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November 15, 2024

CERTIFICATE OF THE SECRETARY OF ENERG AND ENVIRONMENTAL AFFAIRS
ON THE
FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan
PROJECT MUNICIPALITY	: Barnstable (Hyannis)
PROJECT WATERSHED	: Cape Cod
EEA NUMBER	: 16640
PROJECT PROPONENT	: Cape Cod Gateway Airport
DATE NOTICED IN MONITOR	: October 9, 2024

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.08 of the MEPA regulations (301 CMR 11.00), I have reviewed the Final Environmental Impact Report (FEIR) and hereby determine that it **adequately and properly** complies with MEPA and its implementing regulations. As detailed below, the Proponent will file one or more Notices of Project Change (NPCs) to provide details of proposed stormwater management, hangar development, and future projects for which details are not available at this time.

Project Description

As described in the FEIR, the Proponent proposes several improvements to the Cape Cod Gateway Airport (Airport) in Hyannis as outlined in the Airport's 2022 Master Plan Update (Master Plan),[1] which evaluated aviation demand forecasts, facility requirements, airport access and geometry, and navigation aids over a 20-year planning horizon. According to the FEIR, the Master Plan recommendations are needed to meet Federal Aviation Administration (FAA) airport safety standards[2] as well as future aviation demand including rehabilitation of existing infrastructure. One of the main objectives of the Master Plan is to develop feasible and flexible alternatives to meet forecast demand. While the primary purpose of proposed improvements is safety, improvements also support future

[1] The Master Plan was approved in May 2022 by the Cape Cod Gateway Airport Commission, the Massachusetts Department of Transportation (MassDOT) – Aeronautics Division and the FAA. See https://flyhya.com/master-plan/
[2] In particular, FAA Advisory Circular (AC) 150/5300-13B, Airport Design

airport growth.

Master Plan projects to be implemented in Phase 1 include the following:

Airside[3]

- Runway 15-33 Extension: Extend Runway 15 end by 895 feet (with a 695-foot displaced threshold[4]) to a total length of 6,150 feet from 5,255 feet
- Taxiway Modifications
    - Construct new partial parallel Taxiway D with a 400-foot standard separation east of Runway 15-33 from proposed relocated Taxiway B to existing Taxiway A1
    - Remove portions of Taxiway D between existing Taxiway A and the new partial parallel Taxiway D and between Runway 6-24 and proposed relocated Taxiway B
    - Extend Taxiway A by 895 ft to provide a full-length parallel taxiway to Runway 15-33
    - Remove Taxiway E and the existing runup area and construct a new run-up area along the north side of the new partial parallel Taxiway D
    - Realign Taxiway B to a standard 400-foot separation south of Runway 6-24 and extend Taxiway B northward by 750 feet with two midfield taxiways to Runway 6-24 and a northern taxiway spanning Runway 6-24 to Taxiway C
    - Remove Taxiway C1 between Taxiway C and Runway 6-24

Landside

- Apron and hangar development in the East Ramp and North Ramp areas, including up to six individual hangars (which store one aircraft) and eight conventional hangars (which may store more than one aircraft and larger aircraft such as jets)
- Construct a 20,000 square foot (sf) Snow Removal Equipment (SRE) building
- Construct electric aircraft support equipment, including space for parking and charging of up to six electric aircraft
- Planning for construction of a smart microgrid that will provide clean, reliable power to charge electric aircraft and ground vehicles

Airspace Safety Improvements

- Runway Safety Area (RSA) and Runway Object Free Area (ROFA) Avigation Easements
- Airport control over Runway Protection Zone (RPZ) Properties

Master Plan components to be constructed in Phase 2 include:

- Runway Safety Area Enhancement: Install a ±200-foot by 400-foot engineered material

[3] The DEIR notes airside facilities typically include runways, taxiways, airport lighting and markings, and navigational aids.
[4] A displaced threshold is a threshold located at a point on the runway other than the designated beginning of the runway. Displacement of a threshold reduces the length of runway available for landings. The portion of runway behind a displaced threshold is available for takeoffs in either direction and landings from the opposite direction.

arresting system (EMAS)[5] to the safety area beyond the end of Runway 24
- Terminal Improvements to expand the existing terminal building to accommodate current and future passenger levels
- Construction of microgrid infrastructure
- Potential development of hangars not constructed in Phase 1

Changes Since Filing the DEIR

The Preferred Alternative for Taxiway D has been modified. The previously-proposed 12-ft wide service road along the north side of Taxiway D (between Taxiway D and Upper Gate Pond) will terminate east of Upper Gate Pond, resulting in a narrower cross-section adjacent to the pond. Vehicular access to the portion of the airfield to have been served by the western part of the service road will instead be provided from Airport Road to the north and Taxiway D itself. As detailed below, this modification will minimize impacts to wetlands associated with Upper Gate Pond**.**

Project Site

The Cape Cod Gateway Airport (the "Airport" or "project site") is located in Hyannis on Cape Cod. The Airport is bordered to the north Route 6 and by the Hyannis Ponds Wildlife Management Area (WMA), a Massachusetts Division of Fisheries and Wildlife (MassWildlife)-designated conservation area; to the south by Barnstable Road (Route 132); to the west by Yarmouth Road; and to the east by an industrial park (Independence Park). The Airport is owned by the Town of Barnstable (Town) and accommodates General Aviation (GA) uses and commercial service to Boston, New York and the islands of Martha's Vineyard and Nantucket. It is managed by the Cape Cod Gateway Airport Commission and airport staff. The Airport is zoned for Business and Industrial uses. Land uses surrounding the Airport property include agriculture, commercial, industrial, mixed uses, open land, and residential.

The Airport encompasses approximately 639 acres of land, of which approximately 140 acres is developed for airport facilities and operations including a 43,097-sf Terminal Building, Air Traffic Control Tower (ATCT), parking facilities, aircraft ramps, hangars, runways, taxiways, an Airport Rescue and Fire Fighting (ARFF) building and an aircraft fuel farm. More than 45 private tenants lease space on parts of the Airport property. The Airport includes two runways: Runway 15-33 is 5,255 feet long by 150 feet wide and is aligned in a northwest to southeast direction and Runway 6-24 is 5,425 feet long by 150 feet wide and is aligned in a southwest to northeast direction. The Airport has seven taxiways designated A, A1, B, C, C1, D, and E. The Airport has three ramps (Terminal Ramp, East Ramp, and North Ramp), that provide approximately 369,500 sf (8.5 acres) of aircraft parking, fueling, and staging and maneuvering areas.

Approximately 460 acres of the Airport site north of the airfield are undeveloped areas consisting of upland evergreen and deciduous forests, wetlands, and two ponds (Upper Gate Pond and Lewis Pond) to the north. The forested communities are located north of the intersection between the two runways, with smaller patches of forested lands northwest of the Runway 15 end and southeast of Runway 6-24. Wetland resources areas include Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), and Bank. Several of the small, isolated freshwater wetlands located on or immediately adjacent to Airport

[5] EMAS uses crushable material placed at the end of a runway to stop an aircraft that overruns the runway. The tires of the aircraft sink into the lightweight material and the aircraft is decelerated as it rolls through the material.

property are identified as Potential Vernal Pools (PVPs). The project site is located within Cape Cod's public drinking water supply's wellhead protection areas (Zone II). According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, the majority of the Airport is within Zone X, an area of minimal flood hazard determined to be outside the 500-year flood (panels 25001C0566J and 25001C0567J, effective July 16, 2014); however, a small section of forested area near Mary Dunn Pond, within the Airport property, is within an area with a 0.2% annual chance of flood hazard.

The Airport contains areas mapped as Estimated Habitat of Rare Wildlife, Certified Vernal Pools and/or Priority Habitat of Rare Species as designated by the Massachusetts Natural Heritage and Endangered Species Program (NHESP). However, these areas are not within the limits of the proposed improvements described in the Master Plan. The northern portions of the ponds contain densely forested embankments, extending into the Hyannis Ponds WMA. No federally identified critical habitats are located at the Airport. The project site supports habitat for many bird species, both resident and migratory, including several birds that are protected under the Migratory Birds Treaty Act of 1918 and/or the Bald Eagle and Golden Eagle Protection Act of 1940.

The project site is within the Designated Geographic Area (DGA) of Environmental Justice (EJ) populations[6] located in whole or in part within 1 mile of the project site as stated in 301 CMR 11.02 (definition of "DGA"). The project site is located within one EJ population characterized by Minority and Income; within 1 mile of 13 EJ populations characterized by Minority, Income, Minority and Income, and Minority, Income and English Isolation (10 in Barnstable and three in Yarmouth); and within 5 miles of ±20 EJ populations characterized by Minority, Income, Minority and Income, and Minority and English Isolation (13 in Barnstable and seven in Yarmouth).

Environmental Impacts and Mitigation

Table 1.3-2 in the FEIR provided a summary of potential impacts of Phase 1 identified in the FEIR in comparison to estimates of impacts included in the DEIR. As a result of the revised Taxiway D design, the land alteration and wetlands impacts have been reduced compared to the DEIR.

[6] "Environmental Justice Population" is defined in M.G.L. c. 30, § 62 under four categories: Minority, Income, English Isolation, and a combined category of Minority and Income.

Table 1.3-2 Summary of Draft EA/EIR vs FEIR Impacts

	Existing	Reviewed in DEIR	FEIR Update
LAND			
Total Site Acreage (in acres)	639	639	639
New acres of altered land (in acres)	--	50*	49*
Acres of New Impervious Area (in acres)	167	40	40
New bordering vegetated wetlands alteration (in sf)		4,600	3,000
New other wetland alteration (in sf)		12,700 sf LUW 300 lf Bank	10,900 sf LUW 300 lf Bank
STRUCTURES			
Footprint of buildings (in acres)	121	0.25**	0.25**
Gross square footage	43,097	55,000	55,000
TRANSPORTATION			
Internal roadways (in acres)	902	+14***	+14***
Parking and other paved areas (in acres)	50	+26.4	+26.4
Vehicle trips per day	88	+70 - 171****	+70 - 171****
Parking spaces	1,135	0	0
Other altered areas (in acres)	27	--	--
Undeveloped areas (in acres)	460	-40	-40
WASTEWATER			
Water Use (Gallons per day [GPD])	7,000	--	--
Water withdrawal (GPD)	7,000	--	--
Wastewater generation/treatment (GPD)	13,000	--	--

* Includes calculations of both vegetation converted to impervious surface and temporary impacts due to grading of grass areas to remain grass.
** This number does not include potential hangars which may be up to a total of 5 acres. These 5 acres overlap with the impervious surface number under "other paved areas."
*** Paved apron and ramp space is included in" other paved surfaces."
**** The Airport Master Plan includes a 100% growth scenario (increase in 200 peak hour passenger design capacity). Increased trips represent between a 0.51% and 1.30% increase in daily and peak hour volumes, respectively, along the major travel routes.

Impacts from Phase 2 projects are not included in the table above; future NPCs will disclose impacts and describe mitigation measures associated with Phase 2.

Measures proposed to avoid, minimize and mitigate environmental impacts include implementation of eight electric vehicle (EV) charging stations and electric aircraft charging infrastructure (as technology advances); construction of new or renovated buildings to meet the 2023 Stretch Code with 100% heat pump space heating; construction of 3,000 sf of BVW replication; construction of a stormwater management system to improve water quality, reduce flow rates and infiltrate runoff; implementation of Transportation Demand Management (TDM); monitoring of groundwater to track the per- and poly-fluoroalkyl substances (PFAS) plume at the Airport; and construction-period Best Management Practices (BMPs) to minimize noise, air and water quality impacts including construction of a noise barrier along the proposed run-up pad for noise protection. Additional measures should be specified in future NPCs as related to individual projects proposed under the Master Plan.

Jurisdiction and Permitting

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(1)(a)(1) and 11.03(1)(a)(2) because it requires Agency Actions and will result in direct alteration of 50 or more acres of land and creation of 10 or more acres of impervious area, respectively. The project is also required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a DGA (1 mile) around one or more EJ Populations. The project exceeds the ENF threshold at 11.03(6)(b)(3) for expansion of an existing runway at an airport; 11.03(6)(b)(4) for construction of a

New taxiway at an airport.[7] The project requires a Section 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP). It is subject to the 2010 MEPA GHG Emissions Policy and Protocol.

The project will require an Order of Conditions from the Barnstable Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions (SOC) from MassDEP); submittal of a pre-construction notification (PCN) to the U.S. Army Corps of Engineers (ACOE) seeking authorization under the General Permits for Massachusetts in accordance with Section 404 of the Clean Water Act; review by the Massachusetts Historical Commission (MHC), FAA and ACOE pursuant to Section 106 of the National Historic Preservation Act of 1966; review by FAA; Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act; preparation and review of an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA);[8] a National Pollutant Discharge Elimination System (NPDES) Construction General Permit and Sole Source Aquifer Review from the U.S. Environmental Protection Agency (EPA); and review by the Cape Cod Commission as a Development of Regional Impact (DRI). The Airport obtained coverage under the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity in 2021.

The Proponent has received and may seek additional Financial Assistance through the Massachusetts Department of Transportation (MassDOT) Aeronautics Division. Therefore, MEPA jurisdiction is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment, as defined in the MEPA regulations.

Review of the FEIR

The FEIR was generally responsive to the Scope included in the Certificate on the DEIR. It provided a supplemental alternatives analysis, additional information regarding groundwater conditions, and a description of changes to the project design since the filing of the DEIR. The FEIR identified and described state, federal and local permitting and review requirements, provided an update on the status of each of these pending actions, analyzed applicable statutory and regulatory standards, and provided a discussion of the project's consistency with those standards. It included responses to comments received on the DEIR and draft Section 61 Findings.

The FEIR did not provide detailed information about the proposed stormwater management systems for the Taxiway B, Taxiway D, and Runway 15 Extension projects, and provided only conceptual-level descriptions of proposed hangar development, the terminal building expansion, and the proposed EMAS at the end of Runway 24. The Proponent will file one or more NPCs for these projects, for which full details were not available in the FEIR. Future NPCs will provide updated impact estimates of each project, detailed descriptions of the stormwater management systems, and, for proposed or expanded buildings, analyses of stationary source GHG emissions. As discussed below, additional analysis of mobile source GHG emissions and air quality should be provided to the extent flight projections associated with hangar development exceed demand projections in the Master Plan.

[7] The DEIR Certificate indicated that the project also exceeded the ENF threshold at 11.03(3)(b)(1)(f) for alteration of one-half or more acres of other wetlands; however, the project's combined wetlands impacts is less than ½ acre.
[8] According to the Proponent, FAA is expected to issue the Final EA and Finding of No Significant Impact (FONSI) by the end of 2024.

I received comments from residents and local community and environmental organization which expressed concern about the public health and environmental risks associated with PFAS-contaminated groundwater from the Airport. As discussed below, the Airport is undertaking monitoring and remedial actions in accordance with M.G.L. c. 21E and the Massachusetts Contingency Plan (MCP) regulations at 310 CMR 40.000 that commenced prior to and independently of the Master Plan projects proposed in the FEIR. According to the FEIR, the Master Plan projects will not disturb areas of the site that have been capped to mitigate PFAS; additional filings under the MCP would be required if the project design were to change in a manner that would disturb the cap. MassDEP may require certain response actions to be conducted or approve response actions proposed by a Licensed Site Professional (LSP); however, MassDEP's comment letter did not identify any additional information or analyses that are required in connection with the Master Plan projects.

Alternatives Analysis

As previously reviewed in the DEIR Certificate, the Master Plan made recommendations for changes to the geometric layout and design of runways, taxiways, aprons, and other facilities to meet FAA safety and operations standards applicable to the Airport based on current and future Airport users and aircraft types. The DEIR included an analysis of alternative airside project designs to address the Master Plan recommendations. The Scope included in the DEIR Certificate required analyses of alternative designs of two airside projects: Taxiway D construction, for which alternatives were evaluated in the DEIR, and the Runway 24 end EMAS, for which alternatives were not evaluated in the DEIR. The Scope also required an alternatives analysis for two landside projects, the hangar development and terminal expansion projects, which were not evaluated in the DEIR.

Taxiway D

As described in the FEIR, application of the FAA design standards (Advisory Circulars (AC) 150/5300-13B) to the airport results in a minimum required separation distance of 400 feet between the center line of Taxiway D and the center line of Runway 15-33. The Scope for the FEIR required the Proponent to identify the maximum separation distance that could avoid impacts to BVW, LUW and Bank associated with Upper Gate Pond, and, if wetland impacts cannot be avoided, to review an alternative Taxiway D design that minimizes impacts to wetlands. The maximum separation distance from centerline to centerline which avoids wetland impacts is 300 feet; an alternative with this separation distance (designated as Alternative 4) was previously described in the DEIR. According to the FEIR, any alternative with a separation distance of less than 400 feet is not feasible because it does not comply with the FAA standard.

Though maintaining a 400-foot separation distance, the FEIR identified a new Preferred Alternative for Taxiway D ("Alternative 5") which reduces impacts to wetland resource areas in other ways. The Taxiway D design previously proposed in the DEIR included a 400-ft separation between Taxiway D and Runway 15/33. In addition, a 37.5-ft wide Taxiway Safety Area (TSA) and the 12-ft wide perimeter gravel service road were proposed along the north side of Taxiway D, between the taxiway and Upper Gate Pond. As proposed in Alternative 5/Preferred Alternative, the service road will terminate east of Upper Gate Pond, which will reduce encroachment in the pond and wetlands by 12 ft. As shown in the table below, the Alternative 5/FEIR Preferred Alternative will reduce BVW impacts by 1,600 sf, reduce LUW impacts by 1,300 sf, and minimize impacts to non-wetlands vegetation, compared to the design proposed in the DEIR. As detailed below, the Proponent will mitigate wetland impacts by providing a 3,000-sf BVW replication area on the eastern bank of Upper Gate Pond.

	DEIR Preferred Alt	FEIR Preferred Alt	Change from DEIR to FEIR
Total Pavement	294,129 sf	294,129 sf	0
New Pavement	59,686 sf	59,686 sf	0
BVW Impacts	4,600 sf	3,000 sf	-1,600 sf
LUW Impacts	13,700 sf	12,400 sf	-1,300 sf
Bank Impacts	300 lf	300 lf	0
Area of Shrub Removal	114,041 sf	105,748 sf	-8,292 sf
Area of Tree Removal	58,370 sf	58,220 sf	-3,159 sf
Net Grass Area Impact	550,510 sf	547,351 sf	-3,159 sf
Work Area	873,221 sf	877,680 sf	-11,601 sf

Runway 6-24 Runway Safety Area Improvement

The existing Runway Safety Area (RSA) at the Runway 24 end does not fully meet the FAA standard sizing of 800 ft by 1,000 ft. The No Build Alternative (Alternative 1) would maintain the existing condition of the runway. According to the FEIR, the FAA made a determination in 2000 that deemed Runway 6-24 to be safe; however, the Proponent intends to further enhance the safety of the runway in Phase 2. The FEIR also evaluated alternatives that would provide a full 800-ft by 1,000-ft RSA by either acquiring additional land at the end of the runway (Alternative 2), shortening the runway to create space for the RSA within the existing airport bounds (Alternative 3), or relocating/realigning Runway 6-24 within the airport bounds such that a full RSA could be constructed (Alternative 4). Alternative 2 was not selected because it would have high costs and significant impacts associated with land acquisition and relocation of transportation infrastructure, including railroad tracks, Yarmouth Road, and Route 28. In addition, the runway would have greater impacts on nearby residences and businesses. Reducing the length of Runway 6-24 (Alternative 3) would reduce safety margins for landings and takeoffs, and would make it unsuitable for use by many aircraft, which would have to use Runway 15-33 instead. Alternative 3 was not selected because it would result in significantly increased use of Runway 15-33, which would result in greater noise impacts on residential areas near the Runway 33 end. Relocating Runway 6-24 to the north and east within the existing airfield (Alternative 4) would in turn require relocation of Taxiway C and other critical airport infrastructure, such as the air traffic control tower, portions of the Terminal Ramp, and a 6.7-megawatt (MW) ground-mounted solar generating facility; Alternative 4 was not selected due to the costs and disruption to airport operations associated with these impacts.

The Preferred Alternative includes construction of a 200-ft by 400-ft engineered material arresting system (EMAS) at the Runway 24 end. The EMAS would be constructed of material that collapses under the weight of an aircraft. In the case of an aircraft that overruns the end of the runway, the EMAS would reduce the speed of the aircraft more quickly and in a shorter distance than a standard surface. According to the FEIR, the Preferred Alternative will provide the equivalent level of safety as a full-dimension RSA and is considered to be a standard RSA by the FAA. The EMAS was selected as the Preferred Alternative because it can be constructed within the available space at the end of Runway 24 and will provide an extra level of safety.

Hangar Development

According to the FEIR, hangar development is proposed to meet an anticipated industry trend for

aircraft storage and is not an increase in capacity to induce more demand for airplane and vehicular travel. The need for hangar space is also based on consideration of the evolution of aircraft and the requirement that hangars accommodate aircraft with longer wingspans, which are a feature of modern single and multiengine- aircraft. According to the FEIR, the following planning factors were used to calculate the approximate hangar space requirements for aircraft based at the Airport:

- 1,200 sf for Single Engine and Rotor Aircraft
- 1,600 sf for Multi-Engine Aircraft
- 3,200 sf for Jet Aircraft

According to the FEIR, to estimate hangar demand, it is assumed that 70% of single engine and 35% of multi-engine aircraft will be stored in individual hangars, and that 25% of single engine aircraft, 60% of multi-engine aircraft, and 100% of jet aircraft will be stored in conventional hangars. The FEIR estimated that approximately 5,370 sf of hangar space is needed to meet forecasted demand in 2040. According to excerpts of the Master Plan included in the DEIR, there is currently a waiting list of 17 aircraft owners who may not be accounted for in the forecasted demand. The FEIR included an estimated need for six individual hangars and up to eight conventional hangars to account for unplanned demand for new hangars and new business. However, the FEIR did not fully justify whether the numbers of proposed hangars and associated aircraft/flights align with the corresponding demand projections in the Master Plan. This information should be provided in future NPCs associated with hangar development, and GHG emissions and air quality analyses should be provided to the extent anticipated flights would exceed estimates of flights that would occur without the new hangar space.

The No Build Alternative would not provide additional hangar space. This alternative was not selected because it would not meet the existing or future need for space by airport users. Alternative 2 would include development of up to 178,000 sf of corporate and general hangar space in the North Field area, which is located north of the proposed Taxiway D alignment and adjacent to Upper Gate Pond and Lewis Pond. The North Field area is currently undeveloped; therefore, construction of hangars and ramps in this area would have greater impacts with respect to land disturbance, impervious area, tree removal, and wetlands alteration, than development of hangars at the East and North Ramp areas (Preferred Alternative), which have already been largely cleared and are partially paved.

The FEIR identified development of the East and North Ramp areas as the Preferred Alternative for development of individual and conventional hangars. According to the FEIR, the North Ramp area is well-suited for hangar development because it is close to the terminal building, the majority of the area is already disturbed and/or paved, and it has access to taxi lanes. The proposed relocation of Taxiway B would open up previously-disturbed land and paved areas next to the East Ramp for hangar development. The FEIR did not specifically identify the number of proposed hangars (it identified a range of up to 14 hangars) or the square footage of hangar space, or describe any potential ancillary facilities, such as fuel tanks and passenger vehicle parking spaces; however, it estimated that construction of hangars in this area would require clearing of approximately 6.6 acres of trees and the creation of 9.1 acres of impervious area. Any development of hangars at the East Ramp must be designed to avoid disturbance of the cap of the PFAS disposal area. The FEIR included a commitment to construct all hangar buildings with high performing building envelopes that meet or exceed the requirements of the 2023 Stretch Energy Code, are equipped with all-electric heating, cooling, hot water, and ventilation systems, are constructed with solar photovoltaic (PV)-ready rooftops, and provide electric vehicle (EV) charging stations for motor vehicles. The Proponent should submit one or more

NPC that will describe impacts and mitigation measures for hangar construction, including GHG emissions and air quality analyses to the extent the estimated numbers of flights associated with the new hangars exceed demand projections in the Master Plan (i.e., flights that would occur without the new hangar space).

