by jet aircraft. Taxiway A parallels Runway 6/24 and has connector taxiways A1, A2, and A3 and provides access between the runway and the parallel taxiway. Several other connectors provide access between the parallel taxiway and the main apron with numerous hangars located on the airfield. **Figure 1.2 Existing Airfield Configuration** illustrates the airfield configuration and property boundary of ARB.



FAA-Owned Runway End Identifier Light

Runway 6/24 is equipped with Medium Intensity Runway Lighting (MIRL). The approach end of Runway 6 is equipped with a 4-light precision approach path indicator (PAPI), while the approach end of Runway 24 is equipped with a 2-box visual approach slope indicator (VASI). Both navigational aids are owned by ARB and assist aircraft with vertical guidance when landing. ARB is also served by an airport traffic control tower (ATCT) that manages the landing and departure of aircraft.

In addition to the ARB-owned navigational aids described above, two FAA-owned Runway End Identifier Lights (REILs) are located at the approach end of Runway 6. Note that all construction by the FAA will be limited to the relocation of the two REILs. A detailed description of a REIL can be found at https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/lsg/reil.

[1] 2017 Michigan Aviation System Plan, Michigan Department of Transportation Office of Aeronautics, Page 2-9.

Figure 1.2 Existing Airfield Configuration

Source: Mead & Hunt, 2020

Until recently, the approach to Runway 24 was equipped with FAA owned Omnidirectional Approach Lighting System (ODALS); however, they were decommissioned and removed in the summer of 2020. For additional maps and information on the Airport including its history, existing facilities, and the role it plays in the community and the region, see **Chapter 3.0 Affected Environment & Environmental Consequences**.

1.2 State Block Grant Program

Michigan is one of 10 states that administers Airport Improvement Program (AIP) grants under the FAA's State Block Grant Program (SBGP). The SBGP, authorized under 49 U.S.C. § 47128, and 14 C.F.R. Part 156, allows the state of Michigan to assume environmental review responsibilities for FAA AIP grants in the state. Under the program, Michigan handles annual AIP grants that go to airports classified as "other than primary" airports, which includes ARB. ARB is classified as a nonprimary regional airport in the 2023-2027 National Plan of Integrated Airport Systems.

Under the SBGP, the state of Michigan provides funding and oversight for this proposed project at ARB along with the responsibility for evaluating the potential environmental impacts of the project, consistent with the National Environmental Policy Act (NEPA) of 1969. Certain actions are considered outside the scope of the SBGP and are considered connected "Federal Actions" and subject to FAA's environmental review. Relocating the FAA owned REILs at the approach end of Runway 6 is considered a Federal Action requiring FAA involvement and environmental review. See **Section 1.4 Airport Sponsor's Proposed Project Action** for a list of project components.

1.3 Section 163 Review

As part of this project, the Airport coordinated with the FAA regarding review and applicability with respect to Section 163 of the FAA Reauthorization Act of 2018 ("Section 163"). In general, Section 163 limits the FAA's review and approval authority of an Airport Layout Plan (ALP) to those portions of the ALP that:

1. Materially impact the safe and efficient operation of aircraft at, to, or from the airport.
2. Adversely affect the safety of people or property on the ground adjacent to the airport as a result of aircraft operations; or
3. Adversely affect the value of prior federal investments to a significant extent.

When an Airport submits an ALP change, requests a change in land use from aeronautical to non-aeronautical, or requests to dispose of airport-owned land, the FAA must determine whether the proposal is subject to FAA approval authority, as defined and/or limited by Section 163. A Section 163 determination frames the required NEPA analysis and may limit the FAA's authority to review a proposed project.

As the current project would require a change to the Airport's ALP, the FAA reviewed ARB's proposed action and determined that it retains ALP approval authority for all components of the proposed project under criteria #1 and #2, listed above. The FAA's ALP approval authority for the proposed project would be considered a Federal Action and all project actions listed in **Section 1.4 Airport Sponsor's Proposed**

Project Action would be subject to NEPA. The FAA determination document is found in **Appendix A Section 163 Determination**. The Airport's current ALP can be found in **Appendix B Airport Layout Plan**.

