

Environmental Assessment Phase – Draft EA/EIR



Technical Master Plan Team & Environmental Review Team









Airport / PAC

The Airport, overseen by the Plymouth Airport Commission, completed the Technical Master Plan Update and is now working through the EA phase.

FAA/ MASSDOT

The EA is funded by the Federal Aviation Administration with 5% funded by the MASSDOT Bureau of Aeronautics with a local match. Input from the Public throughout the EA/EIR phase provides opportunities for meaningful public input.



D&K and Epsilon Associates

The DuBois and King team has over 30 years of experience serving Plymouth Municipal Airport and its community.



Agenda

- Community Asset
- Timeline &
 - Environmental Assessment Phase
- Environmental Evaluation Process & and Regulatory Framework
- Step 1 Alternatives Overview & Preferred Alternative
- Step 2 Proposed Action
- Step 3 Existing Conditions
- Step 4 Consequences and Mitigation
- Next Steps
- Questions

Plymouth Municipal Airport – Community Asset



GOOD FOR THE ENVIRONMENT

- 150 preserved acres of Natural Habitat
- DEP standards
- Compatible Wildlife
 Program
- State wildlife approval for construction
- 800 acres of rural legacy



- State Police Air Wing
- Boston Medflight
- Cape Cod Community College
- Local Pilot Humanitarian Missions
- Civil Alr Patrol



- Administration Building open to Public
- Public interaction with Airport activity- Patio and Play Area
- Public tours
- Precinct 11 voting location
- Noise Briefings



ECONOMY

- Municipal Enterprise
 Account
- \$450,000+ real estate tax revenue on ~60 Buildings
- \$62 million in Total Annual Economic Output

Timeline

JAN 2022 – JAN 2023

Background and three public meetings as part of Technical Master Plan Update and Airport Layout Plan process; finalized TMPU and ALP MEPA Process Initiated w/MEPA office, Pre-ENF Public Meeting

FEB 2023-

MAR 2023

April 2023-August 2023

MEPA ENF Filing MEPA Scoping Field Visit Proposed Joint Draft NEPA EA/MEPA EIR Development Draft & Final NEPA EA/MEPA EIR Complete & Submit to FAA for FONSI & MEPA Section 61 Findings

> AUG-DEC 2023

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Joint Draft EA/EIR

- Comprehensive Evaluation of Airport and Needs for 20 years into future – 2040+
- Extensive Public Engagement
- Evaluated four Alternatives for Runway 6 extension and associated improvements
- No expansion of Airport proposed; all work to occur within existing boundary



Plymouth Municipal Airport 2022 Ultimate Airport Layout Plan

7

5-Year Capital Improvement Plan (CIP) Evaluation

All Projects proposed within next 5 years

1	Proposed Capital Improvement	Projects
Project ID	Project Name	Planning Period (FFY)
1	Water/Wastewater Upgrades Sewer Main	2024
2	RWY 6 Extension	2025
3	Hangar Construction	2025
4	Gate 3 Taxilane Reconstruction	2025
5	RWY 6/24 Reconstruction	2026
6	Emergency Generator Airside Infrastructure	2026



Purpose of Environmental Assessment



- Fulfill obligations under federal National Environmental Policy Act (NEPA) and Massachusetts Environmental Policy Act (MEPA) and Incorporate Public Involvement
- Aligning Airport future with the Master Plan updates without *significant impacts* to natural resources
- Evaluate Environmental Impacts of Preferred and "No Action" Alternatives
- Evaluate Natural Resource Mitigation impacts to Airport Operations and Safety Needs (FAA mandates);
- <u>cannot create hazards</u>

Environmental Evaluation Process – Regulatory Framework



Massachusetts Environmental Policy Act (MEPA)

- Meet with MEPA office to Introduce the project (2/2/23)
- Public Outreach meaningful input before the ENF is filed
- Notice of this meeting & Screening Form disseminated to >150 organizations, parties, and individuals that were compiled during the TMPU and EA/EIR process, including designated Environmental Justice communities
- 1st step Environmental Notification form (ENF)
- 2nd step Site Walk with MEPA staff (public invited to attend)
- Confirm Scope of Environmental Impact Report (EIR)



National Environmental Policy Act (NEPA)

- Under FAA 1050.1F
- Met with FAA and MassDOT to identify scope
- Define specific Purpose & Need
- "Environmental Assessment" (EA) under NEPA
- 14 resource categories evaluated
- Must stay below designated "significance thresholds" for each category using avoidance, minimization, and mitigation opportunities