Terminal Improvements

According to the FEIR, the existing terminal building has enough space to perform security screening and baggage handling for up to 120 passengers per hour under peak conditions. The number of passengers needing to be screened is forecasted to increase to 200 passengers in a peak hour over a 20-year period. The Master Plan identified the need for approximately 20,000 sf to 25,000 sf of additional space for security screening and baggage handling to accommodate the increase in passengers. The DEIR identified a proposed terminal expansion of approximately 30,000 sf; if the proposed terminal expansion, as described in a future NPC, exceeds the Master Plan recommendation, the NPC provide a rationale for the additional space. The No Build Alternative would avoid any new impacts associated with the construction and operation of the expanded terminal building; however, this alternative was not selected because it would not address the forecasted increase in peak passenger activity. The Interior Functional Organization Alternative would consolidate all security screening and associated baggage handling functions for both inbound and outbound flights at one end of the terminal, and use the other end of the terminal to accommodate passengers on flights that do not require security screening and secure baggage handling. The Interior Functional Organization Alternative would not require any expansion of the building footprint; however, this alternative was not selected because level of air traffic at the airport does not warrant the additional capital and operational costs associated with two separate passenger and baggage processing areas. The Preferred Alternative will include both interior reconfiguration and building expansion of approximately 30,000 sf with secure departures at the south end of the building, arrivals and non-secure departures in the north end of the building, and airline operations and ticketing in the center. According to the FEIR, the Preferred Alternative will minimize construction-related impacts to Airport operations by allowing a phased implementation as need arises. The Proponent will submit an NPC with a detailed description of the proposed terminal expansion and review its impacts and mitigation measures.

Environmental Justice

As previously described in the DEIR, the Proponent has developed a public involvement plan for the purpose of ongoing engagement with EJ Populations. A project website was created to provide information, updates, meeting notices, and presentation materials[9] and project-specific email was made available to allow the public to contact the Proponent with any questions or comments.[10] Notice of the filing of the FEIR was made on August 21, 2024 by email to an updated EJ Reference List provided by the MEPA Office and a stakeholder list maintained by the Proponent, and posted on the Airport's website.[11] Prior to filing the FEIR, the Proponent met with local groups such as the Yarmouth Camp and the Yarmouth Rotary Club, and held two additional public meetings to provide an update on the project and review the analyses prepared for the FEIR. The two public meetings were held on August 27, 2024, and included a remote meeting at 2:00 PM and an in-person meeting at 6:00 PM at Barnstable Town Hall. Email notice of the meetings was emailed to over 250 stakeholders and publicized via a press

[9] www.flyhya.com/environmentalassessment
[10] enviroHYA@epsilonassociates.com
[11] www.flyhya.com

release and advertisements in local newspapers. No interpreters were requested for either meeting. According to the FEIR, the two public meetings were professionally moderated, and were also attended by officials of the FAA and MassDOT Aeronautics Division; FAA and MassDOT officials addressed questions from the community, which could be submitted in advance or asked during the meetings. According to the Proponent, comments were mostly related to noise impacts, air quality, wetlands, and PFAS that were addressed in the DEIR. In addition to public meetings about the proposed master plan projects, the Proponent will continue to hold separate meetings specifically regarding PFAS remediation.

The FEIR reviewed the extent of PFAS contamination associated with the historical use of Aqueous Film Forming Foam (AFFF) at the airport and required remediation undertaken in accordance with M.G.L. 21 E and the Massachusetts Contingency Plan (MCP) regulations. AFFF containing PFAS continues to be used in cases of emergency; however, since 2015 it has no longer used in annual testing and tri-annual firefighting training exercises. The Proponent commenced investigation of PFAS in soil and groundwater, including contaminated groundwater impacting nearby public drinking water supply wells, in 2016. According to the FEIR, removing all PFAS from soils at the Airport is economically infeasible; therefore, areas of contamination totaling 94,100 sf (approximately 2.15 acres) have been capped to prevent infiltration by rainwater and the further leaching of PFAS to groundwater and uncontaminated areas. The FEIR included data showing significant reductions in groundwater PFAS concentrations since the contaminated soils were capped. The Proponent will continue to monitor PFAS levels in groundwater until an MCP Permanent or Temporary Solution can be achieved, and inspect and maintain the caps twice a year in accordance with an Activity and Use Limitation (AUL). The Proponent has also contributed to the installation of granular activated carbon (GAC) filters at the Town's nearby drinking water supply wells, which will reduce PFAS concentrations in drinking water below standards set by MassDEP and EPA. During its investigations of soils and groundwater contamination, the Proponent identified groundwater plumes of PFAS from sources other than the airport and reported these sources of contamination to MassDEP. According to the FEIR, MassDEP will require remediation of PFAS associated with non-Airport sources by the appropriate Responsible Party and the Airport will not be responsible for remediation of those sources.

The FEIR asserts that the Proponent's remediation of PFAS in accordance with the MCP will minimize public health risks and unfair and inequitable burdens on EJ populations associated with the release of PFAS at the Airport by achieving the necessary reductions in soil and groundwater concentrations and assisting the Town in meeting drinking water quality standards. According to the FEIR, the Proponent has implemented a Public Involvement Plan (PIP) to inform the public of the results of soil and groundwater remediation by the Proponent. The Proponent has held public meetings to address PFAS remediation on July 29, 2019, September 13, 2022, August 7, 2023, and December 18, 2023, and the next meeting is scheduled to be held in November 2024 to provide an update on the status of remediation efforts.

The Proponent previously documented in the DEIR that the project complies with FAA noise requirements and that the Airport is in a NAAQS attainment area for air emissions. As noted above, the Proponent asserts that the proposed Master Plan projects will address safety deficiencies at the Airport so that forecasted growth in operations can be safely accommodated, but the projects will not add capacity leading to more flight operations. As a result, the FEIR did not provide any additional analyses of traffic, air quality or noise impacts associated with the operation of the airport. According to the FEIR, the Airport anticipates significant reductions in air emissions and noise from aircraft over the next 20 years. The FAA released a Final Rule on April 26, 2024 to limit carbon particles emitted by subsonic

aircraft engines (e.g., with speeds less than 250 mph). According to the FEIR, the rule sets maximum standards for the amount of non-volatile particulate matter (nvPM) emissions from U.S. civil aircraft engines which align with EPA recommendations and International Civil Aviation Organization standards. The Airport will also make Sustainable Aviation Fuels (SAF) available to aircraft when these fuels are more widely available. Finally, the proposed microgrid will enable the use of charging stations for six electric aircraft and eight motor vehicles. According to the FEIR, a 2021 Report from the National Renewable Energy Lab entitled "Electrification of Aircraft: Challenges, Barriers, and Potential Impacts"[12] noted that commercial hybridelectric and electric propulsion could reduce aircraft noise up to 85% (electric), improve fuel consumption by 40% (hybrid), reduce CO_2 emissions by more than 20% (hybrid), and reduce airline operating and maintenance costs up to 20% (electric and hybrid). The proposed microgrid will be designed to accommodate the electrification of the Airport's operations, including replacement of small aircraft such as the Cessna 402 with electric aircraft and increased flight traffic from transient electric aircraft. Phase 1 of the project includes construction of electric aircraft storage and charging infrastructure and the initial planning for an on-site microgrid; these projects will support the future use of electric airplanes, which are quieter and have fewer air emissions than conventional aircraft and jets.

Public Health / Sole Source Aquifer (SSA)

As requested by the EPA in its comments on the DEIR and required by the Scope included in the DEIR Certificate, the FEIR provided detailed information about the groundwater flows, analyzed potential impacts to the aquifer and drinking water supply wells, and reviewed measures to minimize potential releases of contaminants from the airport. The FEIR included maps of existing and proposed groundwater monitoring wells, groundwater contours and flow directions, and locations of drinking water wells in the vicinity of the site. This information was requested by EPA to support a Sole Source Aquifer review.

Based on groundwater elevation and hydraulic conductivity data collected from monitoring wells at the site, and the porosity predominance of sand to a depth of 70 feet, the Proponent has determined that groundwater flows across the Airport property from the west and northwest to the southeast at an average rate of 0.94 feet per day or 344 feet per year. According to the FEIR, two locations at the Airport where AFFF have been capped with impervious material to prevent infiltration of rainwater and migration of PFAS to groundwater. Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). Bi-annual reports will continue to be uploaded to MassDEP until a permanent solution can be obtained. Groundwater sampling conducted in December 2023 and May 2024 indicated that groundwater concentrations of PFAS have decreased and are lower than they were before the caps were constructed. Groundwater treatment for PFAS is occurring at the Maher wells treatment plant via granular activated carbon (GAC) treatment systems which were installed with funding from the Airport.

The FEIR (Table 3.3-1) provided a list of potential pollutants associated with operation of the Airport. In accordance with the Airport's Multi-Sector General Permit, samples are collected on a bi-annual basis from stormwater outfalls and tested for the presence of a variety of compounds that could reflect releases of pollutants.

[12] www.nrel.gov/docs/fy22osti/80220.pdf

Table 3.3-1 List of Potential Pollutants

Industrial Activity	Associated Pollutants
Fuel Delivery and Transfer	Jet A fuel, low lead fuel, gasoline and diesel fuel
Vehicle, Aircraft, and equipment maintenance	Fuels, oils, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds
Deicing activities	Deicing fluids (glycol)
Vehicle washing	Fuels, oils and cleaning solvents
Snow removal activities	Sediments and salts

Land Alteration and Impervious Area

As described above, the design of the Taxiway D project has been modified to eliminate the segment of the perimeter road between Taxiway D and Upper Gate Pond. Compared to the design of Taxiway D described in the DEIR, the modification will reduce the overall work area by 11,601 sf (0.27 acres), BVW alteration by 1,600 sf, LUW alteration by 1,300 sf, shrub removal by 8,292 sf, and tree removal by 150 sf.

According to the FEIR, the Proponent has conducted a comprehensive review of alternatives, which was initially documented in the ENF and DEIR, to meet FAA standards while minimizing land alteration, impervious area, and impacts to wetlands. As described above, the design of the Taxiway D project was modified after the filing of the DEIR to reduce impacts to wetlands. The FEIR included an analysis of alternatives for project components for which alternatives were previously evaluated, including hangar development, Runway 6-24 RSA improvements, and terminal expansion. As detailed above, the terminal expansion and construction of new hangars will be limited primarily to previously-disturbed areas; however, hangar development in the East Ramp area may result in the removal of approximately 6.6 acres of trees and the creation of 9.1 acres of impervious area. Future NPCs submitted by the Proponent should document that hangars have been designed and located to minimize land alteration and new impervious area. The Preferred Alternative also includes construction of an EMAS for the end of Runway 6-24 RSA, rather than a full RSA, to minimize the land area needed to improve runway safety.

The FEIR reviewed measures the Proponent will undertake to mitigate land alteration, impervious area, and tree loss. The Proponent participates in the Greening Hyannis initiative, which plants trees in and around environmental justice communities in Hyannis. The Proponent will mitigate a portion of its tree clearing impacts through the Airport's support this initiative. The Proponent will also plant trees in two locations on Airport-owned land that will not cause any flight obstructions, including a 1.02-acre undeveloped plot of land southwest of the end of Runway 15 along Airport Road, and an approximately 0.59-acre area along Barnstable Road.

Approximately 115 acres of forest on the site will remain undeveloped. The FEIR reviewed the feasibility of permanently protecting undeveloped land at the site through a Conservation Restriction (CR). The placement of a CR on airport land was not selected as a mitigation measure; however, according to the FEIR, large land areas owned by the airport are already protected given the airport's existing mission and need to maintain open areas of space for the purpose of preventing hazards to air travel (for the flying public). Per FAA and MassDOT Aeronautics regulations, the Airport is required to keep areas of the airport as open space by maintaining these areas free of obstruction, whether they be a manmade structure (building) or vegetative obstruction (tree). According to the FEIR, placing a CR on

Airport land may prevent future land-use options that the Town may may seek in the future. These areas, if placed in a CR would be restrictive to opportunities to use public lands in a manner consistent with both the Airport's mission and the future vision of the town.

Stormwater

The Scope included in the DEIR Certificate required the FEIR to include a Stormwater Report for the project which identifies all measures that will be employed to protect the water quality of the sole source aquifer, provides a detailed description of the location and design of the proposed stormwater management system for each project/phase, identifies BMPs that will be incorporated into its design, and demonstrates that it will comply with the SMS. According to the FEIR, implementation of the three major projects (Taxiway B, Taxiway D, Runway 15 Extension) will be staggered as funding is received, and a detailed Stormwater Report will be produced when funding is received for the permitting and design of the projects. The FEIR included a commitment to incorporate all reasonable measures into the future designs of the stormwater management systems to protect the water quality of the SSA. According to the FEIR, stormwater management systems will include one or more of the following BMPs and low impact design (LID) measures:

- Subsurface infiltration chambers to promote groundwater recharge in areas with permeable soils
- Detention structures in areas with poorly draining soils not suitable for infiltration
- Deep sump catch basins
- Water quality units
- Detention basins/sediment forebays
- Rain gardens/bioretention structures
- Sand filters
- Infiltration trenches
- Vegetated filter strips
- Grassed channels/swales
- Tree box filters

According to the FEIR, the subsurface infiltration and detention systems will be constructed using modular chambers that can be added onto existing structures to provide sufficient capacity to mitigate future storm conditions.

The NPCs to be submitted for future projects will describe the proposed stormwater management system for each project/phase, identify BMPs incorporated into the design, and describe how the proposed stormwater management system will fully comply with water quality standards. Design submissions associated with future permitting projects should provide details on the size, location, and design of proposed stormwater systems which will endeavor to exceed stormwater management standards by incorporating LID strategies and green infrastructure wherever practicable.

Wetlands

The FEIR described the proposed 3,000-sf BVW replication area to be constructed on the eastern bank of Upper Gate Pond to mitigate permanent BVW impacts associated with construction of Taxiway D. The replication area is located on a shallow-sloped bank, which will minimize the need for regrading

to establish hydrological connections with surface and groundwater. The replication area will be planted with native seed mix and shrubs to mimic conditions at the impacted area, blend in with the surrounding BVW, and provide flowering herbs for pollinators. During the permitting process, the Proponent will prepare a detailed restoration plan with drawings, grading plans, planting schedules and plans, soil types, and erosion control details for review and approval by the Barnstable Conservation Commission and MassDEP. Once completed, the replication area will be monitored for two years to ensure that the BVW has become established. As noted above, impacts to BVW and LUW associated with Upper Gate Pond have been reduced by removing a portion of the perimeter road from the design of the Taxiway D project. According to the FEIR, the project will meet all WQC performance standards because alternative designs have been evaluated to ensure the project avoid and minimize potential adverse impacts and does not propose dredging or filling for prohibited uses, and because it will include BVW replication to mitigate unavoidable impacts, construction period mitigation measures to minimize impacts to water quality, and stormwater management systems that comply with the SMS.

Climate Change

Adaptation and Resiliency

As previously reported in the DEIR, the Proponent used the MA Climate Resilience Design Standards Tool (the "MA Resilience Design Tool")[13] for guidance on designing the project to be resilient to future climate risks. The project has a high exposure based on the project's location for extreme precipitation (urban and riverine flooding) and extreme heat. Based on the 60-year useful life and the self-assessed criticality of the terminal building and proposed hangars, the Tool recommends a planning horizon of 2070 and a return period associated with a 100-year (1% chance) storm event when designing these assets. Based on a 20-year useful life and self-assessed criticality of runway and taxiways, the Tool recommended a planning horizon of 2050 and a return period associated with a 10-year (10% chance) storm event. This recommendation appears to be based on a "Low" criticality assessment, which is understated given the critical functions served by airport operations for regional travel. It is unclear whether the Proponent intends to design the capacity of the stormwater management systems based on precipitation levels identified in the Tool output report or based on the "NOAA Atlas 14 Plus" standard anticipated to be adopted by MassDEP in 2025. Such information is anticipated to be provided in future NPCs filed for individual projects.

The Scope included in the DEIR Certificate required the FEIR to include detailed descriptions of proposed stormwater management systems, including evaluations of stormwater management system designs to accommodate projected precipitation levels under future climate conditions. As noted above, design of the stormwater management systems will not be completed until a subsequent funding phase. The FEIR included a commitment by the Proponent to submit one or more NPCs that will provide a detailed description of proposed stormwater management systems, including measures to accommodate higher future precipitation rates in the future. Future NPCs should provide the information that was not available for inclusion in the FEIR, including the precipitation data used for the design of the stormwater management system and the source of the data (MA Resilience Design Tool or NOAA Atlas 14 Plus) and a discussion of how it will be sized to address future climate conditions. The NPCs should discuss whether the project has engaged in flexible adaptative strategies, and whether current designs allow for future upgrades to be made to adapt to climate change.

[13] https://resilientma.org/rmat_home/designstandards/

Stationary Source GHG Emissions

According to the FEIR, up to six individual hangars and eight conventional hangars will be constructed, in addition to the expansion of the terminal building and construction of the SRE building. The FEIR did not include plans or design details of these projects. The Town of Barnstable has not adopted the Stretch Energy Code (SC); however, the Proponent has committed to incorporate the GHG mitigation measures listed below, which are consistent with the current SC, into the design of all new buildings and building additions:

- High performing envelope that complies with the 2023 Stretch Code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch Code update;
- Electric domestic hot water heating; heat pump domestic hot water heating will be evaluated;
- Roofs to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces with quantity to be determined;
- EV infrastructure for additional future EV-parking spaces to be installed, with quantity to be determined

As noted above, detailed building designs and GHG mitigation measures should be provided in future NPCs. The Proponent should consult the comment letter submitted by the Department of Energy Resources (DOER) for guidance on building design requirements.

Mobile Sources and Air Quality

In the DEIR, the Proponent provided an analysis of motor vehicle emissions which calculated the changes in CO_2 emissions as a result of the project and identified potential reductions associated with improvements via TDM and other green initiatives at the Airport. As noted above, the Proponent asserts that the Master Plan projects will not increase the capacity of the Airport such that additional impacts will be generated; however, the FEIR did not fully document the number of flights that may be associated with new hangar development and whether this number aligns with demand projections presented in the FEIR. More detailed information specific to each hangar development should be provided in future NPCs, as stated above. As detailed above, the FEIR described anticipated decreased air emissions and noise as electric aircraft replace conventional aircraft over the next 20 years.

The Scope included in the DEIR Certificate required the Proponent to provide additional information about proposed measures to minimize air emissions from motor vehicles and aircraft associated with the Airport. The FEIR did not provide significantly greater detail regarding these measures than was presented in the DEIR because design of the project components has not yet commenced. As previously reported in the DEIR, eight EV charging stations will be installed at designated parking/recharging spaces; however, the exact locations of these charging stations are not known and will be identified during the design of the proposed microgrid. According to the FEIR, Phase 1 will include the design of the microgrid, which will then be constructed when funding becomes available in Phase 2.

Land Alteration

As described above, the design of the taxiway D project was modified since the review of the DEIR to minimize impacts to vegetated areas, including removal of shrubs and trees; however, the FEIR asserted that additional reductions in land alteration throughout the project cannot be achieved due to FAA standards for taxiways and runways. As noted above, an NPC will be submitted that will describe proposed hangar development in an approximately 6-acre forested area at the East Ramp and document that the hangars have been designed to minimize land alteration and tree clearing. The FEIR (Table 6.2-1) provided an updated summary of the proposed tree and shrub removal. The revised estimate of total impacts is approximately 0.15 acres larger than the estimate provided in the DEIR because the area of potential tree clearing at the East Ramp increased from 6.11 acres to 6.6 acres; however, the total impacts associated with Taxiway D project have decreased from 2.54 acres as identified in the DEIR to 2.2 acres.

Table 6.2-1 Summary of Tree Cutting Impacts by Area

Project	Total Impacts	Tree Removal and Change to Pavement (acres)	Tree Removal with Vegetation Remaining (acres)	Brush/Shrub Removal and Change to Pavement (acres)	Proposed Work Components
Aeronautical Development (East Ramp)	6.6 ac (287,496 sf)	6.6 ac	0	0	Tree cutting and removal of vegetation for construction of future aircraft hangars
Taxiway D and Runup Pad Relocation	2.2 ac (95,832 sf)	0.90 ac	0.40 ac	0.90 ac[a]	Tree cutting and removal within areas of proposed pavement - along Taxiway safety area and side slopes, tree removal area will be graded and restored to grass.
TOTAL	**8.8 ac (383,328 sf)**	**7.5 ac (326,700 sf)**	**0.4 ac (17,424)**	**0.90 ac (39,204 sf)**	

a) The Airport currently maintains vegetation around the areas of Upper Gate Pond and Lewis Pond within the Runway Visibility Zone to prevent trees from visually obstructing this area. The proposed Taxiway D will result in approximately 1.9 acres of this area comprised of a shrub layer to be graded and maintained as grass within the side slopes adjacent to Upper Gate Pond. For the purposes of this analysis, grasses and shrub layers are assumed to provide comparable levels of carbon sequestration, as grasses sequester carbon year-round without releasing it. Of the total area, approximately 0.9 acres will be converted from a brush/shrub layer to pavement.

The FEIR (Table 6.2-2) also provided an updated estimate of carbon sequestration loss as a result tree and shrub removals within areas of the Airport being converted from forested area to pavement. Consistent with the increased impacts (in comparison to the DEIR) shown in Table 6.2-1, the FEIR analysis estimated a loss to carbon sequestration of 7.05 metric tons (MT) of carbon per year (compared to the loss of 6.52 MT carbon a year estimated in the DEIR) and 211 MT of carbon over a 30-year period (compared to the 195 MT carbon estimate in the DEIR). The lost sequestration is in addition to the estimated one-time loss of 173 MT of carbon released due to the tree clearing.

Table 6.2-2 Carbon Sequestration Estimates

Project	Area of Tree Removal and Conversion to Non-vegetated Land (Pavement)	Carbon Sequestration by Acre Per Year (MTs) (a)(b)	Total Change (Loss) In Carbon Sequestration (MT) (c)
Aeronautical Development Areas (East Ramp)	6.6 ac (287,496 sf)	-0.84 metric ton CO_2 acre/year	+5.54 MT Carbon/Year
Taxiway D and Runup Pad Relocation	1.8 ac (78,408 sf)	-0.84 metric ton CO_2 acre/year	+1.51 MT Carbon/Year
TOTAL	**8.4 ac (365,904 sf)**		**+7.05 MT Carbon/Year (15,542 lbs./Year) +211 MT Carbon over 30-Year Period**

a. Metric Ton (1.1 Short Tons) = 2,204 lbs.
b. A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, 9/7/2023.
c. 1The negative value in this equation indicates carbon sequestration. A positive value indicates a loss in carbon sequestration.

The Proponent will mitigate impacts to trees and carbon sequestration by replanting approximately one acre of trees on and off the site, including within nearby EJ populations, that will sequester approximately 25 to 30 MT of carbon over 30 years. In addition, the trees that are cut down will be chipped and reused for landscaping purposes on the site, which will displace wood chips the Airport would have otherwise purchased and transported onto the site for landscaping. GHG mitigation measures previously implemented by the Airport include two solar fields (24,640 solar panels in total) occupying approximately 25 acres on the northern side of the Airport property which generate approximately 6.7 megawatts (MW) of energy and are estimated to offset more than 5,000 metric tons of CO_2 emissions annually; use of LED lighting in exterior areas; and EV charging stations in three parking lot locations.

Solid and Hazardous Waste

As noted above, the FEIR provided a list of chemicals used at the site and described measures to minimize their release in connection with airport operations. The FEIR asserted that no proposed activities, including construction of hangars at the East Ramp, will disturb capped areas. An NPC will be submitted to provide details about the design and impacts of any hangars to be constructed at the East Ramp. The NPC should review measures incorporated into the design of the hangars and proposed construction methods to avoid disturbance of the cap. According to MassDEP, a Release Abatement Measure (RAM) Plan would be required if disturbance of the cap is proposed.