However, since the state of Michigan is in the SBGP, the following applies: "After distributing the SBGP grants, FAA Office of Airport (ARP) has no control, responsibility, or discretion for the use of SBGP funds for airport specific projects under the SBGP.[2] In fact, those airport-specific responsibilities ARP would normally fulfill under the AIP become State responsibilities under the SBGP. Therefore, NEPA and other environmental statutes applicable to "Federal actions" do not apply to airport actions under the SBGP, since there is not a major Federal action." (See FAA Order 5050.4B, Sec. 211). "Because FAA does not retain funding for or approval of SBGP actions, actions under the SBGP technically do not qualify as "Federal actions." Nevertheless, FAA, in consultation with the Council on Environmental Quality (CEQ), determined it to be good environmental policy and stewardship to require SBGP states that are not subject to state laws comparable to NEPA to consider the environmental consequences that SBGP actions would cause. As a result, each SBGP has contractually committed to consider the environmental effects of their actions as noted below." (See FAA Order 5050.4B, Sec. 212).

1.4 Airport Sponsor's Proposed Project Action

The Airport's proposed project includes the following project components:

- Extend Runway 6/24 720 feet at the approach end of Runway 6 to provide 4,225 feet of runway length
- Shift Runway 6/24 to the southwest by adding an additional 150 feet on the Runway 6 end and removing 150 feet on the Runway 24 end
- Taxiway A - Extend parallel to the southwest to match the Runway 6/24 length
- Taxiway A1 – Relocate 150 feet to the southwest and reconstruct to comply with FAA Advisory Circular (AC) 150/5300-13B, Section 4.8.1 to correct the taxiway intersection with Runway 6/24 to connect at a right angle
- Taxiway A4 – Construct new connector taxiway at the Runway 6 end
- Taxiway D – Relocate 150 feet to the southwest and reconstruct to comply with FAA AC 150/5300-13B, Section 4.3.5 *Runway Access from Apron,* which discourages direct access from an apron to a runway without requiring a turn by aircraft prior to reaching the runway.

The State Block Grant Program actions include:

- Unconditional approval of the ALP displaying all components of the Proposed Action.
- Approval of an application for Federal assistance, under the AIP, for eligible components of the Proposed Action.

2 Although the generic Section 163 Determination form (Appendix A) indicates that "[t]he FAA retains ALP approval authority and the project should be processed as a normal ALP review," in actuality the SBGP retains the ALP approval authority.

The FAA's federal actions include:

- Relocation and replacement of the existing FAA owned REIL at the approach end of Runway 6 to the new runway threshold.
- Amendment of necessary air traffic procedures, including instrument approach and departure procedures, to accommodate the proposed action.

The construction of these improvements will be covered in detail as a part of the Preferred Alternative in **Chapter 3.0 Affected Environment & Environmental Consequences**. For additional discussion on the Preferred Alternative selection process, see **Chapter 2.0 Alternatives Considered**.

1.5 Purpose and Need for the Proposed Action

The purpose and need of the proposed action is to provide an airport facility that meets the demands of current and future users.

1.5.1 Purpose of the Proposed Action

The purpose of the proposed action is to improve operational utility of the Airport by meeting the takeoff and landing runway length requirements of aircraft that currently operate at the Airport and are projected to gradually increase operations over time.

1.5.2 Need for the Proposed Action

The proposed action is needed because Runway 6/24 was designed to serve primarily small piston driven aircraft; however, the Airport receives regular use by small turboprop aircraft and occasional business jet aircraft that require a longer runway to operate at a greater payload than they do today.

Analysis of current operations found that aircraft with similar operational performance characteristics routinely use ARB and have runway requirements that exceed the current 3,505-foot length of Runway 6/24 under normal operating conditions. For these users to conduct operations on the existing runway, undue concessions in reduced fuel, passengers and/or cargo loads are often needed. Diversions to other airports are also commonly needed when the runway surface is wet, or during the summer months when higher temperatures reduce aircraft performance.

To document and justify the need to provide enhanced facilities for current and future users of the Airport, the FAA and MDOT AERO evaluated a report titled *Runway 6/24 Extension Justification Study* (Justification Study) that was completed in 2021 (found in **Appendix C Runway Justification Study**).

The intent of the Justification Study was to document, justify, and recommend alternatives to meet the needs of aircraft types regularly using ARB, factoring in operating weight, takeoff on a hot day, and landing on a wet runway. The Justification Study documented the types of aircraft that operate at ARB and then determined the number of current and projected operations the Airport could expect in the future. The Justification Study then developed prudent and feasible alternatives to meet the performance requirements of current and future users.