Environmental Evaluation Process – Joint MEPA/NEPA

MEPA

- No Mandatory Thresholds were Exceeded; no air quality thresholds met or exceeded and no wetland impacts
- Two Discretionary Thresholds under 301 CMR 11.03(2)(b) for greater than 2 acres of disturbance of designated habitat (3 grassland birds that are state species of special concern; 1 state-threated species); and 301 CMR 11.03(6)(b)(3) for expansion of an existing airport runway
- One EJ population within 1-mile Designated Geographic Area (DGA) radius under 301 CMR 11.06(7)(b)
- Must consider cumulative impacts and avoid "Segmentation"; if additional projects proposed in future, they must be reviewed under MEPA under a Notice of Project Change (NPC)

NEPA

Starts with defined

"Purpose & Need" for the project, which then overarches the entire evaluation;

If an alternative does not meet the Purpose and Need, it is eliminated

- No Significance Thresholds Exceeded; consideration for state-designated rare species
- Must consider Cumulative Impacts of the Proposed Action with past and future proposed actions



Environmental Evaluation Process – Purpose & Need

Purpose of Runway 6 Extension – To safely serve the critical aircraft at a higher useful load (still less than 60% of total aircraft useful load available)

- 1) The Airport's primary Runway 6-24, does not fully support the critical aircraft at desired capacity (per TMPU Chapter 3). The existing length of Runway 6-24 is 4,650 feet (including 300' displaced threshold), whereas a runway length analysis determination in the TMPU and associated supporting documentation concluded that a runway length of 5,001 feet would satisfy local and transient aircraft operations.
- 2) FAA Advisory Circular (AC) 150/5300-13B specifies full parallel taxiways along all runways with Instrument Landing Systems (ILS).
- 3) A number of the existing instrument approaches at the Airport are reliant upon ground-based instrumentation systems that include glideslope and localizer antennas.

Additional Goals: Climate Change Resilience and Economically Sustainable Operations to remain a fiscally responsible community asset.

NOTE: "Useful load" is used in General Aviation only and refers to the weight of the pilot, crew, passengers, baggage, useful fuel, and drainable oil; versus Commercial operations refer to "payload".)

MEPA Designated Geographic Area (DGA) – 1-Mile



Overarching Guidance & Grant Mandates – Safety Paramount

FAA Grant Assurance 5 & Grant Assurance 21 [funding mandates]	GA 5 – Preserving Rights and Powers GA 21 – Compatible Land Use	Compliance Order 5190.6b, Chapter 20	 Under the airport compliance program, the FAA has the responsibility to assure airport sponsors comply with certain obligations that arise from FAA grant agreements Chapter 20 – Compatible Land Use and Airspace Protection
Compliance Order 5190.6b, paragraph 7.13, Grant Assurance 20	Hazards and Mitigation GA 20 – requires airport sponsors to protect terminal airspaceinstrument and visual flight operationsincludes protecting against establishment or creation of future airport hazards, including wildlife hazards.	AC 150/5200- 33C, paragraph 2.9	 Hazardous Wildlife Attractants on and near Airports Habitat for State and Federally Listed Species on Airports may increase wildlife hazards and be inconsistent with safe airport operations.



Plymouth Airport – Orientation

- Compass or "Wind Rose"
- Horizontal & Vertical "Planes" = Surfaces
 [NOTE: "Plane" vs "Airplane" or "Aircraft"]



Runway Ends – Safety Paramount



Figure 2-1. The percentage of aviation accidents as they relate to the different phases of flight. Note that the greatest percentage of accidents take place during a minor percentage of the total flight.

SOURCE: Pilot's Handbook of Aeronautical Knowledge, 2016, FAA-H-8083-25B

Table 3-9 - Summary of Baseline Data			
Based Aircraft (Table 3-3)		1(05
Least Itingrant Calit (Table 2-4)	Local	Itinerant	Total
Local funerant Split (Table 3-4)	33,103	27,918	61,021
Operations by Aircraft Type (Table 3-6)	Operations	% 1	otal Operations
Single-Engine	41,494		68.00%
Multi-Engine	5,492		9.00%
Turbo-Prop	7,323		12.00%
Turbo-Jet	4,271		7.00%
Rotorcraft	2,441		4.00%
Glider	0		0.00%
Light Sport	0		0.00%
Military	0		0.00%
Operations by FAA Grouping (Table 3-7)			
AAC/ADG	Opera	ations	% Total Operations
A-I	58,	595	96.00%
A-II	69	97	1.10%
A-III	3	3	0.00%
B-I	38	34	0.60%
B-II	1,1	22	1.80%
B-III	3	3	0.00%
C-I	9	0	0.10%
C-II	9	6	0.20%
C-III	2	2	0.00%

Findings

- 8% Increase in Total Operations (2022-2041) 8% Decrease in Based Aircraft

Summary

Modest changes. On track with National Average.