Mitigation and Draft Section 61 Findings

The FEIR provided draft Section 61 Findings for use by Agencies in future Actions associated with the project. The Section 61 Findings should be provided to Agencies to assist in the permitting process and issuance of final Section 61 Findings. The FEIR contained commitments to implement these mitigation measures, identified the parties responsible for implementation, and included a schedule for implementation. As described in the FEIR, the Proponent has committed to implement the following measures to avoid, minimize and mitigate Damage to the Environment:

Environmental Justice

- The Proponent will continue its public engagement efforts after MEPA review is concluded and prior to and during subsequent permitting
- The project will facilitate the use of electric vehicles and aircraft by constructing a microgrid
- The project will include measures to minimize noise from Airport operations and construction activities, as detailed below
- Site contamination will be addressed as detailed below to protect public health
- Mitigation measures listed below will minimize construction-period impacts on nearby EJ populations

Land Alteration

- Projects have been designed to meet FAA standards while minimizing land alteration and impervious area
- Necessary tree removal of 7.5 acres will be accomplished during time periods appropriate for minimizing impacts to any potential bat populations outside of the summer roosting period (April through September), and optimally during the winter months (October 1 through March 31 when possible)
- No work will occur within mapped rare species habitat and there will be no impacts to state-listed species

Wetlands

- Use of a cofferdam in Upper Gate Pond to minimize turbidity associated with construction activities
- Use of a 2:1 side slope to construct Taxiway D to minimize impacts to wetland and water resource areas associated with Upper Gate Pond
- Avoid construction of perimeter road between Taxiway D and Upper Gate Pond to minimize impacts to wetland and water resource areas associated with Upper Gate Pond
- Construction of an approximately 3,000-sf BVW replication area[14]

Stormwater

- The stormwater management systems will be designed in compliance with Massachusetts Stormwater Management Standards for impervious surface additions
- Utilization of revised rainfall intensities by NOAA Atlas 14 Plus for future climate conditions
- Stormwater Best Management Practices to be incorporated into design include:
    - Infiltration chambers or leaching basins with pre-treatment
    - Vegetative strips
    - Oil/Water separators.
- Updates to Airport's Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention, Control, and Countermeasure Plan (SPCC), as necessary
- Groundwater monitoring to track PFAS plume at the Airport

[14] The Draft Section 61 findings included in the FEIR listed a BVW replication area of 2,100 sf; however, the text of the FEIR (Chapter 5) included a commitment to provide a total of 3,000 sf BVW replication.

- Construction period stormwater management best practices

Greenhouse Gas Emissions

- New or renovated buildings will meet 2023 Stretch Energy Code measures including:
    - High performing envelope that complies with the 2023 Stretch code envelope performance requirements
    - 100% heat pump space heating
    - Energy recovery ventilation per the 2023 Stretch code update
- Electric domestic hot water heating
- Roofs to be constructed PV-ready
- Installation of EV charging spaces, quantity to be determined
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.
- 110 acres of forest unaffected by the project will sequester 40 MT of carbon per year
- Plantings of native species will sequester an estimated 15 tons of CO_2 per acre over 30 years
- Trees that are cut down will be chipped and reused on site

Climate Resiliency

- The stormwater management systems will be sized for future storm events using NOAA Atlas 14 Plus rainfall intensities
- 110 acres of forested area will be maintained and new trees will be planted to minimize urban heat island effect

Solid and Hazardous Waste

- Soil, sediment, groundwater, and surface water will be managed in accordance with the requirements of the MCP. Work will be performed under the Preliminary Response Action or Comprehensive Response Action provisions of the MCP, as applicable.
- Existing PFAS disposal site caps will not be altered or impacted.
- Excess soil or sediment will either be reused on-site during construction, stockpiled in accordance with the MCP for future reuse, or transported offsite for reuse, recycling, or disposal in accordance with all local, state, and federal regulations
- If soil is reused during construction, it is anticipated that the soil will be reused in the general proximity of the location of the original excavation. If excess soil is retained for future reuse, it will be placed in an area designated by the Airport for materials management. Soil placed in the Airport materials management area(s) will be covered with polyethylene sheeting to minimize potential fugitive dust or otherwise stabilized. Secondary containment such as berms will be installed, as necessary, to prevent sediment in runoff from leaving the material management area. Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES DRGP, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal
- Excavation and management of contaminated soil will be conducted in general accordance with Response Action Performance Standards (RAPS) as defined in the MCP (310 CMR 40.0191)
- Construction projects will be completed in accordance with requirements of MCP provisions for the various response actions across the Airport

Noise

- Installation of noise barrier along the runup pad for the relocated Taxiway D adjacent to the existing runup pit
- Evaluation of voluntary noise abatement flight procedures for visual flight rule
- Encourage voluntary quiet hours between 10 p.m. and 6 a.m.
- Encourage voluntary avoidance of touch and go nighttime operations
- Review, and respond as necessary, to noise complaints received in person, over the phone or online https://flyhya.com/pilot-info/noise-abatement/
- Consult with FAA and primary Airport air taxi operators on flight path and approach angle modifications for take-offs and landings that may serve to minimize noise impacts

Construction

- Comply with MassDEP's Air Pollution Control regulations pursuant to M.G.L. c.40, §54 and the Massachusetts Air Pollution Control regulations at 310 CMR 7.00, including anti-idling provisions and handling and disposal of asbestos; and use of vehicles meeting EPA's Tier 4 Emissions Standards
- Implementation of measures to minimize dust and odors, including application of water on exposed soil, minimizing storage of materials on-site and street sweeping and use of stone in construction roads and staging areas;
- Encourage contractors to develop transportation management plans to reduce the number of worker vehicle trips
- Minimize construction noise by limiting construction to weekdays between 7 AM and 5 PM, using noise mufflers on construction equipment, using muffling enclosures around continuously running equipment, replacing noisy construction operations with less noisy ones where feasible, scheduling equipment operations to keep average noise levels low, turning off idling equipment, and locating noisy operations away from sensitive receptors
- Compliance with MassDEP's Solid Waste regulations and implementation of measures to reuse and recycle construction and demolition (C&D) debris, including recycling of asphalt for use as base course for new taxiway and runway surfaces or in other locations such as the perimeter road
- Conduct all earthwork and construction in accordance with the MCP and provide regular updates to the community, including through the project's LSP
- Use of sedimentation and erosion controls in compliance with the requirements of the SMS and the NPDES General Permit for Construction Activities, including development and implementation of a SWPP, and refuel equipment outside of wetland buffer zones.

Conclusion

Based on a review of the FEIR and consultation with Agencies, I find that the FEIR adequately and properly complies with MEPA and its implementing regulations. The project may proceed to permitting. Participating Agencies should forward copies of the final Section 61 Findings to the MEPA Office for publication in accordance with 301 CMR 11.12.

November 15, 2024
Date

Rebecca L. Tepper

Comments received:

10/28/2024 Deborah Green
11/04/2024 Charles Bloom
11/06/2024 Hyannis Park Civic Association
11/07/2024 Association to Preserve Cape Cod
11/08/2024 Massachusetts Department of Environmental Protection (MassDEP) – Southeast Regional Office (SERO)
11/08/2024 Cape Cod Commission
11/08/2024 Paul Phalan
11/08/2024 Betty Ludtke
11/08/2024 Christine Greeley
11/08/2024 Eric Byrne
11/08/2024 Karen O'Hanley
11/08/2024 Kelly Corwen
11/08/2024 Laurie McNeill
11/08/2024 Sierra Club Cape Cod & Islands Group
11/09/2024 kareningemie@comcast.net
11/10/2024 Betty Ludtke
11/14/2024 Department of Energy Resources (DOER)

RLT/AJS/ajs

Energy & Environmental Affairs
Public Comments Portal

alexander.strysky@mass.gov

View Comment

Comment Details

EEA #/MEPA ID
16640

Comments Submit Date
10-28-2024

Certificate Action Date
11-8-2024

Reviewer
Alexander Strysky, (857)408-6957, alexander.strysky@mass.gov

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Debora

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debgreen511@yahoo.com

Address Line 1
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Address Line 2
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State
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Zip Code
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Organization
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Affiliation Description
--

Status
Opened

Comment Title or Subject

Topic: airplane noise

Comments

I live at 356 Great Island Road in West Yarmouth. The planes fly directly over my house multiple times a day. They are quite low and quite loud and particularly frequent in the early AM.

I live fairly close to South Sea Ave, Just a few hundred feet from my house to the west there is uninhabited land. It was always my understanding that the planes were supposed to fly over this land where there are no houses to help mitigate some of the noise. This would be very helpful . Additionally , it is frightening to think of what it will be like with jets and more frequent planes flying directly over my house all day long. Disrupts the peace and serenity of living on the ocean and seems unfair. I do not support this new runway. Debora Green

Attachments

Update Status

Status
Opened

SUBMIT

Share Comment

SHARE WITH A REGISTERED USER

BACK TO SEARCH RESULTS

From: MEPA (EEA)
To: Strysky, Alexander (EEA)
Subject: FW: Reject FEIR Cape Cod Gateway Airport
Date: Tuesday, November 5, 2024 6:50:32 AM

Hi Alex -

Forwarding the comment below - unsure whether the comment period has closed on this yet.

Thanks,
Joe

-----Original Message-----
From: Charles Bloom <charlie.bloom@comcast.net>
Sent: Monday, November 4, 2024 11:19 PM
To: MEPA (EEA) <mepa@mass.gov>
Subject: Reject FEIR Cape Cod Gateway Airport

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

The residents of Hyannis have paid a heavy price by consuming PFAS/PFOS contaminated water for decades that originated from the Cape Cod Gateway Airport. My own blood levels are above the 98th percentile in 7 of the 11 areas measured. It is time for the airport to take aggressive action to clean up the mess on their property. As a lifelong resident of Hyannis who grew up drinking the water from the wells next to the airport, and as that same precinct's Town Councilor, I will not vote for any further expansion of the airport until I am satisfied that the airport is taking aggressive action to clean out the contamination. The airport's current lack of action rests on the cap they have installed. That is NOT good enough. The airport also relies upon the treatment of water at the Maher wells as mitigation. That is passing the buck to Barnstable's water department. And in any event, the Maher wells treat just a fraction of the water from the plume which they draw upon.

Due to public health, environmental justice, and climate change concerns, the FEIR for Cape Cod Gateway Airport Master Plan Projects (#16640) should be rejected as insufficiently responsive to your previous directives, to public comments on the DEIR, and to the needs of Hyannis area communities.

First, the FEIR does not include a PFAS cleanup solution within the scope of the proposed expansion and thus does not mitigate previous and possible future PFAS-related burdens imposed on environmental justice and other communities neighboring the Airport. Notably, the FEIR does not acknowledge recent sampling data and analysis by the Hyannis PFAS Community Working Group indicating that the Airport's plume is not dissipating, as projected; and is not fully contained by treatment systems installed in the Maher Wells, as claimed. The Airport should be required to fully characterize the extent of downstream contamination and the available treatment options at its upstream source areas, and then to submit an updated FEIR incorporating PFAS site cleanup as the starting point for its proposed expansion.

Second, the FEIR does not provide accurate accounting or commensurate mitigation of potential greenhouse gas emissions associated with the Airport's expansion and continued long-term operation under a range of possible future scenarios. Notably, American Airlines recently announced plans to increase commercial service to Cape Cod in 2025, an eventuality not anticipated in the FEIR, and the Airport dismissed the potential for increased private jet operations as outside the scope of the proposed expansion despite planning for the additional hangar space. The Airport should be required to provide a complete accounting of aviation-related greenhouse gas emissions—including analysis of private jet emissions like that used to inform EEA's decision to reject the DEIR for Hanscom Airport's proposed expansion—and to provide mitigation consistent with state decarbonization requirements. Thank you for consideration of these comments.

Charles Bloom
Town Councilor
Precinct 9 Hyannis
Sent from my iPhone

Energy & Environmental Affairs
Public Comments Portal

alexander.strysky@mass.gov

View Comment

Comment Details

EEA #/MEPA ID
16640

Comments Submit Date
11-6-2024

Certificate Action Date
11-8-2024

Reviewer
Alexander Strysky, (857)408-6957, alexander.strysky@mass.gov

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State
MASSACHUSETTS

Zip Code
02673

Organization
Hyannis Park Civic Association (Yarmouth)

Affiliation Description
Individual

Status
Opened

Comment Title or Subject

Topic: No PFAS clean-up, no expansion

Comments

Segoe UI 10 pt Paragraph

Secretary Tupper,

Please consider the scientific data offered by hydrogeologist Thomas Cambareri that supports the fact that the Cape Cod Gateway Airport's efforts to contain the PFAS plumes have failed. We need your leadership to demand the Airport do a better job of cleaning up its property and protect citizens down gradient from its AFFF contamination.

I represent the small, coastal village of Hyannis Park in Yarmouth. We are the ultimate destination of the Airport's PFAS plumes. We have taken on the responsibility of securing grant money to test our environment and found elevated levels of PFAS overshooting the Maher Wells. In addition, it has been disclosed through the Airport's own data that the asphalt cap has failed to contain its main plume.

Please consider that with our waters being contaminated, it is only a matter of time before the economic powerhouse of this entire region, namely Lewis Bay, will be impacted as well. Please institute a pause of the Airport's Master Plan until they remediate their PFAS.

Thank you.

Linda Bolliger, President

Hyannis Park Civic Association (Yarmouth)

Attachments

Update Status

Status

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Executive Director

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November 7, 2024

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
Alexander Strysky, EEA No. 16640
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Cape Cod Gateway Airport Master Plan Projects Final Environmental Impact Report

Dear Secretary Tepper:

The Association to Preserve Cape Cod (APCC) has reviewed the Final Environmental Impact Report (FEIR) for the Cape Cod Gateway Airport Master Plan Projects (EEA # 16640) and submits the following comments.

Founded in 1968, APCC is the Cape region's leading nonprofit environmental advocacy and education organization, working for the adoption of laws, policies and programs that protect, preserve and restore Cape Cod's natural resources. APCC focuses our efforts on the protection of groundwater, surface water, and wetland resources, preservation of open space, the promotion of responsible, planned growth and the achievement of an environmental ethic.

According to the FEIR, the Cape Cod Gateway Airport proposes the design and/or construction of the following projects as part of the airport master plan:

- Partial parallel Taxiway D to Runway 15-33
- Removal of Taxiway E and existing aircraft runup area and construction of an aircraft engine runup area and noise barrier for partial parallel Taxiway D
- Relocation and reconstruction of Taxiway B
- Extension of Runway 15-33
- Extension of Taxiway A

- Development of hangars within the North and East Ramp areas
- Construction of electric aircraft infrastructure and support equipment
- Construction of snow removal equipment storage and a seasonal maintenance building
- Completion of acquisition of Runway 15-33 Runway Safety Area and Runway Object Free Area aviation easements and enhancement of airport control over Runway Protection Zones.

As with our written comments submitted for the Draft Environmental Impact Report (DEIR), APCC has focused our comments for the FEIR on aspects of the proposed projects concerning wetland impacts, stormwater, groundwater protection, and carbon sequestration mitigation related to proposed tree clearing.

As described in the FEIR, changes to the project that were made after the DEIR was filed include:

- Modification of the Preferred Alternative for Taxiway D that is intended to minimize wetland impacts to Upper Gate Pond through the removal of a gravel service road from the design
- Refined land alteration impact calculations
- Identified areas on airport property for tree planting and participation in an off-airport tree planting program to offset project-related tree removal
- Some additional information on proposed stormwater management
- A proposed wetland mitigation plan for wetland area impacts
- Reduction in the length of the proposed Runway 15-33 extension by 400 feet

<u>Wetland Impacts</u>

APCC continues to express strong concern about the proposed significant impacts to Upper Gate Pond. The area around Upper Gate Pond is mapped by the Natural Heritage and Endangered Species Program as BioMap Core Habitat (Rare Species Core) and Critical Natural Landscape. Airport project plans include a new Taxiway D that would directly and permanently adversely impact Upper Gate Pond and its surrounding wetland buffer.

As mentioned above, revised plans in the FEIR have removed a proposed service road and include a proposed 2:1 side slope instead of a 4:1 side slope on the taxiway in order to reduce the wetland area impacted by Taxiway D. The resulting change in area impacted includes:

- 3,000 sf of altered Bordering Vegetated Wetlands (BVW) in the FEIR, compared to 4,600 sf in the DEIR;
- the loss of 10,900 sf (approximately a quarter of an acre) of Land Under Water (LUW) in

the FEIR, compared to 12,700 sf (approximately a third of an acre) in the DEIR; and
- no change in the 300 linear feet of pond bank altered in both the DEIR and FEIR.

In addition to the proposed permanent impacts to Upper Gate Pond, temporary impacts of 405 sf of BVW and 810 sf of LUW are anticipated for construction access and work associated with Taxiway D.

The project proponent states that impacts to Upper Gate Pond cannot be further minimized due to Federal Aviation Administration design requirements. To mitigate the permanent impacts of filling BVW, replication of 3,000 sf of BVW has been proposed at another location adjacent to the pond. According to the FEIR, the wetland replication area will be designed and constructed according to the Massachusetts Department of Environmental Protection's Massachusetts Inland Wetland Replication Guidelines, Second Edition (September 2022). APCC notes that the aforementioned MassDEP guidelines include the following statement:

> *"Although more careful design and management of replacement projects can improve replacement success, the UMASS studies and other reports establish that wetland replacement is, at best, an uncertain science. Based on this compelling evidence, MassDEP is wary of placing too much reliance on replacement, even under improved standards, to achieve the goals of the WPA or the no net loss of wetlands policy of the Water Resources Commission (April 9, 1990). These goals can best be achieved by avoiding and minimizing impacts to wetlands, thereby reducing the need for replacement projects of uncertain success."*

APCC recommends that the project proponent be required to provide a contingency plan to address the potential failure of the wetland replication efforts to provide the necessary wetland environment to properly mitigate the loss of BVW. According to the FEIR, replication plan details, including erosion control details, grading plans, planting schedules and plans, and plans for monitoring wells, have not been completed yet and are not available for public review.

Although the FEIR discusses proposed mitigation to address the loss of the 3,000 sf of BVW, APCC cannot find information in the FEIR about how the applicant proposes to mitigate the loss of 10,900 sf (approximately a quarter of an acre) of LUW at Upper Gate Pond that will be permanently filled in for construction of the taxiway. How will this significant loss to the pond be appropriately mitigated?

<u>Groundwater Protection</u>

APCC also remains concerned about potential adverse impacts to groundwater caused by the

proposed projects in the master plan, along with ongoing concerns about impacts to groundwater from existing PFAS soil contamination. PFAS-impacted soil in the airport's East Ramp area and at the ARFF/SRE Building area have been previously capped in an attempt to prevent further impacts to groundwater from PFAS leaching into the aquifer due to precipitation.

The FEIR states, "No further ground disturbances are proposed in these two areas. The airport will take all necessary precautions (e.g., marking construction limits) during all ground moving activities (e.g., grading, excavating, and fill) to ensure the capped areas of the airport remain intact during construction, and that the PFAS-contaminated soil will remain in place indefinitely … The caps will be inspected twice annually and maintained as necessary until a Permanent or Temporary Solution can be achieved." The project proponent maintains that the proposed projects will not disturb the PFAS-impacted locations at the airport, while removal of the PFAS-contaminated soil as a permanent solution is "economically infeasible."

It is APCC's position that continued reliance on point of extraction treatment by the water supplier is an inadequate response to PFAS contamination from a known source. APCC requests that the Secretary obtain written affirmation from MassDEP regarding the adequacy of the airport's PFAS response action before accepting the project proponent's assertion that capping and monitoring is the appropriate method in this instance for ensuring protection of the aquifer.

Stormwater Management

The FEIR states in general terms that the proposed projects will be designed to meet MassDEP's updated stormwater management standards that are part of the new updates to the Wetlands Protection Act. However, the FEIR also states that the project proponent intends to seek local, state, regional and federal permits for each individual project as funding becomes available and therefore details of a comprehensive stormwater management plan were not included in the FEIR. APCC believes it is important for such a large project, with potential impacts to wetland resources and public water supplies—and compounded by ongoing concerns over PFAS contamination—to provide a detailed stormwater management plan in the MEPA process so that permitting agencies and the public can review it and determine its appropriateness.

In fact, the MEPA Certificate on the DEIR says, "the FEIR should provide a copy of the Stormwater Report for the project which identifies all measures that will be employed to protect the water quality of the SSA, describes the proposed stormwater management system for each project/phase, and identifies BMPs that will be incorporated into its design. It should describe how the proposed stormwater management system will fully comply with the SMS. The FEIR should provide details on the size, location, and design of proposed stormwater

systems." The FEIR does not provide this information and lacks sufficient detail on the project's stormwater management plan to demonstrate how the project will protect water resources.

As one example, the FEIR states, “The Taxiway D project, as a redevelopment project, will comply with the MassDEP Stormwater Standards to the maximum extent practicable.” This comment about complying with MassDEP’s stormwater standards “to the maximum extent practicable" does not leave APCC with confidence, given that the project calls for Taxiway D to encroach directly on Upper Gate Pond. The FEIR states that stormwater currently discharged into Upper Gate Pond is pre-treated by Vortech stormwater treatment units that remove 81 to 87 percent of total suspended solids and 67 percent of total petroleum hydrocarbons, suggesting to APCC that 19 to 13 percent of total suspended solids and 33 percent of total petroleum hydrocarbons are not captured by the Vortech system and are therefore released into the pond. How much more impact to Upper Gate Pond from stormwater contaminants will occur after construction of the taxiway? The FEIR does not offer this information. This is a fatal deficiency in the project’s stormwater treatment plan and in the airport’s obligation to protect the quality of Upper Gate Pond.

Tree Removal Mitigation

According to the FEIR, approximately 7.5 acres of trees are proposed to be cleared for the airport projects. The Taxiway D project is projected to result in the removal of an additional 0.9 acres of shrub. The carbon sequestration loss from the tree removal has been calculated to represent approximately 7.05 metric tons of carbon per year, equaling approximately 211 metric tons of carbon over a 30-year period.

To mitigate this loss, the project proponent has proposed a tree replanting program on portions of the airport property as well as offsite locations. In addition to limited replanting at the airport, Capetown Plaza Shopping Mall, which is owned by the airport, has been identified as another site for tree planting. The proponent is also exploring participation in town-led efforts to increase tree cover in other parts of Hyannis. The airport’s proposed replanting program lacks detail about locations where trees will be planted and the number of replacement trees proposed. Saplings will not have equal sequestration capacity compared to the mature trees that will be lost, therefore the project proponent should replace more than a 1:1 ratio to compensate for the difference. Plantings should also be in contiguous clusters to replicate habitat lost instead of relying on individual streetscape trees as mitigation. Trees and other vegetation planted by the project proponent, both on and off the airport property, should be species that are native to the region and that are pest and drought resistant.

Conservation Restrictions

In the MEPA Certificate for the DEIR, Secretary Tepper recommended that the project proponent consider placing some areas outside of the proposed and existing development envelopes under permanent conservation restrictions to ensure their future protection. The project proponent stated in the FEIR that they have declined to consider this recommendation. APCC is disappointed that the airport has dismissed Secretary Tepper's recommendation. Placing the airport's undeveloped regions under conservation restrictions would, at a minimum, help to alleviate ongoing public concerns about plans for future airport expansion and the potential for additional threats to groundwater, other natural resources, and impacts to the surrounding community from intensified use of the airport. APCC calls on the project proponent to reconsider the use of conservation restrictions for those undeveloped areas.

Conclusion

Due to unresolved questions about wetland impacts, stormwater impacts, ongoing threats to drinking water, and insufficient details about tree loss/carbon sequestration mitigation, it is APCC's conclusion that the overall FEIR is grossly inadequate and cannot be approved as presented.

APCC appreciates this opportunity to provide comments.

Sincerely,

Andrew Gottlieb
Executive Director

Energy & Environmental Affairs
Public Comments Portal

alexander.strysky@mass.gov

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Comment Details

EEA #/MEPA ID
16640

Comments Submit Date
11-8-2024

Certificate Action Date
11-8-2024

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Alexander Strysky, (857)408-6957, alexander.strysky@mass.gov

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Zip Code
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Organization
Concerned citizen

Affiliation Description
Individual

Status
Opened

Comment Title or Subject

Topic: Reasonable Alternative study is lacking; PFAS clean up is lacking

Comments

Thank you for the opportunity to comment. I am somewhat surprised to hear you anticipate releasing the certificate on November 15, 2024. One would hope that any comments you receive through this comment period might be considered prior to issuing the certificate. That might perhaps take more than one week to accomplish. In fact my recommendation is that no certificate be issued until all reasonable alternatives have been adequately studied.