Representative Critical Aircraft at ARB - Beech King Air 90

The Justification Study started with the identification of a grouping of aircraft types with similar performance characteristics that conduct at least 500 annual operations at ARB. As stated in FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, the critical aircraft for an airport may be a single type of aircraft or a grouping of types of aircraft with similar characteristics that conduct at least 500 annual operations at an airport. The performance requirements of critical aircraft determine a given required runway length.

AIRPORT REFERENCE CODES (ARC)

Aircraft Approach Category (AAC)

- Category A: Aircraft approach speed less than 91 knots
- **Category B: Aircraft approach speed 91 knots or more but less than 121 knots**
- Category C: Aircraft approach speed 121 knots or more but less than 141 knots
- Category D: Aircraft approach speed 141 knots or more but less than 166 knots
- Category E: Aircraft approach speed 166 knots or more

Airplane Design Group (ADG)

- Group I: Wingspan less than 49 feet
- **Group II: Wingspan 49 feet or more but less than 79 feet**
- Group III: Wingspan 79 feet or more but less than 118 feet
- Group IV: Wingspan 118 feet or more but less than 171 feet
- Group V: Wingspan 171 feet or more but less than 214 feet
- Group VI: Wingspan 214 feet or more but less than 262 feet

Note: ARB classifications are **bolded** and underlined.
Source: FAA AC 150/5300-13B, *Airport Design*

The Justification Study found that the Airport Reference Code (ARC) classification of B-II aircraft types are the most demanding grouping of aircraft that currently conduct more than 500 operations per year at ARB. Thus, the Justification Study concluded that existing and future critical aircraft for Runway 6/24 is B-II small turboprop and jet aircraft. With this understanding, a runway length that meets the needs of B-II small turboprop and jet aircraft is warranted at ARB. As shown in **Table 1-0 Current and Future Operations by ARC Classification**, the ARC grouping of B-II aircraft types includes both jet and small turboprop aircraft types.

Table 1-0 Current and Future Operations by ARC Classification

Class	Representative Aircraft	Representative ARC	Annual Ops 2019	Forecasts			
				2023	2028	2033	2038
Turboprop	TBM8 - TBM-850	A-I	150	161	172	183	193
Turboprop	BE20/B350 - King Air	B-II*	966	1,040	1,111	1,178	1,241
		Subtotal Turbine	**1,116**	**1,201**	**1,283**	**1,361**	**1,434**
Jet	C56X - Excel XLS	B-II*	263	283	302	321	338
Jet	E55P - Phenom 300	B-II*	97	104	112	118	125
		Subtotal Jets	**360**	**387**	**414**	**439**	**462**
Piston	C172 - Cessna 172	A-I	2,876	3,016	3,225	3,427	3,613
		Subtotal Piston	**2,876**	**3,106**	**3,225**	**3,427**	**3,613**
Other	EC55 - EC-155	n/a	67	70	75	80	84
		Subtotal Other	**67**	**70**	**75**	**80**	**84**

Source: FAA TFMSC database (2019), Projections: Mead & Hunt, Inc. (2020)

* Denotes B-II aircraft groupings operating at ARB

The forecasts of future aviation operations prepared as part of the Justification Study also indicated that B-II small turboprop and jet aircraft operations will slowly increase over time at the Airport. Understanding that this demand will increase also supports the need of providing improved B-II facilities. Thus, it is prudent for ARB to meet B-II critical aircraft standards to accommodate, in whole or part, both small turboprop and jet aircraft on Runway 6/24.

Providing adequate runway length would meet the operational needs of current and future users by reducing weight concessions and allowing aircraft to operate with greater payloads, thus resulting in a more efficient operating environment.

For details of the runway justification process including operations, forecasts, runway length analysis, alternatives, and recommendations see **Appendix C Runway Justification Study**.

The proposed action also provides an opportunity to improve the airport geometry to enhance the safety of air traffic operations at ARB. In compliance with Section 6.11.7 of AC150/5300-13B *Airport Design*, the movement areas of the airfield should be observable from the ATCT to enable air traffic controllers to manage aircraft movement and operations in a safe and efficient manner. Personnel working in the ATCT currently have limited visibility of the intersection of Taxiway A and Connector Taxiway A1 due to the presence of two hangars north of Taxiway A (illustrated on **Figure 1.2 Existing Airfield Configuration**). Shifting the runway toward the southwest would allow air traffic controllers to have a

clear line of sight from the ATCT to the intersection of Taxiway A and Connector Taxiway A1 and an unobstructed view of the entire length of Taxiway A.