Forecast 2022 vs 2041 Purpose & Need

Table 3-16 - Summary of Forecast Data for 2041						
Based Aircraft (Table 3-11)		96				
Level Minemat Onlit (Table 2.44)	Local	Itinerant	Total			
Local Itinerant Split (Table 3-14)	36,078	30,411	66,489			
Operations by Aircraft Type (Table 3-14)	Operations	% Total O	perations			
Single-Engine	44,932	67.	6%			
Multi-Engine	5,835	8.8	3%			
Turbo-Prop	8,041	12.	1%			
Turbo-Jet	4,847	7.3	3%			
Rotorcraft	2,834	4.3	3%			
Glider	0	0.0	0%			
Light Sport	0	0.0)%			
Military	0	0.0)%			
Forecasted Operations by FAA Grouping (Tab	e 3-15)					
AAC/ADG	Opera	ations	Operations			
A-I	63,	845	96.0%			
A-II	75	59	1.1%			
A-III	1	3	0.0%			
B-I	41	19	0.6%			
B-II	1,2	222	1.8%			
B-III		3	0.0%			
C-I	9	8	0.1%			
C-II	10	05	0.2%			
C-III	1	3	0.0%			
Source: DuBois & King						

Environmental Evaluation Process – Historic and Forecasted Operations

	Aircraft Type	1990	1995	2000	2005	2007*	2009**	2027 Forecast*	2022 Tech MP Update**	August 2023 Actual ^{at}	2041 Forecast**
(F)	Single Engine					102	103	113	79	77	65
	Multi- Engine					13	22	13	10	14	9
-	Turbo-Prop		Idata			5		9	7	N/A	8
_	Business Jet		laera	I N/AJ		9	11	29	5	6	8
	Helicopter					13	8	22	4	8	5
	Glider					0	0	0	0	0	0
	Ultra-Light			_		0	1	4	0	0	0
	Total	186* [220 [†]]	189* [179 [†]]	168* [179 [†]]	L68***±	142 [154 ^t]	105	190 [167-207]	105	105	98

TABLE 1-3. Based Aircraft History and Forecast – 1990-2041

TABLE 1-2. Historical Terminal Area Forecast Operations (Source: TMPU Table 3-4 based on FAA TAF)

YEAR	Local	Itinerant	Total	Mu
2000	26,500	40,000	66,500	Eng
2010	30,000	23,200	53,200	Tur
2020	30,000	21,000	51,000	Bu
2021	33,103	27,918	61,021	Jet

TABLE 1-4. Forecasted PYM Annual Operations Summary by Aircraft Type (Source: TMPU Table 3-12 and Table 3-14)

	YEAR										
ТҮРЕ	2	021	2	026	2	031	2	041			
	Local	Itinerant	Local	Itinerant	Local	Itinerant	Local	Itinerant			
Single Engine	22,510	18,984	22,970	19,372	23,445	19,751	24,397	20,535			
Multi Engine	2,979	2,513	3,034	2,558	3,058	2,590	3,150	2,685			
Turbo-Prop	3,972	3,350	4,069	3,431	4,168	3,515	4,362	3,679			
Turbo-Jet	2,317	1,954	2,370	1,998	2,458	2,073	2,630	2,217			
Rotorcraft	1,324	1,117	1,379	1,163	1,432	1,207	1,539	1,295			
TOTAL	61	,021	62	,344	63	,696	66	,489			
Net Change		-	1, (4/da than	323 iy more 2021)	1, (4/da thar	352 ay more 2026)	2, (8/day mo total 16/da	793 re than 2031, ay over 2021)			
% Change		10	0.	98%	0.	98%	0.	96%			
NOTES:	<i>"Local"</i> ref take off or l	ers to aircraft and from oth	that take o er airports.	ff and land fro	om PYM; "/I	tinerant" refe	ers to aircraf	t that either			