I made the comment I am about to make at the beginning of this process and received assurance that my comment would be adequately addressed but it has not happened. I asked that you study a reasonable alternative to consolidate major flight operations for the Cape and Islands to the airfield complex at Joint Base Cape Cod. Instead of a study which would involve a careful analysis of assets and capabilities taken in the broad context of the environment, a truncated argument describing the level of difficulty associated with understanding jurisdiction at Joint Base Cape Cod was included. And then we heard about having to pay back grant money to the tune of $87 million give or take as an insurmountable obstacle. I am sure that spending more money at an encroached airport is wiser than studying the art of the possible at an airfield complex that is not encroached.

It is curious indeed that nobody discussed the potential for a joint airport facility with competent authorities at Joint Base Cape Cod. In fact no officials were contacted at Joint Base Cape Cod as part of this environmental analysis. Concerning costs, the proposed master plan starts out with about a $100 million program, which will only grow from there. The enlarged and reconfigured terminal is not addressed, which should add another $20 million or so and the costs will continue to escalate. There will never be room for jet bridges at the Gateway Airport terminal. And what will be achieved with this $120 million plus investment at Gateway Airport? A 800’ lengthening of one runway, with a 600’ displaced threshold at an encroached airport.

Gateway Airport has served as the major hub for air operations on Cape Cod for roughly 100 years. In these 100 years, development has encroached upon the airfield and commercial air operations have changed. The off airport easements, proposed in the master plan, are a band aid on a problem that requires major surgery. Denver went through the same examination when they abandoned Denver Stapleton and built Denver International. How far are we proposing to go before we start looking at the next 100 years and make smart, forward thinking decisions? According to the Cape Cod Commission, we now have 86% of the land on Cape Cod either developed or in protected status. We have two vastly under utilized major airfield complexes, one with runway lengths that rival Boston Logan, another with runways that will never be larger than those proposed in the master plan. Do we invest $120 million plus to achieve marginal gains at Gateway or do we invest $120 million plus at Joint Base Cape Cod to get an airport that will meet and exceed regional requirements for the next 100 years?

I also submitted a comment in a format provided by the Sierra Club of Cape Cod. With some grant money they did a modest but brilliant and factual analysis of the PFAS clean up efforts at Gateway Airport. I support their position that any expansion at Gateway aiport be put on hold until adequate clean up protocols are designed and deployed. The same applies to a study of the reasonable alternative to create a joint civil military field at Joint Base Cape Cod. No certificate should be issued and no expansion projects begun until thorough PFAS cleanup is addressed and the joint airport study is complete.

I thank you for consideration of my comments and hope I do not see a certificate issued on November 15 that ignores these two major issues. Please review the screenshots from google earth, to see for yourself.

Attachments

Joint Base Cape Cod Airfield.pdf(null)

Cape Cod Gateway Airport.pdf(null)

Update Status

Status

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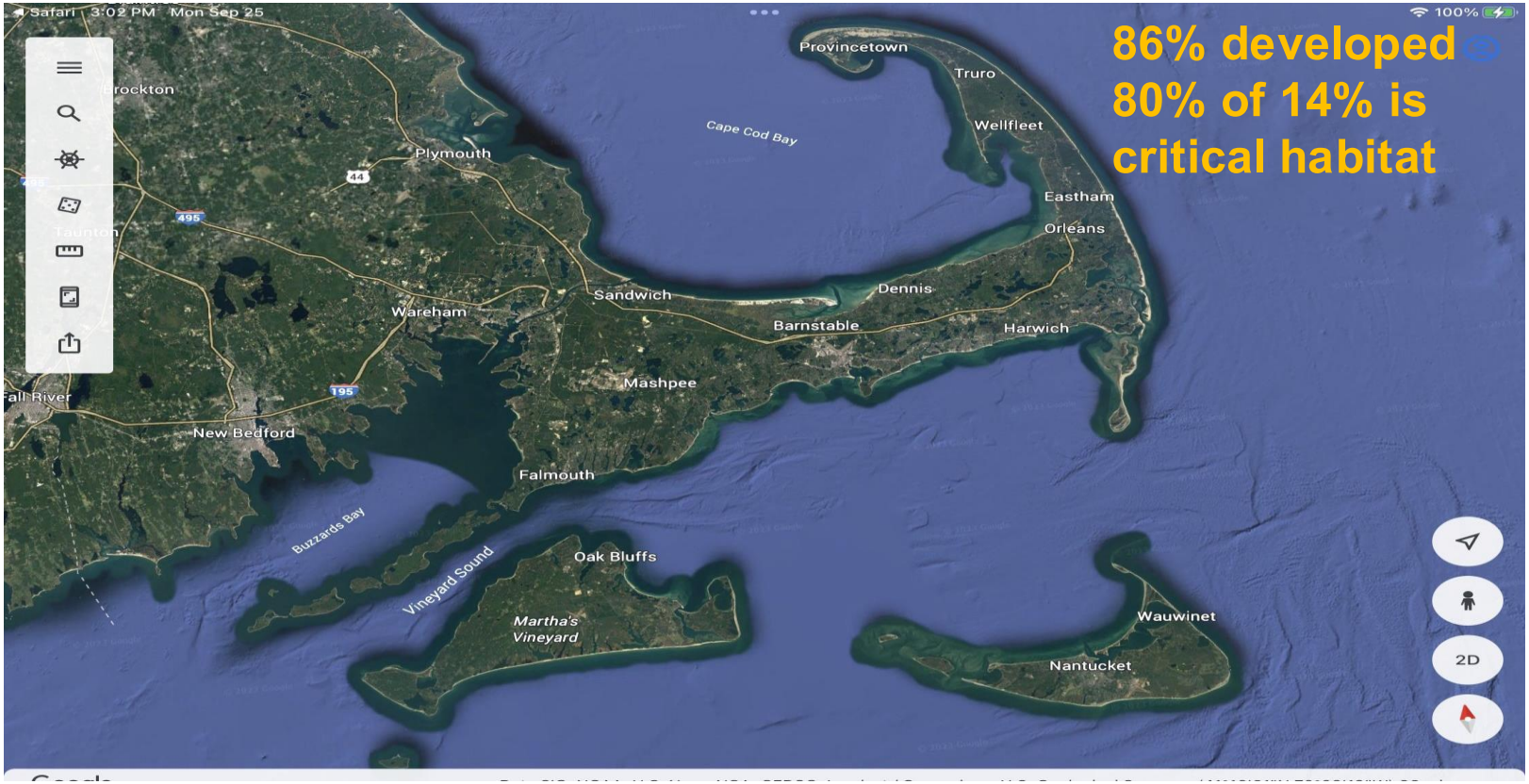
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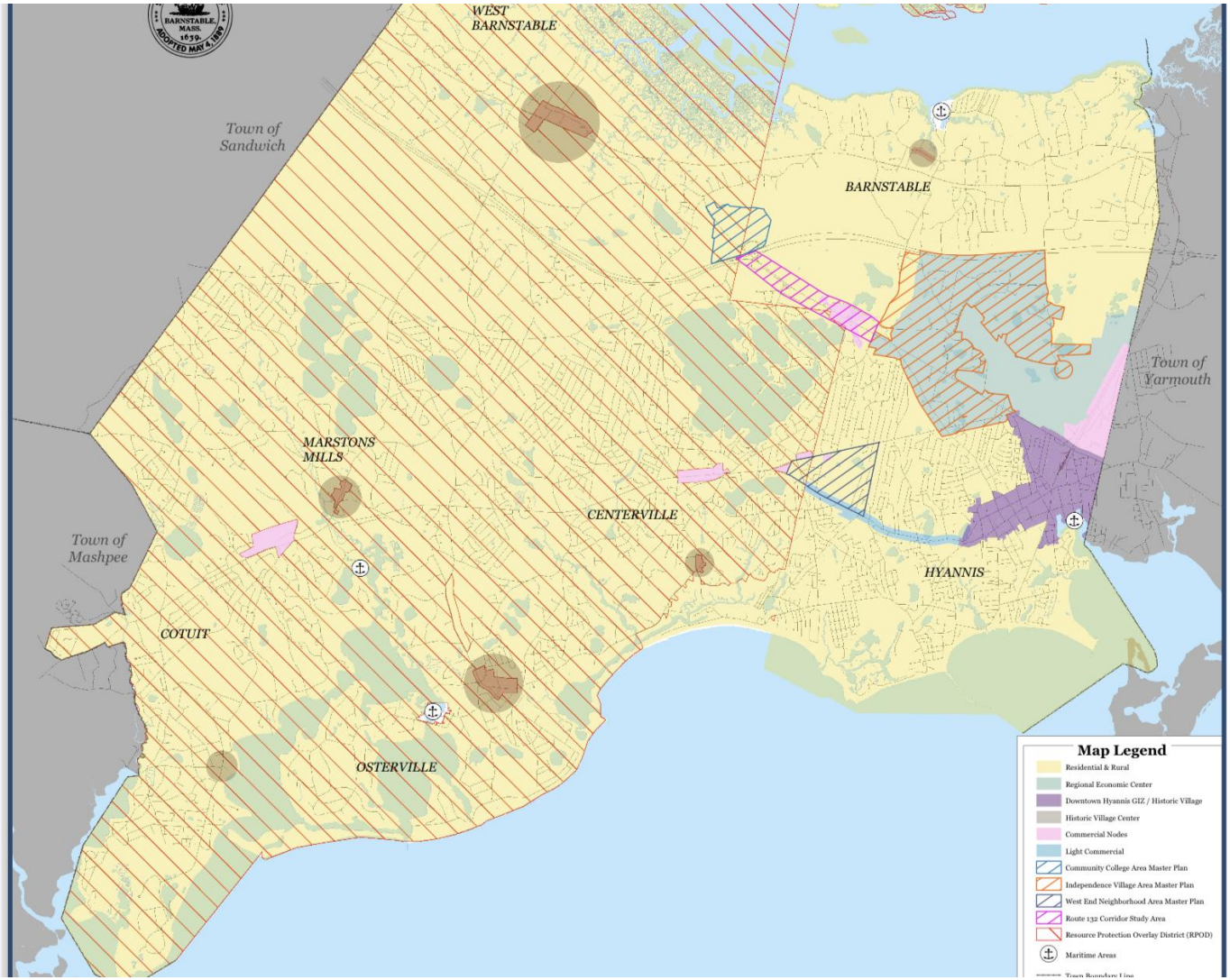
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BACK TO SEARCH RESULTS

Cape & Islands Regional Air Study - Asset Overview




Cape Cod Gateway Airport
Barnstable
Old Town House Park
6
6
Hyannis Ponds Wildlife Management Area
Cape Codder Water Park
Cape Cod Gateway Airport
Whydah Pirate Museum
2D



Draft Future Lan

The Local Comprehensive Planning
invites the community to review an
draft Future Land Use Map with pr
areas that will guide Barnstable's fu
10 years. The LCPC is seeking feedl
proposed land use study areas: shou
areas be amended, are there additio
should be identified?

The public comment period is oper
business Wednesday October 23, 2(
code below to access the interactive
Comments can be submitted online
map, by email to BarnstableLCP@t
or dropped off in person or via mai
and Development office located at
Street, Hyannis 02601, Planning &
(3rd floor).

To learn more about this important
submit questions please contact Ka
Planner, by email kaitlyn.maldonad
ma.us or by phone 508-862-4791.

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Joint Base Cape Cod
Lowell Holly Reservation
Mashpee
Cahoon Mus
of American
Frances A.
Crane Wildlife
Management
Area North
Johns
Pond Park
Mingo
Conservation
Area
Johns Pond

Cape and Islands regional air study

Study would be in line with the Mass Dept. of Transportation (DoT) and the 2010 Massachusetts Statewide Airport System Plan (MSASP).

Purpose: To provide a safe and efficient Cape & Islands regional airport system that:

- **Accommodates demand**
- **Supports economic and transportation needs**
- **Maximizes funding resources**
- **Addresses environmental issues and climate change**

Didn't MSASP study the Cape & Islands regionally?

Cape and Islands Regional Air Study

No, the MSASP did not.

The 2010 MSASP, complied individual data on 37 airports

- **Good news**, all commercial Cape & Islands airports included
- **Bad news**, Joint Base Cape Cod airfield not included
- MassDOT Aeronautics has a grants-in-aid program known as the Airport Safety and Maintenance Program (ASMP)
- Grants for projects under the ASMP are only given to public use airports included in the MSASP.

But did the Cape's own regional planning body do regional air study?

Cape and Islands Regional Air Study

No. The Cape Cod Commission (CCC) is our regional planning agency. The CCC does not study air transport nor plan for the islands. It encourages:

- Partnerships for use of shared infrastructure
- Comprehensive master planning with community input

The CCC's 2018 Regional Policy Plan (RPP) says **only** this about air transport: "Six airfields and airports also
link Cape Cod residents and visitors to Boston, New York, and the islands of Martha's Vineyard and Nantucket."

The CCC's 2024 Regional Transportation Plan (RTP) has 172 projects listed, not one for air transport. The RTP is targeted towards non-aviation related transport grants.

But all the airports have Master Plans, right?

Cape and Islands Regional Air Study

Yes, each Cape commercial airports has an independent master plan:

- Cape Cod Gateway Airport, Master Plan, 2022
- Capital Improvements Plan - Provincetown Municipal Airport, 2011
- Nantucket Memorial Airport Master Plan Update, 2015
- Proposed Capital Improvement Plan, Martha's Vineyard Airport, 2021

None of this planning is regional; all are individual, stovepiped master plans.

Cape and Islands Regional Air Study

Joint Land Use Study

JBCC and CCC did a 2013 Joint Land Use Study (JLUS)

- In 2005, the CCC, through a Department of Defense (DoD) grant, prepared a JLUS for JBCC and the four Upper Cape towns of Bourne, Falmouth, Sandwich, & Mashpee
- In May 2011, the Army nominated JBCC for a JLUS Update. DoD and CCC completed the update.

What did they find?

Cape and Islands Regional Air Study

- OEA found sufficient evidence that **encroachment** of the civilian community is likely to impair continued operational utility of the JBCC
- **Noise** contours should be incorporated into the zoning bylaws for all four towns or an **overlay district** should be considered to restrict development in noise-sensitive area. No action taken due to Base Realignment and Closure
- Establish **quasi-public state** wastewater entity. Done!

We have a mechanism to work jointly! Let's use it to study the joint use of JBCC airfield.

How ?

Cape and Is.ands Regional Air Study

Request Cape Cod Commission and Mass DoT Aeronautics work jointly on a regional air study

- Town of Barnstable advocate for Regional Study to CCC and state reps
- Town of Barnstable open communications with JBCC
- Peake, Cyr and Diggs advocate to State
- Study JBCC airfield assets and capabilities

Request Federal Aviation Administration (FAA) Military Airport Program (MAP) consideration

MAP is a grant set-aside from the **Airport Improvement Program** (AIP). Through MAP, the FAA awards funds to the civil sponsor of a military airfield for the development of aviation facilities for the public

Where have airport conversions been done?

Denver Stapleton > Denver International

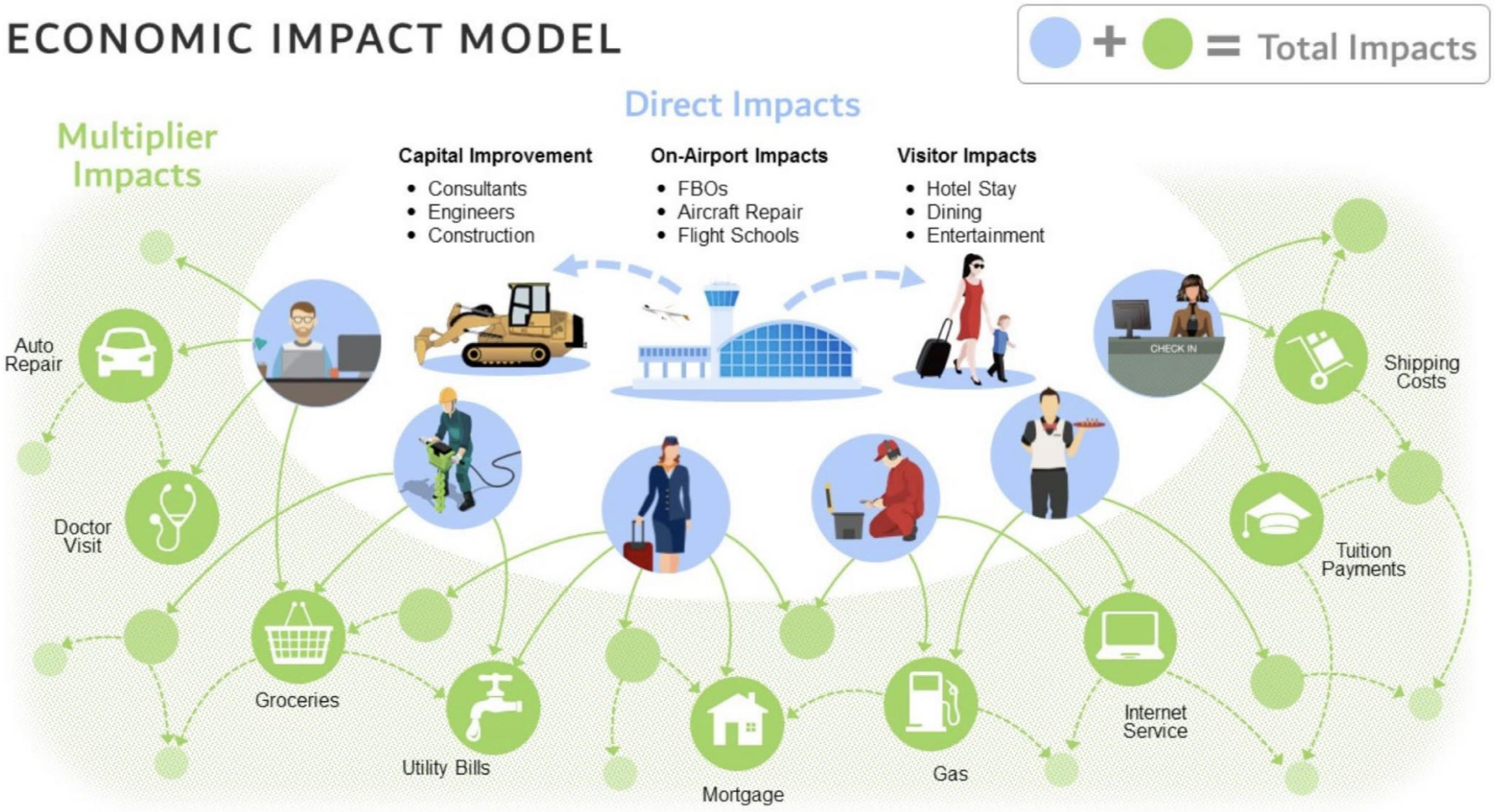
- Denver Stapleton encroached
- Denver International constructed
- Denver Stapleton closed
- Denver Stapleton rebuilt as mixed use

Worcester Regional Airport transferred to MassPort

Joint civil-military airports: Charleston, SC

- Joint use with U.S. Air Force since 1952
- City of Charleston transferred airport to Charleston County Aviation Authority in 1979

ECONOMIC IMPACT MODEL



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CAPE COD COMMISSION

Via Email

November 8, 2024
Rebecca Tepper, Secretary of Energy and Environmental Affairs
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office, Alexander Strysky, Environmental Analyst
100 Cambridge Street, Suite 900, Boston, MA 02114

Re: Final Environmental Impact Report
EEA No. 16640 (Cape Cod Commission File No. 22033)
Cape Cod Gateway Airport Master Plan Projects, Barnstable

Dear Secretary Tepper:

Thank you for the opportunity to provide comments on the above-referenced Final Environmental Impact Report ("FEIR") for the Cape Cod Gateway Airport Master Plan. The Cape Cod Gateway Airport Master Plan proposes multiple improvements to be completed in three phases over 20 years. This FEIR encompasses the improvements anticipated to receive funding within the next five to seven years: extending runway 15-33; modifying taxiways A, B, and D; removing taxiway E; constructing a run-up area and noise wall; and developing new hangars ("the Project"). Because the Project requires an Environmental Impact Report ("EIR"), it is deemed a Development of Regional Impact ("DRI") under § 12(i) of the Cape Cod Commission Act, c. 716 of the Acts of 1989.

Cape Cod Commission staff previously submitted comments on the Project's 2022 Environmental Notification Form ("ENF") and 2024 Draft Environmental Impact Report ("DEIR"). Our comment letter on the DEIR discussed concerns related to the amount of new land alteration, wetlands disturbance, and vegetation clearing associated with construction, noting, however, that the DEIR included an alternatives analysis and some beneficial modifications from the ENF, such as a decrease in new land alteration—from approximately 63 acres to less than 50 acres. At that time, we encouraged the Applicant to continue to assess design alternatives and/or mitigation to further minimize negative impacts to natural resources while fulfilling applicable Federal Aviation Administration ("FAA") requirements. We offer the following additional comments as Cape Cod Gateway Airport ("the Applicant") completes the MEPA process and prepares for DRI review.

Natural Resources

In the FEIR, the Applicant describes a new preferred alternative for Taxiway D that reduces, but does not eliminate, impacts to Upper Gate Pond. The FEIR presents information on proposed stormwater management and a wetland mitigation plan for wetland resource area impacts. As part of DRI Review, the Applicant will be required to expand upon these project elements in relation to Upper Gate Pond, including a summary of alternatives considered for Taxiway D, including compliance with the Regional Policy Plan ("RPP") Wetlands Resources Goal and Objectives through methods identified in the Wetlands Resources Technical Bulletin.

The FEIR also presents updated impact calculations, with land alteration calculated to total 49 acres and new impervious area calculated to total 40 acres. Around Taxiway D, approximately 1.54 acres of tree clearing and 3.37 acres of brush removal (to be converted to grassland) are proposed, and around the East and North Ramps, an additional 6.6 acres of tree/vegetation removal is proposed to accommodate potential future hangar development. As part of DRI Review, the Applicant will be required to prepare a Natural Resources Inventory (NRI), as described in the Commission's Wildlife and Plant Habitat Technical Bulletin, for undeveloped areas proposed to be altered. To mitigate impacts, the Applicant has identified potential areas on Airport for tree planting and proposes to participate in off-Airport tree planting programs. As part of DRI Review, the Applicant will be required to provide additional details about these project elements, including details on how it complies with the Open Space Goal of the RPP.

The FEIR notes that certain information as requested in the Certificate on the DEIR is not available until further engineering design is completed for specific projects upon receipt of funding. The Applicant proposes to submit supplements for each major element of the Project, documenting compliance with the Massachusetts Stormwater Standards and Greenhouse Gas Emissions requirements via modeling and calculations though a Notice of Project Change (NPC) and the provision of final impact numbers, regardless of whether they exceed a new MEPA review threshold or change more than 20%. According to the Applicant, this process would be completed in parallel with Cape Cod Commission review, via an amendment process. As part of DRI Review, the Applicants will be required to clearly identify each Project element. Any element of the Project proposed to be approved as part of DRI Review must include sufficient detail for Commission staff and members to review the proposal for compliance with RPP Goals and Objectives.

Water Resources

The Project Site is entirely within mapped Wellhead Protection Areas. Commission staff note that the FEIR provides several updates related to water resources, including additional alternatives considered and selected for the replacement of Taxiway D, general principles to be applied during stormwater system design, and a discussion of the solid and hazardous waste operations for the Project. The FEIR includes a groundwater analysis, including summary of site investigations and remedial actions related to PFAS contamination and the Project's potential impacts to public drinking water supplies and the area's sole source aquifer. During DRI Review, the Applicant will be required to address other items related to drinking water supply, including: opportunities to

reduce net new impervious surface; how the project will manage stormwater across the site; and any changes to hazardous waste/materials generation, storage, or management related to the new infrastructure, and other information to address the Project's consistency with RPP Water Resources Goal and Objectives.

Cultural Heritage

The proposed improvements will involve construction and disturbance in several locations that are near known archaeological sites and may be archaeologically sensitive. Based on the FEIR, the FAA has begun consultation with Massachusetts Historical Commission and Tribal Historic Preservation Officers to develop an archaeological resource avoidance plan. This would include establishing high visibility fencing around known archaeological sites, providing personnel briefings, and site inspections throughout the construction process. As part of DRI Review, the Applicant will be required to provide details of the avoidance plan, including procedures to address any unexpected discoveries.