1.6 Summary of Existing and Projected Operations

As previously discussed, the *Runway 6/24 Extension Justification Study was* used to help define the purpose and need of the proposed action by determining the critical aircraft and runway length needs. The Justification Study also evaluated historical and future trends of aviation activity for ARB. The Justification Study analyzed past, current, and projected operations from 2005 through the year 2039 and found that passenger and aircraft activity at the Airport have fluctuated in recent history. This is not uncommon in comparison to many U.S. airports as economic uncertainty and increased travel costs have impacted aviation usage.

It should be noted that the economy of the United States and the aviation industry had a near complete shutdown in April 2020 due to the COVID-19 pandemic. As with all airports around the country, the pandemic greatly impacted operations at ARB. However, as noted in the Justification Study, operations have rebounded quickly and now nearly match the operational numbers of 2018 and 2019. Therefore, given industry trends, operations at ARB have nearly recovered to pre-COVID numbers in 2022.

A summary of the forecasts is presented in **Table 1-1 Projections Summary**. These figures illustrate that there is gradual growth projected in aircraft activity at ARB with total operations expected to increase from the 2019 level of 76,428 to 84,336 in 2039. This equates to a compound annual growth rate (CAGR) of 0.49%. For details of existing and projected aviation forecasts at ARB see **Appendix C Runway Justification Study**.

1.7 Required Environmental Review

Federal financial participation in projects through the *Airport and Airway Improvement Act of 1982*, requires environmental review under NEPA. An EA is a document prepared under NEPA that evaluates the effects of a proposed action on the surrounding natural, social, and economic environments.

This EA is prepared under the requirements of Title V of Public Law 97-248 of the *Airport and Airway Improvement Act of 1982*, NEPA, and FAA Order 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions* (April 2006). This EA also meets the requirements of FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, dated July 2015.

The intent of this EA is to provide the environmental documentation necessary to assist local, state, federal officials, and stakeholders in the evaluation of the proposed action at ARB. This EA evaluates the proposed action and a full range of alternatives that may meet the purpose and need identified in the EA. The analysis also identifies and discusses measures to avoid, minimize, and mitigate possible environmental impacts.
The FAA and MDOT AERO must evaluate this EA under NEPA and, if the project does not have the potential for significant impacts, a Finding of No Significant Impact (FONSI) / Record of Decision (ROD) may be issued, or if it does have significant impacts, prepare a federal Environmental Impact Statement (EIS).

Table 1-1 Projections Summary

	Itinerant Operations			Local Operations			
Year	Air Taxi	General Aviation	Military	General Aviation	Military	Total Operations	Based Aircraft
Historical							
2005	2,105	24,942	17	40,871	5	67,940	164
2006	2,082	26,530	263	42,910	0	71,785	148
2007	1,876	25,483	243	45,251	0	72,853	148
2008	1,198	22,677	42	40,991	2	64,910	136
2009	376	21,195	22	35,508	8	57,109	141
2010	208	21,102	33	42,629	7	63,979	129
2011	272	21,016	36	35,893	2	57,219	129
2012	474	23,285	51	39,737	3	63,550	168
2013	556	21,943	40	35,202	3	57,744	175
2014	524	21,728	57	35,051	3	57,363	176
2015	524	22,373	47	33,953	18	56,915	182
2016	568	23,761	72	33,933	49	58,383	188
2017	564	24,213	68	37,112	9	61,966	178
2018	570	24,196	41	38,264	31	63,102	164
2019	550	28,126	76	47,653	23	76,428	164
Projected							
2024	596	30,465	76	47,494	23	78,654	163
2029	636	32,547	76	47,264	23	80,546	163
2034	675	34,524	76	47,123	23	82,421	162
2039	711	36,357	76	47,168	23	84,336	162
CAGR (2019-2039)	*1.29%*	*1.29%*	*0.00%*	*-0.05%*	*0.00%*	*0.49%*	*-0.05%*

Source: Historical Operations – FAA OPSNET, Historical Based Aircraft – FAA TAF, Projections – Mead & Hunt