Forecast for 2041 is 66,489 VS 2000 operations at 66,500

Goal is to recover from losses due to 2008 recession and 2020-2021 pandemic losses

Typical Runway Length Requirements "Critical Aircraft"

Temperature = 30°C - Average Temperature Hottest Month Flaps = 0 Max Gross Takeoff Weight Zero Wind Zero R/W Gradient Pressure Altitude = Sea Level



RUNWAY LENGTH REQUIRED

Runway Length Analysis

B-II Jet (Composite	
Aircraft Type	Operations	% of Composite
Cessna CJ3/4	4	0.8%
Cessna Citation Bravo	4	0.8%
Cessna Citation Encore	7	1.4%
Cessna Citation Excel	68	13.3%
Cessna Citation Sovereign	13	2.5%
Cessna Citation Latitude	69	13.5%
Cessna Citation X	2	0.4%
Embrear Legacy 450	15	2.9%
Embrear Phenom 300	45	8.8%
Dassault Falcon 2000	149	29.0%
Dassault Falcon 900	75	14.6%
Dassault Falcon 50	7	1.4%
Hawker 4000	55	10.7%
Total Operations	513	



Falcon 2000

The Falcon 2000 is the most demanding aircraft (critical design) in the composite of aircraft with more than 500 annual operations. FAA Runway Length Analysis - Unconstrained Runway Length - 5,500'

Current RW6 length = 4650' (including 300' displaced threshold)

Alternatives - Overview



Alternative #1: No Build

- Everything remains the same, no changes are applied
- No Penetrations



Alternative #3: 550-ft ext

- 5200 eet
- Taxiway 4 and E extension
- Relocation of Glidestope and MALS
- One penetration area



Alternative #2: 351-ft ext

- 5001 Feet
- Taxiway A and E extensions
- Relocation of Glideslope and MALS
- No penetrations



Alternative #4: 850-ft ext

- 5500 Feet
- Taxiway A z id E extension
- Relocation of Glider ope and MALS
- Multiple penetrations

Alternative #1 : No Build

1	EGEND
	AIRPORT PROPERTY LINE
OFA	OBJECT FREE AREA
	MARKING - TAXIWAY AND RUNWAY
	HOLDING POSITION MARKING
	RUNWAY SAFETY AREA
	RUNWAY OBJECT FREE ZONE AND RUNWAY PROTECTION ZONE
	GLIDESLOPE CRITICAL AREA
— o —	EXISTING CHAIN-LINK FENCE
	WETLAND
	EXISTING ROADWAY





Alternative #2: 351-ft Extension



LEGEND

Primary Project Components – Preferred RW6 Alternative

- Runway 6 351' Extension
- Taxiway A 351' Extension + 649' Connector to RW 6 end [remove former connector]
- Taxiway E 351' Extension
 + 349' Connector to RW 6 end [remove former connector]
- NavAids relocated



5-Year CIP Evaluation

All Projects proposed within next 5 years

1	Proposed Capital Improvement	Projects	
Project ID	Project Name	Planning Period (FFY)	
1	Water/Wastewater Upgrades Sewer Main	2024	
2	RWY 6 Extension	2025	
3	Hangar Construction	2025	
4	Gate 3 Taxilane Reconstruction	2025	
5	RWY 6/24 Reconstruction	2026	
6	Emergency Generator Airside Infrastructure	2026	



Confirmed Existing Conditions & Evaluated Impacts



Supplemental Desktop & Field Data Collection

- TMPU identified "Existing Conditions"
- Additional Desktop & Field verification of specific natural resources potentially impacted



MEPA

- Identified "thresholds"
- Submitted Environmental Notification Form (ENF) April 18, 2023
- Site Visit w/MEPA agents to Scope the documentation

NEPA

- Evaluate Potential Impacts under 14 Subject Areas based on Project
- Stay below "significance" thresholds



NEPA/MEPA

- Joint EA/EIR
- Prelim Draft August;
 Final Draft noticed on
 Environmental Monitor –
 Nov 8
- Goal is NEPA FONSI & MEPA Certificate

Resource Overview

MEPA

NEPA

- Met or Exceeded one threshold at 11.03(2)(b) – greater than 2 acres of disturbance of Designated Habitat (321 CMR 10.02) that results in a take of state-listed endangered or threatened species or species of special concern
- Others resources generally considered