Transportation

The Project is not expected to generate a significant increase in vehicular traffic volume on the adjacent roadway network and construction-related impacts will be temporary. Any increases in traffic volume to and from the Airport are likely to be gradual, resulting from market and operational factors. The Applicant commits to implementing a Transportation Demand Management ("TDM") program as part of the Master Plan. Commission staff support the inclusion of a TDM program as a method to reduce single-occupancy vehicle trips to the Airport and promote alternative transportation options. As part of DRI Review, the Applicant will be required to provide details to evidence consistency with the RPP Transportation Goal and Objectives. We encourage the Applicant to review and coordinate with MassDOT and the Town of Barnstable to ensure multimodal connectivity is provided to the Airport from these roadways and major intersections.

Thank you for the opportunity to provide comments on the Project. Commission staff are available to answer any questions you might have about these comments.

Sincerely,



Kristy Senatori
Executive Director

Cc: Project File
Alyssa Jacobs, Epsilon Associates

Katie Servis, Airport Manager, Cape Cod Gateway Airport
James Kupfer, Director, Barnstable Planning & Development
Barnstable Cape Cod Commission Representative, via email
Cape Cod Commission Chair, via email
Cape Cod Commission Committee on Planning and Regulation Chair, via email

Christine K. Greeley
48 Glenwood Street, West Yarmouth, MA 02673

Rebecca L. Tepper,
Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street
Suite 900
Boston, MA 02114
November 7, 2024

Re: EEA No. 16640

Dear Secretary Tepper,

I have been a home owner/resident of West Yarmouth for 43 years and have been involved in monitoring and commenting on significant issues concerning the Barnstable Municipal, now Cape Cod Gateway, Airport for decades. I am extremely concerned about the inadequacies of this Final Environmental Impact Report for a number of significant environmental issues.

For decades the airport has submitted numerous "small projects" for review and approval while maintaining there would be little impact on the environment. What we now have are significant documented issues on a huge area of environmentally important land for both Barnstable and Yarmouth. In the mid-1980's I met with FAA officials in their office and was told that if the airport was then coming to request building an airport on the site "it would be denied." I can only imagine what they would say now given all the "incremental expansion" that has been done on the site.

I had responded to the earlier filing and know that I outlined in greater detail my concerns and that they are included in this report. After reading this final document I remain concerned and again articulate issues that I believe still need considerably more study:

- The well-documented PFAS/PFOS contamination that exists on the airport property surrounding land areas is now identified as significantly impacting the land, drinking water sources, and health of residents.

Some mitigation work has been done as a good start, but issues are still being discovered that will require much more work for many years. Although the airport claims to have remediated "their" issues and that others, such as the Fire Fighting Academy, need to address their issues, the fact remains that the flow from the land is continuing to seriously contaminate ground water outside the airport boundaries.

There will need to be significant amounts of soil dug and moved during construction, and

there are plans for future hanger building/parking on land near currently identified PFAS sites. That disturbed soil will need treatment. This is being proposed even as there is evidence that PFAS levels remain high, there is leaching from sources with caps, and the Mahar Wells are not containing the flow.

- There will be loss of wetlands and pond areas that are environmental habitats.

The plan proposes impacting approximately 40 acres of land with impervious surfaces. This includes placing a taxiway through a pond area! In addition, they have plans for a 20,000 sq. foot garage that didn't get included in this filing.

- It is very troubling that nothing has been done, or will be done, to study greenhouse gas/lead fume emissions from small planes and jets.

These planes are the significant users of the airport, as Nantucket and Martha's Vineyard cannot accommodate them for parking and fueling. Given recent studies undertaken by Tufts at Logan and Hanscom Airports, this project should not be approved until such a study is done here. The planes here fly over heavily populated neighborhoods, Lewis Bay, conservation/wet lands and sole source aquifers. Given the serious findings about lead fume emissions (including tonnage), it is a serious omission and no approval should be given for this project until such a study is completed. When asked at a public meeting if they had even read the Tufts study, airport personnel said they hadn't!

- There is an even more significant question of why do we need to expand this airport in such a fragile area when you look at the decline in airport usage for many years now. Although they deny it, it truly has become a "If we build it they will come" scenario as their manager attends national conferences to talk with air carriers about coming here.

- It is concerning that Runway 15/33 will be extended and quite possibly become a primary runway. The extension places departing and arriving aircraft closer to the Vineyard Wind substation which now contains dialectic fluid. The station was built with containment walls as it was stated that the release of even a small amount of the fluid would literally totally contaminate the sole source aquifer for Cape Cod!

I appreciate the opportunity to again comment and ask that any decision on this project be delayed until some very significant work has been done to safeguard both the environment and the residents of Cape Cod. Their hoped-for need for a larger airport should not over rule our needed health and well-being.

Sincerely,

Christine K. Greeley

Christine K. Greeley

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Acting Commissioner

November 8, 2024

Rebecca L. Tepper
Secretary of Energy and Environment
Executive Office of Energy and
Environmental Affairs
Boston, MA 02114
ATTN: MEPA Office
100 Cambridge Street, Suite 900

RE: FEIR Review. EOEEA #16640
BARNSTABLE Cape Cod Gateway Airport at
480 Barnstable Road

Dear Secretary Tepper,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Final Environmental Impact Report (FEIR) for the Cape Cod Gateway Airport at 480 Barnstable Road, Barnstable, Massachusetts (EOEEA #16640). The Project Proponent provides the following information for the Project:

The analysis presented in this Final Environmental Impact Report (FEIR) refines the projects discussed in the 2023 Draft Environmental Assessment and Environmental Impact Report (Draft EA/EIR) and provides even more detail on the environmental impacts of the projects and the mitigation strategies that will be taken on to address environmental impacts. This document has been prepared in accordance with the MEPA Certificate on the Draft Environmental Assessment and Draft Environmental Impact Report dated February 16, 2024 (Appendix A) and MEPA Regulations (301 Code of Massachusetts Regulations [CMR] 11.07), and most importantly, feedback and comments received through the public engagement process. The Final Environmental Assessment (EA) document has been prepared as a separate, standalone document to meet National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508 and 23 CFR 771) requirements of federal agencies to determine whether there are significant impacts associated with federal actions, including federally funded projects. Information in this FEIR is incorporated into the NEPA EA as may be required.

This FEIR will provide a brief background about the airport and a brief description of the projects (Chapter 1.0); an in-depth exploration of additional alternatives possible in these projects (Chapter 2.0); a look into the Sole Source Aquifer of the Cape Cod, Massachusetts area and how these projects will address impacts to the sole source aquifer and the groundwater in general (Chapter 3.0); an analysis of the impacts to environmental justice communities and public health (Chapter 4.0); an explanation of the surrounding wetlands, the project's impacts to the wetlands, wetland replication proposed, and how stormwater will be stabilized during and after the projects (Chapter 5.0); an analysis of climate change impacts to the airport, how the projects will be affected by climate change, and how the project proponent can take steps to lessen climate impacts (Chapter 6.0); a review of solid and hazardous waste management practices at the airport during these projects and after they are completed (Chapter 7.0); an evaluation

of mitigation and avoidance/minimization measures (Chapter 8.0); and a response to comments chapter of comments that were received during the MEPA public comment period (Chapter 9.0).

Bureau of Water Resources (BWR)Comments

Wetlands: No significant change to comments is necessary from what was previously provided with respect to the Project's permitting requirements.

Drinking Water. The Drinking Water's comments for the FEIR remain unchanged... As stated earlier:

Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan recommends improvements needed to meet the goals of the Airport and its users. The Projects, constructed over the next 7 years, include the extension of Runway 15, modification of taxiways A, B and D, construction of a run-up area and noise wall, removal of Taxiway E, and aeronautical development within the North and East Ramp areas.

The Airport Property abuts several properties containing municipal Public Water Supply sources. Each source has a designated Zone 1 and Zone II protection area as required by the Massachusetts Drinking Water Regulations (310 CMR 22.00). After review of the included figures in the DEIR, the MassDEP Drinking Water Program has determined that these projects do not interfere with, or intrude on the Zone 1 of any of the public water supply sources. The entire airport property is within a Zone II, but the regulations do not preclude this construction activity. Activities within the Zone II are subject to local bylaws which are required by the Massachusetts Drinking Water Regulations. MassDEP's Drinking Water Program concludes that the proposed Project will not impact the public water supply sources adjacent to the airport property.

Bureau of Waste Site Cleanup (BWSC) Comment

Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed Project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000].

BWSC finds the Project Proponent's responses to BWSC's comments acceptable with the exception of one comment (MEPA 49). Specifically, the response to MassDEP's comment indicates that there is no planned work in the area of the caps. However, Figure 1.3-1 "Land Alterations and Tree Removals" indicates a "Potential Aviation Development Area" as well as tree removal area proximate to and within one of the capped areas. Please specify the scope of activities within the Potential Aviation Development Area as portions of this area appear to be within the capped areas. If development is not intended here or if tree removal in this area is outside of the capped area, the figures and the text should indicate as such. Otherwise, a RAM would be necessary if completing work in the capped areas.

Also, it should be noted that some language in the FEIR is not wholly accurate. Specifically, in Section 3.4.1 - Groundwater monitoring, the FEIR states, "*Two locations of approximately 2.25-acres total (0.39% of overall airport property) were identified and confirmed with MassDEP*" and that "*Boundaries of the site where AFFF use has occurred on the 639-acre parcel were identified and accepted by MassDEP."*

The Cape Cod Gateway Airport is not under direct oversight by MassDEP; therefore, the Disposal Site Boundaries (DSB) are not formally accepted by the Department. MassDEP may require certain response actions be conducted or approve response actions proposed by a Licensed Site Professional (LSP). MassDEP relies on the LSP to develop a Conceptual Site Model to determine the DSB using professional judgement in accordance with the MCP.

No additional releases have been reported in the vicinity of the Project area since the submittal of the ENF.

Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer at MassMapper. Under the Available Data Layers listed on the right sidebar, select "Regulated Areas", and then "DEP Tier Classified 21E Sites". MCP reports and the compliance status of specific disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: https://eeaonline.eea.state.ma.us/portal/dep/wastesite/

The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this Project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.

Bureau of Air and Waste (BAW) Comments

Air Quality: Response to comments DEP 09. From the FEIR:

"DEP 09 All aircraft, once on the ground, should cease to operate its engines until such time when departure is warranted. Alternatively, to running these engines on idle, when warranted to maintain comfort within these aircraft during the warm summer months, plug in stations should be provided by the airport as an alternative to the greenhouse gas emissions, air pollutant emissions and noise that are emitted while these engines continue to operate while on the ground to keep onboard systems (refrigeration, air conditioning, etc.) running.

The pilot in command of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft under 14 CFR § 91.3. To the extent that it is safe to do so, the pilot in command may take measures to reduce engine running time."

In the context of the MEPA guiding principle to avoid, minimize and mitigate environmental impacts, the Proponent should encourage the use of aircraft plug in stations to avoid the idling of engines to provide conveniences to the aircraft passengers, which increases noise and the emission of air pollutants.

MassDEP also points out the following MEPA requirement:

In fulfillment of the requirements of 301 CMR 11.07(6) and the Greenhouse Gas (GHG) Emissions Policy and Protocols (https://www.mass.gov/doc/greehouse-gas-emissions-policy-and-protocol/download), the Proponent is required to provide the Department with an analysis of alternatives to idling (plug in stations) to address GHG, air quality in general and noise, and the proposed mitigation measures to reduce those emissions. In view of the incoming comments that were shared with the Department, the exhaust emissions and noise generated from the idling of the aircraft engines during the summer months when the airport is

busiest appears to be an ongoing public health concern when those engines are on idle - hours prior to departure for the operation of onboard systems that provide air conditioning comfort to its passengers.

Solid Waste Management: The FEIR states: "The selected contractor will apply relevant and practicable procedures to allow for the reuse and recycling of construction materials. Prior to construction, the contractor will develop a Construction Waste Management Plan to ensure that a minimal amount of waste debris is disposed in landfills. For materials that cannot be recycled, solid waste will be transported in covered trucks to an approved solid waste facility per the DEP Regulation for Solid Waste Facilities, 310 CMR 16.00.." Furthermore, the Project Proponent reports that selected contractors for the construction phase "will adhere to materials banned from disposal under 310 CMR 19.017: asphalt, pavement, brick, concrete, metal, wood, and clean gypsum wallboard. The Airport will seek to recycle these materials at the job site to the greatest extent feasible. All recyclable materials will be separated to achieve a higher recycling rate and reduce recycling costs." MassDEP finds this response adequate, however should materials be re-use on-site please see paragraph 1 below. Should it be determined that Beneficial Use Determination is needed, MassDEP's Solid Waste Management Section encourages a pre-application meeting with MassDEP prior to submittal of any permits.

As a reminder, the Project Proponent is advised of the following requirements:

1. Reuse of any material requires submittal of MassDEP's BWP SW41 – Beneficial Use Determination – Restricted Applications. The permit is intended to protect public health, safety, and the environment by comprehensively regulating the reuse of waste materials as effective substitutes for a commercial product or commodity. Information pertaining to this requirement is available *at* https://www.mass.gov/doc/instructions-sw-39-40-41-42-beneficial-use-determinations/download.

2. *Compliance with Waste Ban Regulations*: Waste materials discovered during construction that are determined to be solid waste (e.g., construction and demolition waste) and/or recyclable material (e.g., metal, asphalt, brick, and concrete) shall be disposed, recycled, and/or otherwise handled in accordance with the Solid Waste Regulations including *310 CMR 19.017: Waste Bans*. Waste Ban regulations prohibit the disposal, transfer for disposal, or contracting for disposal of certain hazardous, recyclable, or compostable items at solid waste facilities in Massachusetts, including, but not limited to, metal, wood, asphalt pavement, brick, concrete, and clean gypsum wallboard. The goals of the waste bans are to: promote reuse, waste reduction, or recycling; reduce the adverse impacts of solid waste management on the environment; conserve capacity at existing solid waste disposal facilities; minimize the need for construction of new solid waste disposal facilities; and support the recycling industry by ensuring that large volumes of material are available on a consistent basis. Further guidance can be found at: https://www.mass.gov/guides/massdep-waste-disposal-bans.

   MassDEP recommends the Proponent consider source separation or separating different recyclable materials at the job site. Source separation may lead to higher recycling rates and lower recycling costs. Further guidance can be found at: https://recyclingworksma.com/construction-demolition-materials-guidance/

   For more information on how to prevent banned materials from entering the waste stream the Proponent should contact the RecyclingWorks in Massachusetts program at (888) 254-5525 or via email at info@recyclingworksma.com. RecyclingWorks in Massachusetts also provides a website that includes a searchable database of recycling service providers, available at http://www.recyclingworksma.com.

3. *Asphalt, brick, and concrete (ABC) rubble* associated with the removal of existing structure must be handled in accordance with the Solid Waste regulations. These regulations allow, and MassDEP encourages, the recycling/reuse of ABC rubble. The Proponent should refer to MassDEP's Information Sheet, entitled " Using or Processing Asphalt Pavement, Brick and Concrete Rubble, Updated February 27, 2017 ", that answers commonly asked questions about ABC rubble and identifies the provisions of the solid waste regulations that pertain to recycling/reusing ABC rubble. This policy can be found on-line at the MassDEP website: https://www.mass.gov/files/documents/2018/03/19/abc-rubble.pdf.

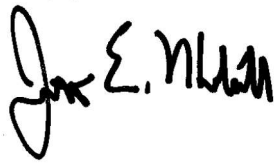
4. *Tree removal/land clearing/clean wood:* As defined in 310 CMR 16.02, clean wood means "discarded material consisting of trees, stumps and brush, including but limited to sawdust, chips, shavings, bark, and new or used lumber"…etc. Clean wood does not include wood from commingled construction and demolition waste, engineered wood products, and wood containing or likely to contain asbestos, chemical preservatives, or paints, stains or other coatings, or adhesives. The Proponent should be aware that wood is not allowed to be buried or disposed of at the Site pursuant to 310 CMR 16.00 & 310 CMR 19.000 unless otherwise approved by MassDEP. Clean wood may be handled in accordance with 310 CMR 16.03(2)(c)7 which allows for the on-site processing (i.e., chipping) of wood for use at the Site (i.e., use as landscaping material) and/or the wood to be transported to a permitted facility (i.e., wood waste reclamation facility) or other facility that is permitted to accept and process wood.

If you have any questions regarding the Solid Waste Management Program comments above, please contact Jennifer Wharff at Jennifer.Wharff@mass.gov or Mark Dakers at Mark.Dakers@mass.gov for solid waste comments.

Other Comments/Guidance

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this FEIR. If you have any questions regarding these comments, please contact George Zoto at George.Zoto@mass.gov or Jonathan Hobill at Jonathan.Hobill@mass.gov.

Very truly yours,



Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/GZ

Cc: DEP/SERO

ATTN: Gerard Martin, Regional Director
John Handrahan, Deputy Regional Director, BWSC
Seth Pickering, Deputy Regional Director, BAW
Jennifer Viveiros, Deputy Regional Director, ADMIN
Maissoun Reda, Chief, Wetlands, BWR
Brendan Mullaney, Chief, Waterways, BWR

James McLaughlin, Chief, Drinking Water, BWR
Michelle Regon, Drinking Water, BWR
Joseph Cerutti, Underground Injection Control, BWR/Boston
Daniel DiSalvio, Chief, Compliance and Enforcement, BAW
Mark Poudrier, Chief, Air/New Source Review, BAW
Christopher Redus, Air/New Source Review, BAW
Mark Dakers, Solid Waste, BAW
Jennifer Wharff, Solid Waste Management, BAW
Angela Gallagher, Audits, BWSC
Amanda Cantara, Site Management, BWSC

From: MEPA (EEA)
To: Strysky, Alexander (EEA)
Subject: FW: Chemical Cleanup HYA Airport
Date: Friday, November 8, 2024 10:01:31 AM

-----Original Message-----
From: ericrbyrne@gmail.com <ericrbyrne@gmail.com>
Sent: Friday, November 8, 2024 9:32 AM
To: MEPA (EEA) <mepa@mass.gov>
Subject: Chemical Cleanup HYA Airport

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi, I'm writing to express my support on efforts to remediate toxic chemicals in the Hyannis water supply. As as Federal official, I understand the priority to serve the public interest.

-Eric Byrne
202-898-3854
917-320-2882
617-372-3046

Sent from my iPhone

From: MEPA (EEA)
To: Strysky, Alexander (EEA)
Subject: FW: Airport expansion and cleanup
Date: Friday, November 8, 2024 10:00:59 AM

From: Karen O'Hanley <kejohanley@gmail.com>
Sent: Thursday, November 7, 2024 10:14 PM
To: MEPA (EEA) <mepa@mass.gov>
Subject: Airport expansion and cleanup

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

As a resident of West Yarmouth I am concerned about the level of contamination in the water around Yarmouth and Hyannis. My family has had a house on Baxter Ave since 1963. We are currently doing a whole house renovation because our family is expanding and we want to stay in this special area.

A portion of our property is conservation land. We stayed within the law and did not disturb the wonderful land around our home. It's odd that there are so many rules and regulations concerning saving conservation land near a homeowners property and yet public town water is being contaminated. It does not make sense. We all need to be held accountable for our actions. The Cape is a special place. Now is the time to take action to clean up the water for us and future generations.

It is imperative that the airport clean up the PFAS pollution before going forward in expanding the airport. During the expansion, the digging and excavating will disturb the polluted area and make matters worse. The covers protecting the wells could be damaged and more contamination possible.

No PFAS clean up/No Airport expansion

Thank you for the opportunity to express my concern.

From: MEPA (EEA)
To: Strysky, Alexander (EEA)
Subject: FW: FEIS for Cape Cod Gateway Airport Master Plan #16640
Date: Friday, November 8, 2024 10:01:05 AM

From: Kelly Corwen <kcorwen@gmail.com>
Sent: Thursday, November 7, 2024 11:25 PM
To: MEPA (EEA) <mepa@mass.gov>
Subject: FEIS for Cape Cod Gateway Airport Master Plan #16640

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I am writing to express my strong objection to the master plan for the Cape Cod Airport at this time.

It is my understanding that the FEIS does not include findings from community-based PFAS sampling and analysis. As a resident of the Hyannis Park community, I am deeply concerned about the cleanup of PFAS in the Hyannis and Yarmouth area. The claims that PFAS plumes have caused no exposure to the community and that temporary plastic and asphalt caps prevent further groundwater contamination are inconsistent with the community-based findings. The fluctuations observed of PFAS in the airport observation wells is typical of a chronic release of contaminants over time that occurs from historic sources of PFAS contamination. Until cleanup of the PFAS is addressed, there should not be an expansion of the airport.

In addition to the concern of PFAS, there is additional concern of Greenhouse Gas emissions due to aircraft fuel usage. It is my understanding that the FEIS does not include the planned additional facilities for private jets in its analysis.

Until the FEIS considers all the above information, there should be no expansion of the airport.

Sincerely,

Kelly Corwen
West Yarmouth resident

From: MEPA (EEA)
To: Strysky, Alexander (EEA)
Subject: FW: Hyannis Airport PFAs
Date: Friday, November 8, 2024 2:23:28 PM

-----Original Message-----
From: Thomason, Isabel (EEA) <Isabel.Thomason@mass.gov>
Sent: Friday, November 8, 2024 10:10 AM
To: MEPA (EEA) <mepa@mass.gov>
Subject: FW: Hyannis Airport PFAs

Hello MEPA Team,

Please see the below email we received in the EEA general inbox sharing comments regarding the Hyannis Airport expansion.

Thank you,
Isabel

-----Original Message-----
From: Laurie McNeill <LAMcNeill11@aol.com>
Sent: Friday, November 8, 2024 7:31 AM
To: ENV Internet (EEA) <env.internet@mass.gov>
Subject: Hyannis Airport PFAs

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To Whom It May Concern:

Please register my opposition the Hyannis Airport expansion plan as evaluated in the Final Environmental Impact Report (FEIR). The on-site PFA's must be cleaned up and the scope of the FEIR does not adequately address the PFA issue.

I am the homeowner at 24 Park Street in West Yarmouth and I own the lot behind it at 43 Grove Street. Both these properties abut the nature conservancy next to Hyannis Hospital.

I urge your thorough action to clean up the contamination.

Sincerely,
Laurie McNeill

From: MEPA (EEA)
To: Strysky, Alexander (EEA)
Subject: FW: cape gateway airport PFAS
Date: Friday, November 8, 2024 9:03:20 AM

Good Morning Alex –

And so the comment letters begin. Would you like me to create a folder in the MEPA inbox for all comment letters submitted for Cape Cod Airport FEIR? I can also forward them to you when received. Let me know.

Thanks,
Joe

From: Paul Phalan <phalanpaul@gmail.com>
Sent: Friday, November 8, 2024 7:46 AM
To: MEPA (EEA) <mepa@mass.gov>
Subject: cape gateway airport PFAS

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello
Regarding the CCGA PFAS pollution.

I'm scared as hell that they don't monitor the pollution beyond their boundaries. They admit to causing this scourge and yet **do not take responsibility** for it beyond their property line!
This is wrong and I hope and pray the MEPA protects us.

Paul Phalan
Barnsatble resident

Strysky, Alexander (EEA)

From: Chris Powicki <chrisp@weeinfo.com>
Sent: Friday, November 8, 2024 4:52 PM
To: MEPA (EEA); Strysky, Alexander (EEA)
Subject: Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan Projects (#16640) - Sierra Club Comments on FEIR
Attachments: TAG MEMO AUG 22 2024.pdf; IEc Hanscom Impact Report (04.05.24).pdf

Importance: High

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Secretary Tepper,

Thank you for the opportunity for Sierra Club to again submit comments on the proposed Cape Cod Gateway Airport Master Plan Projects (#16640), this time addressing the Final Environmental Impact Report (FEIR) prepared by proponents in response to your February 16, 2024 certificate addressing the Hyannis Airport's DEIR.

Sierra Club concludes that the FEIR should be rejected as insufficiently responsive to your instructions, DEIR comments submitted by Sierra Club and others, the needs of Hyannis area environmental justice communities, and the state's decarbonization goals.

Please refer to Sierra Club's DEIR comments below, as well as the attached documents, which undermine the Hyannis Airport's claims regarding PFAS contamination and greenhouse gas (GHG) emissions that were advanced in the DEIR and are reiterated in the FEIR:

- Technical memos by Sole Source Consulting addressing PFAS sampling and analysis relating to the Hyannis Airport's PFAS-contaminated sites and PFAS plumes impacting down-gradient resources and communities
- Report by Industrial Economics addressing GHG emissions associated with private jet operations attributable to proposed hangar expansion at Hanscom Field

Independent, expert analysis shows that PFAS plumes emanating from the Hyannis Airport's sites have likely been impacting downstream water supply wells for far longer than claimed and are also impacting the Mill Creek watershed and other areas, which Hyannis Airport officials deny. This analysis was provided to the Hyannis Airport's leadership in August 2024, before submittal of the FEIR.

Independent, expert analysis focused on quantifying the potential GHG emissions associated with Hanscom Field's expansion is directly applicable to the Hyannis Airport, which plans hangar expansion but has excluded this aspect of its Master Plan from the workscope outlined in the FEIR. Such segmentation, not allowable under MEPA, underpins the Hyannis Airport's inaccurate claims of minimal

GHG impacts and also enables its understating of noise, air pollution, and other impacts on state-designated environmental justice communities. This analysis and your rejection of Hanscom Field's DEIR were well-publicized and issued months before submittal of the Hyannis Airport's FEIR.

The Hyannis Airport should be required to fully characterize the extent of downstream PFAS contamination and the available treatment options at its upstream source areas, and then to submit an updated FEIR incorporating PFAS site cleanup as the starting point for its proposed expansion. The Hyannis Airport also should be required to provide a complete accounting of aviation-related GHG emissions, noise, and air pollution attributable to hangar expansion and to provide mitigation consistent with state requirements.

Your careful consideration of these comments and the attached analyses is appreciated.

Sincerely,

Chris Powicki
Chair, Executive Committee
Sierra Cape Cod & Islands Group
774.487.4614

On Feb 9, 2024, at 3:41 PM, Chris Powicki <chrisp@weeinfo.com> wrote:

Thank you for the opportunity for Sierra Club's Cape Cod & Islands Group, representing members and supporters in Barnstable, Dukes, and Nantucket counties, to submit comments on the Draft Environmental Impact Report (DEIR) for Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan Projects (#16640).

Sierra Club concludes that the Airport's DEIR is incomplete as submitted, and that additional analysis and reporting are required before judgment can be made as to whether MEPA requirements have been satisfied. Two main concerns exist:

First, the DEIR does not acknowledge or in any way mitigate historical and continuing unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport.
In particular, decades of handling and use of aqueous film-forming firefighting foams (AFFF) at and around the Airport resulted in inadvertent but extensive PFAS contamination of public water supply wells and exposed Hyannis residents, students, workers, and visitors to significant but unknown amounts of hazardous but unknown chemical mixtures for significant but unknown time

periods with potentially significant but unknown health consequences. PFAS-contaminated soil and the associated plumes flowing onto and emanating from Airport property continue to pose risks.

Sierra Club appreciates that the Airport has ceased use of AFFF except in emergency situations, that control measures are in place for when AFFF use is required, and that groundwater drawn from Hyannis-area wells is designated "safe" under the current state drinking water standard based on the granular activated carbon (GAC) treatment systems installed at various locations, including within the Maher wellfield located on property downgradient from the Airport owned by the town of Barnstable. However, this does not change the history of contamination and exposure in the Hyannis area nor erase current and future concerns facing EJ and other communities.

No controls are in place for the PFAS that, prior to the initiation of GAC treatment, was distributed through the drinking water supply network serving EJ and other communities and then discharged into the environment via septic leaching and wastewater treatment plant effluent injection; nor for PFAS passing from the Maher wellfield into Mill Creek, Lewis Bay, and the associated ecological and human communities; nor for individuals who consume shellfish and other species harvested from PFAS-contaminated surface waters. The state's current PFAS6 standard is subject to change pending federal action to ratchet down maximum contaminant levels across this entire class of "forever" chemicals, some of which have just been proposed for hazardous waste designation. Sierra Club's position is that no level of PFAS in drinking water is safe.

The DEIR indicates that the Airport's proposed runway expansion and reconfiguration projects will utilize heavy machinery in moving hundreds of thousands of cubic yards of soil, including in locations coincident with and adjacent to temporary caps installed to prevent precipitation from mobilizing PFAS in soil contaminated by the Airport's own storage and use of AFFF. The DEIR asserts that precautions will be taken to ensure that these caps remain intact during construction and that the PFAS-contaminated soil will remain in place indefinitely, like a ticking time bomb. This is not acceptable.

Sierra Club recommends that the Airport be required to address these concerns by updating and expanding the DEIR as follows:

- To characterize unfair and inequitable AFFF-related burdens imposed on designated EJ communities to the fullest extent possible based on available and emerging sources of data, including the federally funded "Massachusetts PFAS and Your Health Study" involving blood and urine sampling, exposure assessment, and neurobehavioral assessment of Hyannis residents led by Silent Spring Institute; and
- To incorporate a permanent cleanup solution, to be implemented as a form of mitigation within the scope of the Airport's proposed projects, that will leverage the onsite availability of earth-moving equipment to remove AFFF-contaminated soil under the Airport's temporary caps for offsite transport, final disposition, and elimination of what would otherwise represent a "forever" source of risk to Hyannis-area communities.

Second, the DEIR does not provide detail on or in any way mitigate aviation-related greenhouse gas emissions associated with long-term Airport operations, particularly those attributable to fuel sales at and around the Airport and to fuel consumption by commercial and private aircraft flying into and out of the Airport. These emissions are not accounted for because the Airport asserts that proposed runway extensions and facility upgrades, designed for the purpose of facilitating safe and economically viable operation through 2040 and beyond, will have no impact on the number of arrivals and departures relative to current Airport usage. No other future usage scenarios are considered, and transportation solutions that could be applied for reducing near-term reliance on the Airport and the most carbon-intensive form of travel to and from the Cape & Islands—such as electrified bus service and expanded vehicle charging infrastructure—are only addressed in the context of facilitating Airport usage. This is not acceptable.

Sierra Club recommends that the Airport be required to address these concerns by updating and expanding the DEIR as follows:

- To present a current and detailed emission inventory for the Airport across all gases and sources, to apply these

and other data in evaluating changes in aviation-related emissions attributable to the post-2005 expansion in fast-ferry service to the Islands, and to estimate future emissions under varying Airport usage scenarios including a no-build alternative; and

- To incorporate a climate mitigation plan consistent with state policies and targets aimed at eliminating or minimizing aviation-related emissions across the time periods encompassed by the Airport's Master Plan and the anticipated lifetime of the proposed projects.

Addressing these concerns and recommendations is essential to ensure that public interests in a stable climate, clean water, environmental justice, and public health are met in Hyannis and across the Commonwealth.

Thank you for the careful consideration of Sierra Club's comments.

Sincerely,

Chris Powicki
Chair, Executive Committee
Sierra Cape Cod & Islands Group
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IEc

Analysis of Greenhouse Gas Emissions Impact of Proposed Expansion of Hangar Capacity at Hanscom Field

April 4, 2024

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1. Summary

North Airfield Ventures, LLC and Runway Realty Ventures, LLC (collectively, the project proponent) have proposed a significant expansion of hangar capacity at Hanscom Field in Bedford, Massachusetts. The expansion plan calls for up to 17 new hangars with a total floor area of 395,700 square feet serving privately owned based aircraft,[1] as opposed to aircraft providing air taxi or commercial aviation service. This additional hangar capacity would support a significant number of new aircraft with their associated flight operations and greenhouse gas (GHG) emissions. The Massachusetts Port Authority (Massport) and the project proponent have claimed that the project would not expand flight operations or GHG emissions, instead contending that the project would serve aircraft that relocate to Hanscom from other airports and that this shift in aircraft to Hanscom would reduce operations and GHG emissions by eliminating so-called "ferry flights" (i.e., flights with no passengers). The analysis presented in this report tests this claim based on flight data for aircraft that have flown into and out of Hanscom over a recent 12-month period.

As detailed further below, we find that there are three jet aircraft that exhibit the characteristics of "ferry flights" and that would realize a reduction in their operations and GHG emissions if they were to relocate to Hanscom from their current base. Cumulatively, the relocation of these aircraft would reduce ferry flights into and out of Hanscom by 132 flights per year, reducing GHG emissions by 41.9 to 140.8 metric tons of CO2e per year. However, these three aircraft generate 57 non-ferry flights from their current bases, and these flights would migrate to Hanscom, adding to Hanscom operations. Net operations at Hanscom, without considering any new aircraft enabled by the project, would be reduced by 75 landings/takeoffs per year out of 38,100, or 0.2%. In addition to the three relocated aircraft, the remaining new hangar capacity could eventually hold 63-76 new aircraft, increasing operations by an estimated 5,487 to 6,568 flights per year and generating approximately 133,784 to 161,390 metric tons of CO2e per year of GHG emissions. These new emissions are approximately 950 to 3,900 times greater than those saved by elimination of ferry flights. Netting out emissions reductions from eliminated ferry flights, these additional aircraft at Hanscom are estimated to generate approximately 133,643 to 161,348 metric tons of CO2e per year.

The estimate of 132 ferry flights used in our analysis stands in stark contrast to the project proponent's estimate of 3,543 ferry flights eliminated per year. This overestimation of ferry flight activity by the project proponent stems in large part from its overly broad definition of what constitutes a ferry flight. Excluding flights for aircraft already based at Hanscom, the project proponent designates a flight as a ferry flight if (1) the destination/origin airport is within a 350-mile radius of Hanscom, (2) the flight has an airport ground time of up to 18 hours, and (3) the aircraft is a business aircraft type. The proponent, however, did not analyze flight itinerary data to determine whether the aircraft making the 3,543 flights follow a ferry pattern (i.e., origin to Hanscom, Hanscom to ultimate destination, destination back to Hanscom, and Hanscom back to origin). Therefore, many of the flights that the proponent counts as ferry flights are not ferry flights but instead are travelers making day trips to the Boston area. In addition, although the hangar expansion is intended for based aircraft, the proponent includes transient aircraft in its ferry flight estimate; these aircraft would not relocate to Hanscom as a result of the project. The proponent also failed to examine the full flight itinerary data for the aircraft it identified in its ferry flight analysis to

[1] The project is 522,380 square feet gross, made up of 395,700 square feet of open hangar and 126,680 of ancillary and support space.

determine if an aircraft owner would likely find it advantageous to relocate its aircraft to Hanscom. If an aircraft ferries to Hanscom for just a small fraction of its flights, relocating the aircraft to Hanscom would likely increase its operating costs, making relocation to Hanscom unlikely. Therefore, to the extent that a given aircraft reflected in the proponent's ferry flight estimate ferries to/from Hanscom for a small fraction of its operations, it is unlikely to relocate to Hanscom, and its ferry flights would not be eliminated as a result of the project.

The project proponent also includes ferry flights from Boston's Logan International Airport in this estimate. However, the data show that no aircraft based at Logan airport exhibit ferry flight activity through Hanscom Field. Therefore, this project would not relieve Logan from private jet ferry flight activity. Instead, additional aircraft based at Hanscom Field as a result of this project could lead to *increased* ferry flights to other hangar-limited airports such as Logan.

In addition to overestimating ferry flights to/from Hanscom, the project proponent incorrectly assumes that the addition of hangar capacity at Hanscom would not affect the annual number of flights, stating that growth in operations simply reflect national and local economic trends. This assumption does not comport with text in the FAA's Fiscal Years 2018-2038 forecast, which states that growth in flight operations is dependent on infrastructure development within the aviation system.[2] Similarly, the proponent's decoupling of flight operations from hangar capacity is inconsistent with the FAA's Advisory Circular on the development of airport master plans, which states that airports should consider how increased hangar capacity is likely to predict the demand for flights. [3]

Based on our analysis, the proposed project will greatly increase the number of operations at Hanscom Field and the GHG emissions associated with the facility's flight operations. Due to the very small number of aircraft likely to relocate to Hanscom from other airports, the beneficial effect of avoided ferry flights would be insignificant when compared with the substantial increases in operations and GHG emissions expected from new aircraft based at Hanscom Field.

2. Background

GHG emissions associated with aircraft are becoming of increasing societal concern as aviation emissions are projected to grow significantly, in contravention of plans to decrease emissions across other sectors of the economy. According to carbonbrief.org, under a business-as-usual scenario where the aviation industry grows by 5 percent each year and no substantial improvements to technology or infrastructure are made, aviation is estimated to consume 27% of the remaining 1.5 degree C carbon budget between 2015 and 2050.[4] For this reason, it is of special interest to examine portions of the industry that have the highest emission rates per passenger mile. The proposed private jet hangar

[2] Federal Aviation Administration, FAA Aerospace Forecast Fiscal Years 2018-2038.

[3] Federal Aviation Administration, *Airport Master Plans*, as modified January 27, 2015.

[4] Carbon Brief, "Analysis: Aviation could consume a quarter of the 1.5C carbon budget by 2050" , 2016.

project is one of the largest in the U.S. to create infrastructure enabling the further growth of private jet operations and has aroused significant public and governmental concerns.[5]

Hanscom Field General Aviation Airport is owned and operated by Massport, a quasi-state agency in the Commonwealth of Massachusetts. Formerly operated under lease as Hanscom Air Force Base, military flight operations ceased in 1974, and the airport operates under a 1978 Master Plan specifying the types of use the airport provides, which includes general aviation and small commuter aircraft.[6] The airport has two runways of 7,000 and 5,100 feet and is capable of handling all aircraft sizes up to Air Force 1 and other large charter aircraft.

Hanscom Field has the highest volume of general aviation use among airports in New England, with 125,000 operations in 2022, of which jet operations made up 38,400.[7] There is a continuing trend at Hanscom and similar airports where flights by small piston-engine aircraft are declining and flights by private jets are increasing. According to Massport data, from 2019 to 2022 propeller flight operations fell by 15% while private jet operations rose by 16%.[8]

The result of these trends at Hanscom and other airports nationwide is that new hangars are being built for jets, and older small "T" hangars for single engine piston aircraft are being replaced with larger hangars.[9] In the last decade, Massport data show the gross jet hangar space at Hanscom Field has increased from 283,000 sq feet to 478,614 sq ft, representing a 70% increase.[10] The proposed project, at 522,380 gross square feet, represents more than doubling of the airport jet hangar capacity. This single project would add the same level of jet hangar capacity that was built at Hanscom incrementally over the prior 60 years.

Private jet hangars generally fall into two categories: those serving private jet based aircraft, and those serving taxi services, shared, or itinerant aircraft. The latter category is primarily served by "Fixed Base Operators" (FBOs), which provide additional services such as cleaning, conference/meeting space, fueling, and pilot accommodations. Massport has stated at public meetings that the intent is to serve based jet aircraft.[11]

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[5] Epstein, C, "As the Private Aircraft Fleet Grows, Hangar Availability Dwindles", Business Jet Traveler, March 2023. Quoting industry sources that for hangars greater than 30,000 sq "there are probably only 10-15 being built at the moment." Of the projects identified, no project was greater than 300,000 sq ft. The proposed project at Hanscom Field is 522,380 sq ft.

[6] Massachusetts Port Authority, Hanscom Field Master Plan and Economic Impact Statement. June 15, 1978.

[7] Massport, Hanscom Field Annual Noise Report, June 2023, pp.12,18. The sum of 36,808 daytime and 1,617 nighttime jet operations.

[8] Massport, Hanscom Field Annual Noise Report, June 2023, pp12,18. Jets increased from 33,370 to 38,400, while propeller aircraft fell from 87,135 to 74,308. 2019 nighttime data from 2019 Noise Report.

[9] A T-hangar is a type of hangar shaped similarly to a T, consistent with the shape of single engine piston aircraft.

[10] Massport, 2017 Hanscom Field Environmental Status and Planning Report. P 2.7 to 2.11, In 2013, Hangars 1,2,3,10,13,16, and 21 totaled 283,000 sq ft. By the end of 2023 hangars 24, 17, and the recent F4 (Atlantic Aviation) added 196,000 sq ft.

[11] Mike Rosenberg, "According to Massport, New North Airfield Development Will Not Include Fueling, " *The Bedford* Citizen, June 23, 2022 and presentation on North Airfield Project by Sharon Williams, Director of Airport Administration, May 12, 2023, Hanscom Civil Air Terminal, Bedford, MA.

The benefits of jet ownership depend on how conveniently owners may use these aircraft. The location of the airport where a private jet is stored in relation to the owner is therefore critically important, particularly in comparison to alternative travel options. Prospective jet owners local to Hanscom Field who are considering the acquisition of an aircraft need a hangar where they can store it. Massport reports that there is currently a waiting list for private jet hangar space, and that it would like to provide hangar capacity to meet future anticipated demand. While the proposed project at Hanscom is claimed to be a response to this demand, the FAA advises that providing convenient hangar capacity itself can drive demand (i.e., demand is conditional on the availability of convenient hangar capacity).

The Draft Environmental Impact Report as well as project plans and descriptions released by the project proponent and Massport to date assert that no new greenhouse gas emissions will be created by the additional private jet aircraft enabled by the proposed hangar capacity. They further claim that the project will reduce GHG emissions from jets. In a recent letter from the proponent to the community they represent that: "…the Project would result in environmental benefits associated with reduced air emissions by reducing overall aircraft trips. Currently, aircraft fly in and out empty to pick up and drop off aircraft operators who cannot secure aircraft storage space at Hanscom, as well as employees of Massachusetts-based companies located in close proximity to the Airport. This practice results in extra flights (referred to as "ferry flights") that would otherwise not be required with aircraft stored at Hanscom."[12] Massport and the proponent claim that there are many current jet owners who would like to base their aircraft at Hanscom Field but cannot due to the lack of hangar capacity at Hanscom. These jet owners purportedly base their aircraft at other nearby airports and summon their aircraft to pick them up at Hanscom Field. When these travelers return from their destination, their aircraft drop them off at Hanscom and return to the nearby base for storage. These "short hop" flights without passengers are a type of "ferry flight."

If additional Hangar capacity were to become available at Hanscom Field, Massport and the project proponent have represented that certain aircraft that regularly make ferry flights to Hanscom Field would relocate to Hanscom, thereby eliminating their ferry flights and the associated GHG emissions.

According to industry trade press, typical private jets require approximately 5,000-6,000 sq ft of hangar space.[13] Based on this figure and the proposed 395,700 sq ft of hangar space that would be added at Hanscom Field under the proposal, the proposed project could serve 66-79 jet aircraft.[14] If all the new hangar capacity created by this project were to serve aircraft exhibiting ferry flights for the majority of their operations, the proposal would result in a net decrease in GHG emissions and aircraft operations. If none of the new capacity were to serve such aircraft, the total jet emissions that are enabled by the 66-79 new aircraft housed by this project would represent a large increase of Hanscom-enabled emissions and operations. Determining the expected magnitude of these effects requires estimation of the number of aircraft currently exhibiting ferry flight operational behavior, along with their operations and emissions.

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[12] Michael Argiros of North Airfield Ventures, letter addressed to citizen group Mothers Out Front, Jan 8, 2024.

[13] Epstein, C, "As the Private Aircraft Fleet Grows, Hangar Availability Dwindles", Business Jet Traveler, March 2023. Quoting industry sources, noting some new very large international private jet aircraft require up to 11,000 sq ft.

[14] In the DEIR (p. 2-6), the proponent assumes 40 to 55 aircraft would be accommodated in the proposed hangars but does not provide a basis for this assumption.

This study estimates these effects based on historical flight data and the GHG emissions profile of these aircraft.

The proponent has suggested in the Draft Environmental Impact Report that future aircraft emissions may be reduced via electrification of some aircraft or the use of Sustainable Aviation Fuels (SAF). The US National 2021 Aviation Climate Plan does not expect electric aircraft to replace jets by 2050.[15] Electrification faces the fundamental technical barrier that all known battery technologies are 20 times heavier per unit energy than jet fuel.[16] SAF is today produced in very small quantities and has a high cost; therefore, it is not a near-term option for achieving significant GHG reductions from the aviation sector.[17] For these reasons, and due to no specific proposals in the project related to these hypothetical technologies, the use of conventional jet fuel for the aircraft enabled by this project is assumed for the foreseeable future.

For the purposes of this analysis, we assume that any hangar capacity built at Hanscom will be fully utilized.

3. Defining Ferry Flights

As described above, the expansion of hangar capacity at Hanscom is expected to result in the relocation of certain aircraft that regularly make ferry flights there from their current home base. This section explains what a ferry flight is, what types of aircraft are considered in this analysis of ferry flights, and what the impact of moving an aircraft from its home base to a ferry airport would be. In addition, this section identifies the specific types of ferry flights that would potentially influence the decisions of aircraft owners to relocate their aircraft to Hanscom Field if the proposed hangar capacity were developed.

3.1 Definition of a Ferry Flight

A flight pattern that is considered a "ferry flight" is defined as follows:

1. A flight departs a "home base" airport, where the aircraft is hangared/parked, to an intermediate "Ferry" airport. This flight is generally without revenue-generating passengers or cargo and is known as the FERRY TO flight.
2. The flight lands at the intermediate Ferry airport, takes on passengers/cargo, and flies to a destination airport.
3. The flight may pause at the destination airport or go on to make other flights (including returning to the home-base airport).
4. The flight departs the destination airport with passengers/cargo and returns to the intermediate Ferry airport where the passengers/cargo are deplaned.
5. The flight departs the intermediate Ferry airport for the home-base airport. This flight segment is known as the FERRY FROM flight.

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[15] Federal Aviation Administration, *2021 Aviation Climate Action Plan*, p 14

[16] Crownhart, C "This is what's keeping electric planes from taking off" *Technology Review*, August 2022.

[17] Pavlenko, et al, "Assessing sustainability implications of sustainable aviation fuels," International Council on Clean Transportation, March 2021. Noting on p14 that "simply displacing petroleum jet fuel with any alternative jet fuel will be insufficient to drive deep decarbonization in aviation."

An example flight pattern that includes FERRY TO and FERRY FROM flight segments is shown below. The home-base airport is KASH (Boire Field in Nashua, New Hampshire). The intermediate ferry airport is KBED (Hanscom Field, Massachusetts). The destination airport is KXXX. Other destination airports that do not involve the ferry airport are KYYY.

- KASH→KBED (FERRY TO)
- KBED → KXXX
- KXXX→ KYYY → ….. → KASH → KYYY → KXXX
- KXXX→ KBED
- KBED → KASH (FERRY FROM)

It should be noted that a given aircraft may not perform a symmetrical ferry flight. For example, for air taxi, charter, or owners with more than one aircraft, a specific aircraft may perform the FERRY TO flight segment, while another aircraft owned by the same operator, performs the FERRY FROM flight segment.

Not all aircraft that exhibit the ferry flight behavior described above would be candidates for re-basing at Hanscom if the proposed hangar project were to be developed. In particular, itinerant aircraft that engage in a ferry flight pattern of travel would not re-base at Hanscom because the proposed expansion of hangar capacity is intended to serve based aircraft only. Similarly, piston-engine aircraft that ferry to and from Hanscom would not be candidates for re-basing into the proposed facility since the hangar capacity proposed is a high-end facility designed for *jet* aircraft, and other smaller hangars exist for propeller aircraft. Aircraft may also exhibit ferry behavior for reasons unrelated to the choice of home base, such as ferry flights for routine maintenance or training. Aircraft with a ferry flight pattern for these reasons would not be candidates for re-basing at Hanscom. Finally, owners of aircraft that make a relatively small number of ferry flights to Hanscom are unlikely to have a strong economic incentive to re-base their aircraft at Hanscom, as re-basing would increase the need for ferry flights to the airport where they are currently based.

3.2 Ferry Flights Considered in Analysis

Based on the considerations outlined above, this analysis focuses narrowly on ferry flights for aircraft that would be legitimate candidates for re-basing at Hanscom based on aircraft type and individual aircraft's pattern of travel. Specifically, aircraft were considered as candidates for re-basing to Hanscom if they met all of the following criteria:

1. **Jet aircraft:** While ferry flights can be performed by many different types of aircraft, this analysis considers only **jet** aircraft as candidates for relocating their home base at Hanscom. The hangars proposed in this project are specifically designed to accommodate jet aircraft, and the airport recently added additional smaller hangars for propeller aircraft. Of Hanscom Field's total operations, jet aircraft comprise approximately 30 percent.[18] The remaining 70 percent of operations are attributable to non-jet aircraft, which may exhibit significant ferry flight behavior but are not included in this analysis. Nevertheless, the proponent did identify a particular

[18] Massport, Hanscom Field Annual Noise Report, June 2023, pp.12,18. The sum of 36,808 daytime and 1,617 nighttime jet operations.

propeller aircraft as a major contributor to ferry flights, and a special analysis of this type of aircraft was added to this study.