- Air Quality
- Biological Resources (Fish, Wildlife, Plants, Habitat)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Haz Materials, Solid Waste, and Pollution
- Historical, Architectural, Archeological, and Cultural
- Land Use
- Natural Resources (materials) and Energy Supply
- Noise and Noise-Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects
- Water Resources [Floodplains, National Wild and Scenic Rivers, Groundwater not affected] Wetlands and Surface Waters Retained

Environmental Constraints & Potential Impact Areas



Epsilon

Figure 4-3 Environmental Constraints



Air Quality and Greenhouse Gases Putting it in perspective

Operations at PYM

Current			VS		For	recasted	d/ Prop	osed
TABLE 1-4. For (So	ecasted P ource: TM	YM Annual PU Table 3-:	Operation 12 and Tab	s Summary I ble 3-14)	<mark>oy Aircraft</mark>	Туре		
				YE	AR			
ТҮРЕ	20	021	2	026	20	031	2	041
	Local	Itinerant	Local	Itinerant	Local	Itinerant	Local	Itinerant
Single Engine	22,510	18,984	22,970	19,372	23,445	19,751	24,397	20,535
Multi Engine	2,979	2,513	3,034	2,558	3,058	2,590	3,150	2,685
Turbo-Prop	3,972	3,350	4,069	3,431	4,168	3,515	4,362	3,679
Turbo-Jet	2,317	1,954	2,370	1,998	2,458	2,073	2,630	2,217
Rotorcraft	1,324	1,117	1,379	1,163	1,432	1,207	1,539	1,295
TOTAL	61	,021	62	,344	63	,696	66	,489
Net Change		-	1,	323	1,	352	2,	793
			(4/da than	y more 2021)	(4/da than	y more 2026)	(8/day mor total 16/da	re than 2031 ay over 2021
% Change		20	0.	98%	0.9	98%	0.	96%
NOTES:	"Local" ref	ers to aircraft	that take o	ff and land fro	om PYM; "/t	inerant" refe	ers to aircraft	t that either

take off or land from other airports.

Biological Resources State-defined Designated Habitat



Plymouth Municipal Airport Plymouth, Massachusetts

Epsilon

Figure 4-13 Natural Heritage and Endangered Species Program



Plymouth Municipal Airport Plymouth, Massachusetts

Epsilon

Figure 5-4 Changes to Mowing Frequency

Noise

TABLE 5-5. Summary of Forecast (2021-2041) from 2022 Technical Master Plan Update

	2021 B-II (Operations	
Aircraft	Approach	Departure	Total
Falcon 2000	75	75	150
Falcon 900	37	37	74
itation Latitude	35	35	70
Citation Excel	35	35	70
Hawker 4000	27	27	54
King Air 350	63	63	126
	Tota	al B-II Operations for 2021	544



FIGURE 5-7. Profile illustration of 65 DNL and 70 DNL contours based on AEDT model output. (NOT TO SCALE)

Forecast Period	Base Year 2021	2026	2031	2041	Average Annual Growth Rate
Operations	61,021	62,344	63,696	66,489	0.43%
Itinerant	27,919	28,522	29,136	30,411	
Local	33,102	33,822	34,560	36,078	
Based Aircraft	105	102	101	95	-0.24%
Single Engine (SE)	79	75	72	65	-0.90%
Multi-Engine (ME)	10	10	10	9	-0.40%
Turbo-Prop	7	7	8	8	0.60%
Turbo-Jet	5	6	6	8	2.30%
Rotorcraft	4	4	5	5	1.40%
Forecasted Operation	ons by FAA Groupi	ng			
AAC/ADG		Operations		% Total Operations	
A-I		63,845		95.2%	
A-II		759		1.1%	
A-III		3		0.0%	
B-I		419		0.6%	
B-II		1,222		1.8%	
B-III		3		0.0%	
C-I		98		0.1%	
C-II		105		0.2%	
C-III		3		0.0%	



Impact ("Consequences") & Mitigation



Next Steps



- Gather Comments through process.
- Formulate responses to post with the Town.
- Submit comments and responses to the FAA and MEPA
- FAA/MEPA determination of impact or No Significant Impact (FONSI).
- Each individual project has its own environmental documentation process during the design a.



Comments

THANK YOU!

Questions?

PlymouthMAAirportRW6EA@dubois-king.com

The opportunity to comment on the EA/EIR will end 30 days after it is noticed on the Massachusetts Environmental Monitor website https://eeaonline.eea.state.ma.us/EEA/MEPA-eMonitor/home Choose Publication Date November 8 Click on EIR tab

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