2. **Based (jet) aircraft:** In addition to being jets, the aircraft potentially re-locating to Hanscom must be **based aircraft** as opposed to itinerant aircraft that provide air taxi or related services. Based on representations made by Massport and the project proponent, the proposed hangar capacity at Hanscom is not designed to serve itinerant aircraft. [19]

3. **Ferry flights to/from Hanscom make up a large portion of the aircraft's operations:** For a given aircraft, ferry flights to/from Hanscom Field may make up a large or small part of its operations. The owner of an aircraft is unlikely to benefit by re-locating that aircraft at Hanscom if most of the aircraft's operations are NOT ferry flights to/from Hanscom Field, but rather other flights to/from the aircraft's current base. To determine which jet aircraft exhibit enough ferry behavior to qualify for relocation to Hanscom Field, a threshold must be established. For this analysis, we assume that more than 50 percent of an aircraft's flights to/from its current base must exhibit ferry behavior for it to qualify. Otherwise, there is likely no net benefit to relocation to Hanscom, and such relocation would actually increase an aircraft's flight operations at Hanscom, contrary to the reduction benefit claimed by the proponent.

3.3 Impact of Moving Home-Base Hangar to Ferry Flight Airport

If the home base for an aircraft were relocated from its current base to Hanscom, this would have two impacts on operations at Hanscom. First, the ferry flights that the aircraft currently takes to/from Hanscom would be eliminated. For instance, if the aircraft from the example in Section 3.1 above were moved from its current home base (e.g., KASH) to Hanscom (e.g., KBED), the following flights would be *eliminated* from Hanscom (i.e., the current intermediate FERRY airport):

- FERRY TO flights (e.g., KASH → KBED)
- FERRY FROM flight (e.g., KBED → KASH)

The second effect of base relocation to Hanscom would be the *addition* of non-ferry flights that the aircraft in question currently takes to/from its current base airport:

- NON-FERRY flights that currently depart from/arrive at KASH (e.g., KASH → KYYY, KZZZ → KASH)

For aircraft that re-locate their base to Hanscom, these non-ferry flight operations would contribute to increased operations at Hanscom. The GHG emissions associated with these non-ferry flights, however, are excluded from the analysis of GHG impacts presented below since these emissions are generated in the baseline (i.e., absent the expansion of hangar capacity at Hanscom).

It is important to note, however, that flight patterns may change over time as a result of changes in aircraft ownership or aircraft hangar leasing arrangements.

[19] Mike Rosenberg, "According to Massport, New North Airfield Development Will Not Include Fueling, " *The Bedford* Citizen, June 23, 2022 and presentation on North Airfield Project by Sharon Williams, Director of Airport Administration, May 12, 2023, Hanscom Civil Air Terminal, Bedford, MA.

4. Collection and Processing of Flight Data

This analysis uses Automatic Dependent Surveillance – Broadcast (ADS-B) flight track data from a third-party provider for the October 2022 to October 2023 period to assess the number of ferry flights to and from Hanscom Field. ADS-B is an aviation surveillance technology in which an aircraft determines its position via satellite navigation or other sensors and periodically broadcasts its identifying information, position, and other related data. These broadcasts are picked up by ADS-B Receivers, which are used to detect and track aircraft equipped with ADS-B transponders. The flight track data used in this analysis were provided by a third-party volunteer network of ADS-B Receivers and processed into a flight origin/destination format. The data were also cross-checked and validated with other volunteer ADS-B networks and publicly available Federal Aviation Administration (FAA) data.

Based on the criteria outlined in Section 3.2 above for identifying aircraft as candidates for relocation to Hanscom Field based on aircraft type and ferry flight travel patterns, we processed the ADS-B data according to the following procedure to identify aircraft that may potentially re-locate to Hanscom:

1. ***Identify aircraft flying into or out of Hanscom:*** Aircraft tail number has KBED listed as the origin and/or destination.

2. ***Limit aircraft to jets:*** Limit data from previous step to aircraft/tail numbers for which Turbo-Fan or Turbo-Jet is listed as the engine type.

3. ***Focus on aircraft with minimum threshold of operations:*** Aircraft with minimum flight operations activity are unlikely to be re-based at Hanscom, as the cost savings associated with doing so are likely to be minimal. We therefore limit our analysis to jet aircraft that operated more than 20 times during the one-year period examined.

4. ***Set distance threshold for potential ferry flights:*** To exclude flights that are not likely to be ferry flights from the data generated from the previous steps, the analysis was limited to flights meeting the following criteria:
    a. To KBED from an origin within 120 nautical miles of KBED; or
    b. From KBED to a destination within 120 nautical miles of KBED.

5. ***Limit analysis to aircraft that are likely to be based aircraft:*** The steps outlined above may identify both based aircraft and itinerant aircraft that exhibit ferry flight behavior. To limit the analysis to based aircraft (i.e., exclude itinerant aircraft), we specified two criteria for filtering the data:
    a. Aircraft destination from KBED or origin prior to arrival at KBED is one of the four most frequented destinations or origins for the aircraft.
    b. The aircraft has overnighted at that destination or origin (above) more than any other airport (i.e., the aircraft is based at that airport).

    This consistency of pattern in terms of origin/destination better aligns with the travel behavior of a based aircraft than an aircraft that frequently moves between locations to maximize operator revenue (e.g., fractional jet itinerant operations).

4.1 Estimated Number of Aircraft Relocating to Hanscom

The criteria outlined above identified jet aircraft that are candidates for relocating their home base to Hanscom Field. With additional hangar capacity available at Hanscom, re-locating an aircraft's home base would be at the discretion of the aircraft's owner. For the purposes of this analysis, we assume that

an aircraft owner would change an aircraft's home base to Hanscom if 50 percent of the aircraft's current flights to/from its current home base are ferry flights from/to Hanscom Field.[20] The rationale behind this assumption is that relocation of the aircraft's home base to Hanscom would provide an added level of convenience and/or cost savings for the aircraft owner if the owner ferries the aircraft to/from Hanscom for the majority of its flights to/from its current home base. If less than 50 percent of the flights to/from the aircraft's current home base do not exhibit a ferry travel pattern to/from Hanscom, this would imply that the added convenience of re-locating the aircraft's home base to Hanscom would be less than the level of convenience afforded by the current home base. Furthermore, the current aircraft operations that did not ferry through Hanscom would now occur at Hanscom, which would more than offset any savings in ferry flights. The relocation would result in a net increase in Hanscom operations, which is directly contrary to the proponent's representation that eliminating ferry flights leads to a decrease in operations.

Based on this rationale, we compared the number of departures from and returns to each candidate aircraft's home base to the number of ferry flights to and from KBED. Three aircraft meeting the criteria outlined above were identified as having more than 50 percent of their base flights exhibiting ferry behavior. The flight track data for these three aircraft identified a total of **132 ferry flights in and out of Hanscom Field** during the one-year data collection period. Two of these aircraft are currently based at Boire Field in Nashua, New Hampshire; the other is currently based in Portsmouth, New Hampshire. There are five jet aircraft that meet the five criteria outlined above but for which ferry flights to/from Hanscom make up between 5 and 50 percent of their base flights, which are based in Lawrence (KLWM), Waterbury-Oxford (KOXC), Plymouth (KPYM), and Marshfield (KGHG); those aircraft would be poor candidates for relocation to Hanscom.

In reviewing the ferry flight data, we also identified no ferry flights between Boston's Logan International Airport and Hanscom. Instead, additional aircraft based at Hanscom Field as a result of this project could lead to increased ferry flights to other hangar-limited airports such as Logan.

4.2 Project Proponent Ferry Flight Estimate

In its assessment of the potential environmental effects of the proposed hangar expansion at Hanscom, the project proponent produced its own estimate of the annual number of ferry flights that would be avoided as a result of the project.[21] The proponent's estimate of 3,543 ferry flights per year stands in stark contrast to the estimate of 132 ferry flights per year presented in this analysis. For the various reasons described below, we conclude that the proponent's estimate is a gross overestimation of the number of ferry flights that would be avoided due to the project.

[20] This 50 percent threshold is relative to flights to/from the aircraft's home base. Flights not involving an aircraft's home base are excluded from the calculation, as such flights are assumed not to influence decisions about re-locating the aircraft to Hanscom.

[21] VHB, L.G. Hanscom Field North Airfield Development Bedford, Massachusetts - Draft Environmental Impact Report. EEA No. 16654, March 2024.

To understand why the proponent's analysis overestimates ferry flights for aircraft likely to relocate to Hanscom, it is instructive to state the four criteria used by the proponent to identify ferry flights. These include:[22]

- Business aircraft type and commercial aircraft operations;
- "Short Turn" flights with airport ground time of up to 18 hours;
- Not Hanscom Field tenant aircraft; and
- The destination/origin airport is within a 350-mile radius of Hanscom.

The proponent's reliance on these criteria yields an inaccurate estimate of ferry flight activity at Hanscom, due to both the incompleteness of these criteria and the bias associated with certain individual criteria. More specifically, these shortcomings are as follows:

The proponent failed to determine whether the flight itineraries for aircraft making so-called ferry flights exhibit a ferry flight pattern of activity. By definition, an aircraft making ferry flights to Hanscom travels there with no passengers onboard, picks up passengers, continues from Hanscom to another destination, brings the passengers back to Hanscom from that destination, and finally returns to its base. If an aircraft were to fly to Hanscom and subsequently return to its location of origin on its next flight, the flight to Hanscom would not be a ferry flight. Thus, an essential criterion for correctly identifying a flight as a ferry flight is that the aircraft in question follows a ferry pattern consistent with that outlined above. Because the proponent's analysis does not apply this criterion, its ferry flight estimate likely includes many flights that are not ferry flights (e.g., flights for aircraft that transported passengers to Hanscom and subsequently returned them to their location of origin). Making such a determination requires detailed analysis of aircraft-specific flight itinerary data (i.e., landings and takeoffs by date, time, and location). The project proponent's aviation consultant specifically stated during the February 20 presentation of its analysis prior to the DEIR release that it did not attempt to conduct such an analysis of itinerary data.[23]

The proponent's analysis includes both based aircraft and transient aircraft. The project proponent has represented that the additional hangar capacity proposed at Hanscom would serve based aircraft rather than transient aircraft.[24] However, the proponent's ferry flight analysis does not distinguish between based aircraft and transient aircraft and therefore includes transient aircraft, such as NetJets, that would not be candidates for relocation to Hanscom. Due to its inclusion of transient aircraft, the project proponent systematically overestimates the number of ferry flights by aircraft that might relocate to Hanscom as a result of the project.

The proponent incorrectly assumes that all ferry flights to Hanscom would be eliminated as a result of the hangar expansion. Using the criteria outlined above, the project proponent estimates the annual number of ferry flights to and from Hanscom and assumes that all of these ferry flights would be

[22] These criteria are as listed in section 2.3.2 of VHB, L.G. Hanscom Field North Airfield Development Bedford, Massachusetts - Draft Environmental Impact Report. EEA No. 16654, March 2024.

[23] Presentation delivered by Kate Larson of HMMH, February 20, 2024.

[24] Mike Rosenberg, "According to Massport, New North Airfield Development Will Not Include Fueling, " *The Bedford* Citizen, June 23, 2022 and presentation on North Airfield Project by Sharon Williams, Director of Airport Administration, May 12, 2023, Hanscom Civil Air Terminal, Bedford, MA.

eliminated by the project. This assumption fails to account for the decision-making process of aircraft owners, who make decisions on where to hangar their aircraft based on all of the expected operations for that aircraft rather than just a subset. For example, an aircraft based in Nashua may make 2 ferry flights per year to Hanscom but makes 48 (non-ferry) flights from Nashua to other destinations. Because ferry flights to Hanscom make up such a small portion of the aircraft's annual flights, the aircraft operator in this case is unlikely to relocate the aircraft to Hanscom. Otherwise, the operator would likely need to ferry the aircraft from Hanscom to Nashua for several of its other flights. By not accounting for this decision-making process, the proponent overestimates the number of ferry flights that would be avoided due to the project.

The 18-hour ground time is unrealistically long for a ferry flight: The proponent's analysis assumes that flights to Hanscom with airport ground time of up to 18 hours may be ferry flights. This cutoff is unrealistically high, and the proponent did not attempt to validate this assumption with data for known ferry flights. Because the purpose of a ferry flight is to pick up passengers at Hanscom and take them to another destination or to return an aircraft to its base after dropping passengers off at Hanscom, the ground time for such flights is unlikely to be more than a few hours. Flights with 18 hours of ground time are more likely to be flights bringing business travelers to Hanscom for a day of business meetings in the Boston area. The facilities at Hanscom include conference room space for this purpose.

The 350-mile radius for identifying ferry flights is excessively far for a ferry flight: The proponent's analysis also assumes that flights arriving to Hanscom from within a 350-mile radius of the facility are ferry flights if they meet the proponent's other criteria. For based aircraft that may be relocated to Hanscom, this distance is unrealistically far for ferry flight activity, as it implies that aircraft owners located near Hanscom hangar their aircraft up to 350 miles away and incur the additional time and fuel costs of ferrying them to Hanscom when much closer options are available.

Taken together, the limitations of the proponent's approach for identifying ferry flights are likely to mischaracterize a large number of flights as ferry flights. Potential examples include the following:

- If a business traveler from Philadelphia (within the proponent's 350-mile radius) were to fly to Hanscom at 9:00 a.m., attend meetings near Hanscom during the day, and fly back to Philadelphia at 9:00 p.m., the proponent would count this as a ferry flight. When asked about this example during a February 20 presentation of its analysis, the project proponent confirmed that this would be counted as a ferry flight.
- If an individual based on Martha's Vineyard flew his/her jet to Hanscom on a Saturday afternoon to attend a Red Sox game and subsequently flew back to Martha's Vineyard that night, this would also be counted as ferry flight under the proponent's approach. During its February 20 presentation of its analysis, the proponent confirmed that this would also be counted as ferry flight.
- NetJets and air taxi services rely extensively on repositioning flights so that they can meet demand at individual airports. Any repositioning flights that meet the proponent's criteria would be counted as a ferry flight, as confirmed by the project proponent at the February 13 meeting of the Massport Community Advisory Committee. However, none of these flights are ferry flights, and none of these flights would be eliminated as a result of the proposed hangar expansion.

4.3 Ferry Flights from Logan Airport

In addition to the major shortcomings in the proponent's approach described above, the proponent's analysis indicates that many of the ferry flights to Hanscom originated from the Boston Logan Airport. More specifically, during the February 13 meeting of the Massport Community Advisory Committee, the proponent's consultant indicated that 300 ferry flights originate from Logan.[25] However, during that same February 13 meeting, a Massport representative indicated that there are no based private jets at Logan Airport. Therefore, the proposed hangar expansion at Hanscom would not eliminate any ferry flights from Logan. On the contrary, if there are no based private jets at Logan, the development of hangar capacity at Hanscom may provide an additional source of ferry flights to Logan, increasing operations there.

4.4 Project Proponent Inclusion of PC-12 Aircraft in Ferry Flight Analysis

The project proponent's analysis of ferry flights potentially avoided as a result of the project found that flight operations for turboprop Pilatus PC-12 aircraft represent 28 percent of all ferry flights to/from Hanscom.[26] Based on the proponent's estimate of 3,543 ferry flights, this would imply 992 avoided ferry flights by PC-12 aircraft.

The Pilatus PC-12 is configured like a jet and commonly used as a jet alternative for short trips. There is a fleet of 60 of these aircraft at a time share operator based in Portsmouth, said to be the "the world's largest fleet of Pilatus Aircraft." This fleet of PC-12 aircraft is dispatched to many sites to pick up passengers including at Hanscom Field. Such a service can be considered an itinerant aircraft and would not be a candidate for relocation at Hanscom. Nevertheless, since the proponent represented this aircraft to be the principal type of aircraft generating ferry flights, its detailed operations were studied as part of this report.

We analyzed the flight operations data for all PC-12s flying into or out of Hanscom between August 2023 and March 2024. Using the same data and methods as outlined above for jet aircraft (i.e., the methods applied in this analysis rather than the methods applied by the project proponent), we identified just 49 PC-12 aircraft making 284 ferry flights to or from Hanscom during this period. Extrapolating to a full year, we estimate 426 ferry flights by these aircraft. As described above, Hanscom ferry flights for a given aircraft will be avoided only if more than 50 percent of its flights to/from its current base are ferry flights to/from Hanscom. Based on the data for the PC-12 aircraft that exhibit this ferry flight pattern, none of these aircraft meet the 50 percent threshold that would indicate a benefit from relocating to Hanscom. On average, Hanscom ferry flights represent approximately 9 percent of the flights to/from the current base for these aircraft. This level and type of activity is expected since the large PC-12 fleet services the northeast region and Hanscom is the largest jetport in New England. On this basis, none of the PC-12 flights identified as ferry flights in the proponent's analysis are likely to be avoided as a result of the proposed expansion of Hangar capacity at Hanscom.

[25] Presentation delivered by Kate Larson of HMMH, Meeting of the Massport Community Advisory Committee, February 13, 2024.

[26] VHB, L.G. Hanscom Field North Airfield Development Bedford, Massachusetts - Draft Environmental Impact Report. EEA No. 16654, March 2024, p.2-8.

5. Scope of GHG Emissions Captured

This analysis captures the full breadth of GHG emissions associated with jet aircraft. To capture all GHGs emitted through the operation of jet aircraft, this analysis first calculates emissions of carbon dioxide (CO_2). Rather than calculating emissions of other GHGs individually, this analysis calculates emissions of carbon dioxide equivalents (CO2e) based on estimated emissions of CO_2. CO2e is a unit that standardizes and compares the emissions and warming effects of different GHGs based on their global warming potential. The CO2e emissions presented in this report reflect CO_2, ozone (O_3), methane (CH_4), and water vapor (H_2O). To calculate CO2e emissions based on estimates of CO_2, this analysis uses a multiplier of 2 based on existing literature. As indicated by the IPCC, the overall radiative forcing by CO2e from aircraft is 2-4 times larger than the forcing by CO_2 alone.[27] Based on this range, the multiplier of 2 applied in this analysis results in a conservative estimate of GHG impacts.

6. Analysis and CO2e Effects

The analysis of GHG emissions impacts presented in this report includes four main components:

1. ***Ferry Flight Emissions Analysis:*** estimates the annual emissions reductions resulting from the elimination of existing ferry flights to and from Hanscom Field due to aircraft relocation.
2. ***Additional Based Aircraft Analysis:*** estimates the annual GHG emissions produced from a single based aircraft at Hanscom Field.
3. ***Breakeven Analysis:*** explores how many based aircraft would need to be added at Hanscom Field to completely offset the emissions reductions from eliminated ferry flights.
4. ***Full Capacity Analysis:*** estimates the annual GHG emissions associated with the Hanscom Field expansion project if all new hangar space is fully utilized, net of GHG savings from avoided ferry flights.

This section presents the methods and results (in CO2e) for each of these analysis components.

6.1 Ferry Flights Analysis

This section estimates the annual GHG emissions reductions resulting from the elimination of ferry flights to and from Hanscom Field for those jet aircraft identified as likely to re-locate. The analysis presents two different estimates of these impacts: one derived from the Federal Aviation Administration's (FAA's) Aviation Environmental Design Tool (AEDT) and another based on fuel consumption rates for representative aircraft, as obtained from JetAdvisors.

AEDT Estimate

This emissions reductions estimate is calculated using the results of an AEDT run focused on the three aircraft identified as likely to re-locate to Hanscom. Based on the aircraft identifying information included in the flight track data used to identify ferry flights, the aircraft likely to relocate to Hanscom include a Cessna 700 Citation Longitude, a Gulfstream IV, and a Hawker 900XP. The following equation outlines

[27] Intergovernmental Panel on Climate Change (IPCC). 1999. "IPCC Special Report: Aviation and the Global Atmosphere," page 8-9. Available at: https://www.ipcc.ch/site/assets/uploads/2018/03/av-en-1.pdf.

the calculation of the ferry flight GHG emissions avoided if these aircraft were to relocate to Hanscom Field:

$$EmissionsAvoided = LTO \times GHG_{LTO}$$

Where:

- *EmissionsAvoided* is the annual GHG emissions avoided
- *LTO* is the number of ferry flights (landings and takeoffs) to and from Hanscom Field per year.
- GHG_{LTO} is the amount of CO2e produced per ferry flight.

As presented above, this analysis estimates a total of 132 ferry flights in and out of Hanscom Field per year for the aircraft likely to relocate to Hanscom if hangar capacity is developed. To estimate the CO_2 emitted per ferry flight, the AEDT run calculated emissions down from 10,000 feet (for landings) and up to 10,000 feet (for takeoffs). The average emissions for a single LTO across the three aircraft types was approximately 158.8 kg (0.16 metric tons) of CO_2. Applying the factor described above to calculate CO2e emissions, we estimate CO2e emissions of 317.6 kg (0.32 metric tons). For 132 avoided ferry flights, this yields a total estimate of 41.9 metric tons of CO2e avoided per year by the elimination of ferry flights at Hanscom Field.

Fuel Consumption-Based Estimate

As an alternative to estimating GHG emissions savings based on AEDT, we calculated these impacts based on the average fuel consumption per ferry flight. The following equation outlines this approach for calculating emissions reductions:

$$EmissionsAvoided = LTO \times Fuel_{LTO} \times GHG_{gal}$$

Where:

- *LTO* is the number of ferry flights (landings and takeoffs) to and from Hanscom Field per year.
- $Fuel_{LTO}$ is the average fuel consumption in gallons per ferry flight.
- GHG_{gal} is the amount of CO2e produced per gallon of jet fuel consumed.

For the number of ferry flights per year (*LTO*), the analysis applies the same estimate of 132 ferry flights in and out of Hanscom Field per year as applied in the AEDT analysis.

To estimate the average fuel consumption per ferry flight, we assume a one-way distance of 33 miles per ferry flight. This value represents the weighted average distance of ferry flights to Hanscom among the three aircraft likely to relocate to Hanscom if hangar capacity is developed there, using the number of ferry flights per aircraft as weights. Average fuel consumption per ferry flight was calculated by scaling the estimated fuel consumption for a 300-mile flight down to a 33-mile flight. This estimate is based on aircraft specifications from JetAdvisors for the three aircraft types described above and is scaled down by 1/5th to account for the difference in flight distance and to reflect the fact that ferry flights are likely to

be more fuel intensive per mile traveled (due to limited cruising) than the typical flight.[28,29] This produces an average estimate of 54.7 gallons of fuel consumed per ferry flight across the three aircraft types.

The amount of CO2 emitted per gallon of jet fuel consumed (GHG_{gal} in the above equation) is estimated to be 9.75 kg.[30] Applying the factor of 2 described above, this translates to 19.5 kg of CO2e per gallon (0.0195 metric tons).

Applying these values to the equation presented above, we estimate annual ferry flight emissions of approximately 140.8 metric tons of CO2e for aircraft that would be likely to relocate to Hanscom if hangar capacity were to become available (132 ferry flights × 54.7 gallons of fuel per flight × 0.0195 metric tons of CO2e per gallon = 140.8 metric tons).

Comparison of Ferry Flight Emissions Estimates

The estimates of avoided ferry flight emissions based on the two approaches outlined above differ significantly, with the AEDT-based approach at 41.9 metric tons of CO2e per year and the fuel consumption-based approach at 140.8 metric tons per year (see Table 1). This is likely due to the latter approach applying a conservative assumption that fuel consumption per 33-mile ferry flight would be one-fifth the fuel consumption of a 300-mile flight. Due to the lower speeds for landing and takeoff and the energy required for takeoff, the relationship between flight distance and flight time is unlikely to be linear. However, it is likely that fuel consumption for a 33-mile flight is less than one-fifth the fuel consumption for a 300-mile flight. Thus, the fuel consumption-based value may overestimate CO2e savings from eliminated ferry flights.

Table 1. Ferry Flight Analysis Inputs and Results

Assumptions/Estimates		Assumed or Estimated Value
Key Inputs	Number of ferry flights[1]	132
	Distance per ferry flight[1]	33 miles
CO2e Estimates	AEDT-based estimate of CO2e emissions	41.9 metric tons CO2e per year
	Fuel consumption-based estimate of CO2e emissions	140.8 metric tons CO2e per year

Notes:

1. Number of ferry flights and distance per ferry flight derived from Automatic Dependent Surveillance – Broadcast (ADS-B) flight track data.

[28] JetAdvisors, LLC. Performance Statistics for Cessna Citation Longitude, Gulfstream G-IV, and Hawker 900XP; accessed at https://jetadvisors.com/; December 12, 2023. Based on the JetAdvisors data, we estimate an average fuel consumption of 363 gallons per hour for these aircraft.

[29] The relationship between miles traveled and flight time is not direct since landing and takeoff involve lower speeds than cruising. This 1/5th scaling factor is considered to be conservative, which may result in overestimation of emissions.

[30] US EPA, Emission Factors for Greenhouse Gas Inventories, 2014.

6.2 Analysis of Annual Emissions per Additional Based Aircraft

This section estimates the annual emissions produced per additional based aircraft hangared at Hanscom Field. The following equation outlines the calculation of these emissions:

$$EmissionsAdded_{ac} = Fuel_{gal} \times Hours \times GHG_{gal}$$

Where:

- $Emissionsadded_{ac}$ is the annual GHG emissions added per based aircraft.
- $Fuel_{gal}$ is the average fuel consumption in gallons per hour per aircraft.
- *Hours* is the annual number of operating hours for one jet aircraft.
- GHG_{gal} is the amount of CO2e emitted per gallon of jet fuel consumed.

For the average fuel consumption per hour ($Fuel_{gal}$), we assumed the same value (363 gallons per hour) as used for the fuel consumption-based estimate of avoided ferry flight emissions presented above. This value reflects fuel consumption data published by JetAdvisors for the three specific jet models included in the ferry flight analysis. By using the same aircraft mix as in the ferry flight analysis, we ensure that any differences between our estimates of avoided ferry flight emissions and increased emissions for additional aircraft based at Hanscom reflect changes in flight activity rather than differences in the assumed GHG intensity of ferry aircraft versus new aircraft based at Hanscom.

Average annual operating hours (*Hours*) are estimated to be 300 hours per aircraft based on publicly available estimates obtained from the literature.[31,32]

Lastly, the emissions factor for CO2e emissions is estimated as 19.5 kg (0.0195 tons) of CO2e per gallon of jet fuel consumed.[33] This is consistent with the value used above for estimating ferry flight emissions.

Applying these inputs to the formula above, we estimate that each additional based aircraft at Hanscom would have annual CO2e emissions of 2,124 metric tons (363 gallons per hour × 300 hours per year × 0.0195 metric tons of CO2e per gallon = 2,124 metric tons).

6.3 Breakeven Analysis

This section presents a breakeven analysis to determine how many based aircraft would need to be added at Hanscom Field for the incremental emissions to completely offset the emissions avoided from the elimination of ferry flights. The breakeven analysis utilizes the results from the Ferry Flights Analysis (section 6.1) and the Additional Based Aircraft Analysis (section 6.2). In this analysis we assume that the three aircraft responsible for the ferry flights relocate to Hanscom, and that the only effect of those aircraft is the elimination of ferry flight GHG emissions. The following equation summarizes the

[31] Gossling, S. and Humpe, A. 2020. "The Global Scale, Distribution, and Growth of Aviation: Implications for Climate Change." *Global Environmental Change, 65*. Available at: https://www.sciencedirect.com/science/article/pii/S0959378020307779.

[32] Gudmundsson, S. 2022. "Chapter 2 – Aircraft Cost Analysis." *General Aviation Aircraft Design (Second Edition).* Available at: https://www.sciencedirect.com/science/article/abs/pii/B9780128184653000033.

[33] Value based on estimate of 9.75 kg of CO2 per gallon, as specified in US EPA, Emission Factors for Greenhouse Gas Inventories, 2014. A multiplier of 2 was applied to this value to convert to CO2e. This factor was obtained from IPCC, 1999, "IPCC Special Report: Aviation and the Global Atmosphere," available at: https://www.ipcc.ch/site/assets/uploads/2018/03/av-en-1.pdf.

calculation of the number of additional based aircraft needed for incremental emissions added to equal emissions avoided:

$$Aircraft_{Based} = \frac{EmissionsAvoided}{EmissionsAdded_{ac}}$$

Where:

- $Aircraft_{Based}$ is the number of new aircraft needed for the incremental GHG emissions to offset the GHG emissions savings from avoided ferry flights.
- *EmissionsAvoided* are the emissions reductions (in tons of CO2e) from the elimination of ferry flights at Hanscom Field by the relocation of the aircraft responsible. This analysis considers two estimates of emissions reductions – one derived from AEDT (41.9 metric tons) and one derived using fuel consumption data (140.8 metric tons per year), as described in detail above.
- $EmissionsAdded_{ac}$ are the new emissions produced (in tons of CO2e) from the addition of each new based aircraft (2,124 metric tons of CO2e per year).

Applying the above equation, we estimate the breakeven number of aircraft as a range based on the two estimates of avoided ferry flight emissions. At the low end and using the AEDT-derived estimate of avoided ferry flight emissions, we estimate a breakeven of 0.02 based aircraft. At the high end and based on the fuel consumption-based estimate of avoided ferry flight emissions, the estimated breakeven is 0.07 aircraft. Both of these estimates are incremental to the three aircraft identified as likely to relocate to Hanscom and represent the additional aircraft needed for the increase in GHG emissions to offset the GHG savings from avoided ferry flights. At both ends of the range, the addition of a single based aircraft at Hanscom in addition to the three projected to relocate (or four aircraft in total) would lead to a net *increase* in GHG emissions. As context, the proposed expansion of hangar capacity at Hanscom includes space for an estimated 66 to 79 jet aircraft. Key inputs and results for the breakeven analysis are summarized in Table 2.

Table 2. Breakeven Analysis Inputs and Results

Inputs/Estimates		Assumed or Estimated Value
Key Inputs[1]	CO2e emissions from eliminated ferry flights	41.9 to 140.8 metric tons CO2e per year
	Jet aircraft relocated to Hanscom (these aircraft emit GHGs absent the hangar expansion project)	3 aircraft
	Annual GHG emissions per based aircraft	2,124 metric tons CO2e per year
Breakeven Estimates[2]	Number of jet relocations to Hanscom, in addition to the ferry flight generators, that offset emissions savings from eliminated ferry flights	0.02 to 0.07 aircraft

Notes:
1. All key inputs derived in sections above.
2. Estimates are incremental to the three aircraft identified as likely to relocate to Hanscom.

6.4 Full Capacity Analysis

This section calculates the annual net emissions associated with the Hanscom Field expansion project if all new hangar space is fully utilized, based on a range of 66 to 79 additional aircraft based at Hanscom. The analysis builds on the results presented above for annual ferry flight emissions avoided and the annual GHG emissions per based aircraft (Sections 6.1 and 6.2). We estimate the net GHG emissions associated with full capacity utilization as a range to reflect (1) uncertainty in the number of based aircraft added at Hanscom and (2) the range of avoided GHG emissions that we estimate above for ferry flights eliminated (41.9 to 140.8 metric tons of CO2e per year).

The following equation describes this calculation of the net emissions for a given number of hangar spaces:

$$NetEmissions_{hs} = [(HS - R_{ac}) \times EmissionsAdded_{ac}] - EmissionsAvoided$$

Where:

- $NetEmissions_{hs}$ is the annual net GHG emissions impact associated with full utilization of the new hangar capacity proposed for Hanscom.
- *HS* is the number of hangar spaces associated with the proposed capacity expansion at Hanscom (66 to 79 spaces).
- R_{ac} is, as defined above, the number aircraft that would likely relocate to Hanscom Field from other airports.
- $EmissionsAdded_{ac}$ is, as defined above, the new emissions produced (in tons of CO2e) from the addition of a single new based aircraft (2,124 metric tons of CO2e per year).
- *EmissionsAvoided* are the emissions reductions (in tons of CO2e) from the elimination of ferry flights at Hanscom Field (irrespective of the number of hangar spaces added). As noted above, this value is estimated as a range: 41.9 to 140.8 metric tons.

In the above equation, the expression ($HS - R_{ac}$) represents the number of based aircraft added at Hanscom, less the three projected to relocate their base to Hanscom from other airports. Because the aircraft that relocate to Hanscom are already operating and emitting GHGs, the analysis does not include these aircraft in the estimate of incremental GHG emissions added.

Based on the approach outlined above, this analysis estimates a net increase in annual GHG emissions of 133,643 to 161,348 metric tons of CO2e, as summarized in Table 3. The low end of this range reflects the addition of 66 based aircraft at Hanscom combined with the high-end estimate of avoided emissions from eliminated ferry flights. The high end of the range reflects the addition of 79 based jet aircraft at Hanscom and is based on the low-end estimate of avoided GHG emissions from eliminated ferry flights.

As a point of comparison for the estimates presented in Table 3, we also estimated GHG emissions associated with the fuel to be delivered to the fuel farm planned for the project. During the February 20 presentation of its analysis prior to the DEIR release, the project proponent stated that two trucks would each deliver 10,000 gallons of jet fuel per day to the fuel farm, or 20,000 gallons per day in total.

Assuming an emission factor of approximately 9.75 kg of CO_2 per gallon of jet fuel,[34] this would imply 71,186 metric tons of CO_2 emissions per year. Applying the multiplier of 2 referenced above to calculate CO2e emissions from estimates of CO_2 emissions, this suggests annual CO2e impacts of 142,372 metric tons per year, which is within the range of emissions impacts presented in Table 3. Note that these emissions only represent the fuel provided at Hanscom for outgoing legs of trips. Many aircraft will take on additional jet fuel for return trips, which will add significantly to the emissions by the aircraft based at Hanscom.

Table 3. Summary of Net Increase in Annual GHG Emissions

Number of Based Aircraft Added	Emissions Added Per Year (Metric Tons of CO2e)	Emissions Avoided Per Year (Metric Tons of CO2e)	Net Increase in Annual GHG Emissions (Metric Tons of CO2e)
66	133,784	41.9 – 140.8	**133,643 – 133,742**
79	161,390	41.9 – 140.8	**161,249 – 161,348**

6.5 Project Proponent Full Capacity Analysis

The project proponent's analysis of the project's environmental impacts does not explicitly estimate the GHG impacts associated with increased hangar capacity at Hanscom. Instead, the proponent's analysis alleges that aircraft operations at Hanscom (i.e., the number of takeoffs and landings) are driven by national and local economic trends and will be unaffected by the project. Based on this assumption, the proponent claims that the project will result in a net GHG savings, due to avoided ferry flights. As a basis for claiming that overall operations at Hanscom will be the same with or without the project, the proponent points to the Massport 2017 Hanscom Environmental Status & Planning Report (ESPR), which projects that operations at Hanscom will grow at a rate of 0.3% per year through 2035.[35] As validation for its forecast, the ESPR references the FAA's Aerospace Forecast for FY 2018-2038.[36] The FAA forecast, however, acknowledges that airport operations are driven not only by macroeconomic conditions but also by infrastructure development:

> *"As demand continues to grow and workload increases, congestion and delays could become critical limits to growth over the forecast period. FAA's forecasts of both demand and operations are unconstrained in that they assume that there will be sufficient infrastructure to handle the projected levels of activity. Should the infrastructure be inadequate and result in even more*

[34] Energy Information Administration, Carbon Dioxide Emissions Coefficients, September 7, 2023, accessed at https://www.eia.gov/environment/emissions/co2_vol_mass.php.

[35] Massport, 2017 L.G. Hanscom Field Environmental Status & Planning Report, EEA Number: 5484/8696, May 2019.

[36] Federal Aviation Administration, FAA Aerospace Forecast Fiscal Years 2018-2038.

congestion and delays, it is likely that the forecasts of both demand and operations would not be achieved." [37]

An important conclusion from this FAA language is that growth in flight operations is dependent on infrastructure development within the aviation system. The FAA's Advisory Circular on the development of airport master plans more specifically notes that hangar capacity should be considered when projecting flight demand for individual airports:

"If demand levels are likely to be particularly sensitive to one or more factors, the planner should estimate the impact of reasonable changes in the underlying assumptions about those factors. For example, if expected growth in aircraft operations is highly dependent on the continued operation of a fixed base operator (FBO) and there is a reasonable possibility that the FBO will close, the planner should estimate how much that closing would change the predicted demand. The planner should also examine general aviation hangar activity, including the airport hangar waiting list, and estimate how much increased hangar space would change predicted demand."[38]

As confirmed by both of the above-referenced FAA documents, the project proponent is incorrect in claiming that flight operations at Hanscom will be unaffected by the proposed construction of additional hangar capacity. Therefore, the proponent's conclusion that the project will lead to a net GHG savings is incorrect.

7. Changes in Operations

To supplement the emissions analysis presented above, this section estimates the changes in Hanscom Field operations resulting from full utilization of new hangar space at the facility. The following formula describes this calculation of new flights (*ΔOperations*) associated with the addition of 66 to 79 based aircraft:

$$\Delta Operations = HS * \left(\frac{Hours_{Year}}{Hours_{Flight}}\right) * FractionBase$$

Where:

- *ΔOperations* is the annual change in operations (flights per year) associated with full utilization of the new hangar capacity proposed for Hanscom.
- *HS* is the number of hangar spaces associated with the proposed capacity expansion at Hanscom (66 to 79 spaces).
- $Hours_{Year}$ is the annual number of operating hours for one jet aircraft.
- $Hours_{Flight}$ is the number of hours per flight for one jet aircraft.
- *FractionBase* is the portion of an aircraft's total flights that are to/from its home base airport.

[37] Federal Aviation Administration, FAA Aerospace Forecast Fiscal Years 2018-2038, p.48.

[38] Federal Aviation Administration, *Airport Master Plans*, as modified January 27, 2015.

Average annual operating hours are estimated to be 300 hours per aircraft based on publicly available estimates obtained from the literature.[39,40] Average hours per flight are assumed to be 1.67 hours based on flights for based aircraft identified as potential candidates for relocation to Hanscom. This yields an average estimate of 180 flights per aircraft each year. For the *FractionBase* input, this analysis assumes that 46 percent of an aircraft's total flights are to or from its home base airport. Similar to the average flight duration, this value is derived using the data for the subset of aircraft that were considered to be candidates for relocation to Hanscom (before the application of the 50 percent threshold described in Section 4.1).

The calculations described above produce an estimated increase in operations of approximately 5,487 to 6,568 additional flights to and from Hanscom Field per year, if all new hangar space is fully utilized.

8. Conclusion

The results of the analysis presented here strongly suggest that the proposed 395,700 square foot expansion of hangar capacity at Hanscom Field would, on net, lead to a significant increase in aviation-related CO2e emissions. Key results from this analysis that support this conclusion include the following:

- **Few jet aircraft are likely to relocate to Hanscom:** We identified only three based jet aircraft for which relocation to Hanscom Field would likely lead to reduced costs/increased convenience. We reach this conclusion based on analysis of detailed flight data for aircraft flying into and out of Hanscom over a one-year period.
- **Low threshold for net increase in GHG emissions:** Based on the breakeven analysis presented above, just one aircraft in addition to the three likely to relocate to Hanscom would generate GHG emissions that more than offset the emissions avoided from eliminated ferry flights.
- **Emissions associated with full utilization of planned capacity far outweigh any emissions savings:** With 66 to 79 new hangar spaces fully utilized, the increase in GHG emissions from additional based aircraft at Hanscom would be 950 to 3,900 times greater than the GHG emissions avoided from eliminated ferry flights.
- **The DEIR errs in finding that the new hangar capacity will not increase operations or GHG emissions.** FAA guidance states that flight operations are affected by hangar capacity and operations projections be adjusted based on hangar capacity. For this project, the assertion that reductions of ferry flights will offset any operations increases is shown to be incorrect. The hangar capacity will result in between 5,500 and 6,600 additional flight operations and 134,000 to 161,000 additional tons of CO2e, virtually none of which will be offset by reductions in ferry flights.

[39] Gossling, S. and Humpe, A. 2020. "The Global Scale, Distribution, and Growth of Aviation: Implications for Climate Change." *Global Environmental Change, 65*. Available at: https://www.sciencedirect.com/science/article/pii/S0959378020307779.

[40] Gudmundsson, S. 2022. "Chapter 2 – Aircraft Cost Analysis." *General Aviation Aircraft Design (Second Edition).* Available at: https://www.sciencedirect.com/science/article/abs/pii/B9780128184653000033.

Hydrogeologic Technical Memo 1#

TO: Betsy Young, President
Greater Hyannis Civic Association
betsy@sohocompany.net

Hyannis PFAS Community Working Group
Greater Hyannis Civic Association
Hyannis Park Civic Association
Sierra Club of Cape Cod

FROM: Tom Cambareri
Sole Source Consulting LLC
DATE: August 22, 2024

RE: **DEP TAG Grant – Cape Cod Gateway Airport Hyannis**

I have reviewed several documents pertaining to the Airport and PFAS contamination in the Sole Source Aquifer, including the October 2023 "Draft Immediate Response Action (IRA) Status Report 14, IRA Completion Statement and Phase IV Final Inspection Report and Completion Statement Report;" the April 2024 "Immediate Response Action(IRA) Status Report IV, IRA completion statement, Phase IV Final Inspection Report and Completion Statement; and recent results of monitoring for PFAS in the Mill Creek System conducted by the Hyannis Park Civic Association.

The Mill Creek System monitoring project memo of June 24 is attached. The memo was discussed at a meeting with the Town Manager and their consultants Tetra Tech on July 15th in the Town of Yarmouth.

The Mill Creek System is downgradient from the Gateway Municipal Airport and the Barnstable County Fire Training Academy (Figure 1). The use of Aqueous Film Forming Foam (AFFF) for fire training resulted in groundwater contamination that migrates to discharge in the Mill Creek system and to Barnstable Water Supply Division Public Supply Maher Wells. The sampling program was undertaken by HPCA to enhance the understanding of PFAS in the impacted surface waters in the community.

PFAS was detected in surface waters at all sampling points. The highest concentrations were detected in Mill Creek Marsh. The Mill Creek Marsh is the western upgradient portion of the system. Clear surface water with a slight pulsing motion indicated direct groundwater discharge into the marsh. The location is approximately 530 feet east of the Maher ME2 Well which has been impacted with PFAS from legacy and recent Telomer types

of AFFF. Total PFAS was 2,329 ng/l. PFAS6 was 379 ng/l. PFAS compounds associated with the Telomer AFFF used by the Gateway Airport comprised a substantial portion of the total concentrations with the 6:2 FTS at 1,250 ng/l and PFCAs (Perfluoro Carboxylic Acids) at 610 ng/l which are associated with telomer AFFF precursors. PFAS discharged into the marsh

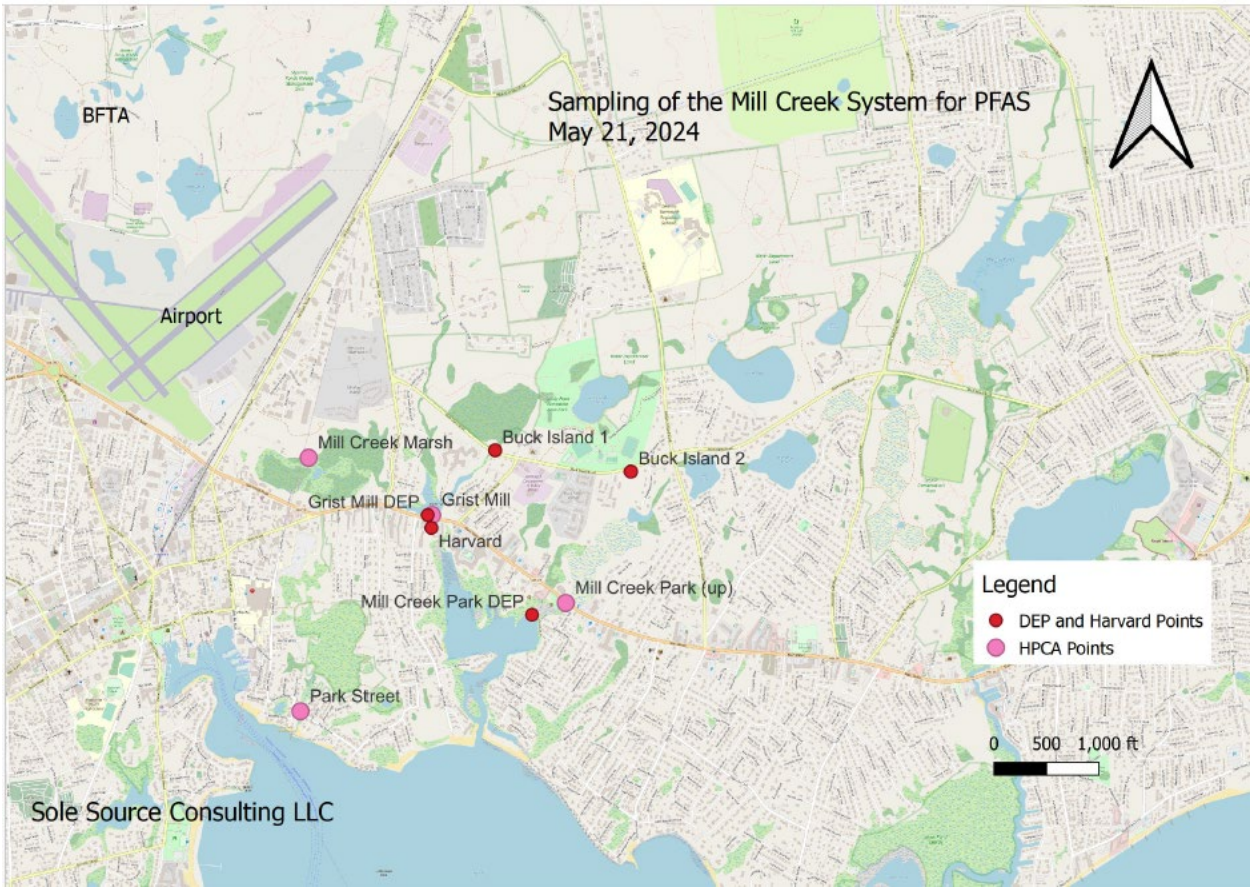


Figure 1 Map of the Area with sample locations and Major Point Source of PFAS Contamination

flows into the open water of Mill Creek Pond. PFAS was sampled by HPCA and DEP at the Grist Mill and by Harvard researchers slightly more downgradient, south of Route 28. Total PFAS at the Grist Mill was 210 ng/l, PFAS6 was 106 ng/l and associated PFCAs were 58 ng/L in the HPCA sample. Comparison to previous samples at the Grist Mill indicate a consistent concentration of PFAS since 2018 with the Harvard results in 2018 being slightly lower. The consistency indicates a stable source of PFAS in the Mill Creek system from the Airport which is 2,700 feet directly upgradient and potentially the BFTA which is 1.44 miles upgradient. The sampling of PFAS by the Hyannis Park Civic Association has revealed a strong direct source from the Airport in the Mill Creek System

A more detailed evaluation of the Airport's monitoring results from June 2023 indicates a significant increase of legacy AFFF PFAS6 components, including PFOS, in the identified Deployment area wells HW-Is and HW-S (Figure 2). The Airport consultant's reports and

presentations indicated that PFAS concentration plummeted after the cap was installed in September 2020. A statement in the IRA Status Report 14 said,

> *..the installation of the two caps have significantly decreased the concentration of total PFAS in the vicinity of the Deployment Area and ARFF/SRE Area as indicated on the time plot... As such, the majority of the PFAS impacted soil at the Airport is currently capped and stabilized*."

However, their 2023-24 monitoring results indicate significant increases of PFAS6 compounds well after the cap was installed (Figure 2). PFAS6 in Airport's Monitoring wells HW-Is, HW-S and the Maher Well, ME2, all have substantial increases. The highest concentration of PFAS6 in HW-Is of 1,777 ng/L, was recently detected June 2024, over three years after the cap to stabilize it was installed (Figure2). This occurrence was not mentioned in the Airport's concluding reports of 2024. The April 2024 samples detecting PFOS in HW-Is at 1,200 ng/L, PFOS in the downgradient well HW-S at 170 ng/L, Maher ME2 well 74 ng/L and the Mill Creek discharge at 178 ng/L indicate substantial migration of PFOS.

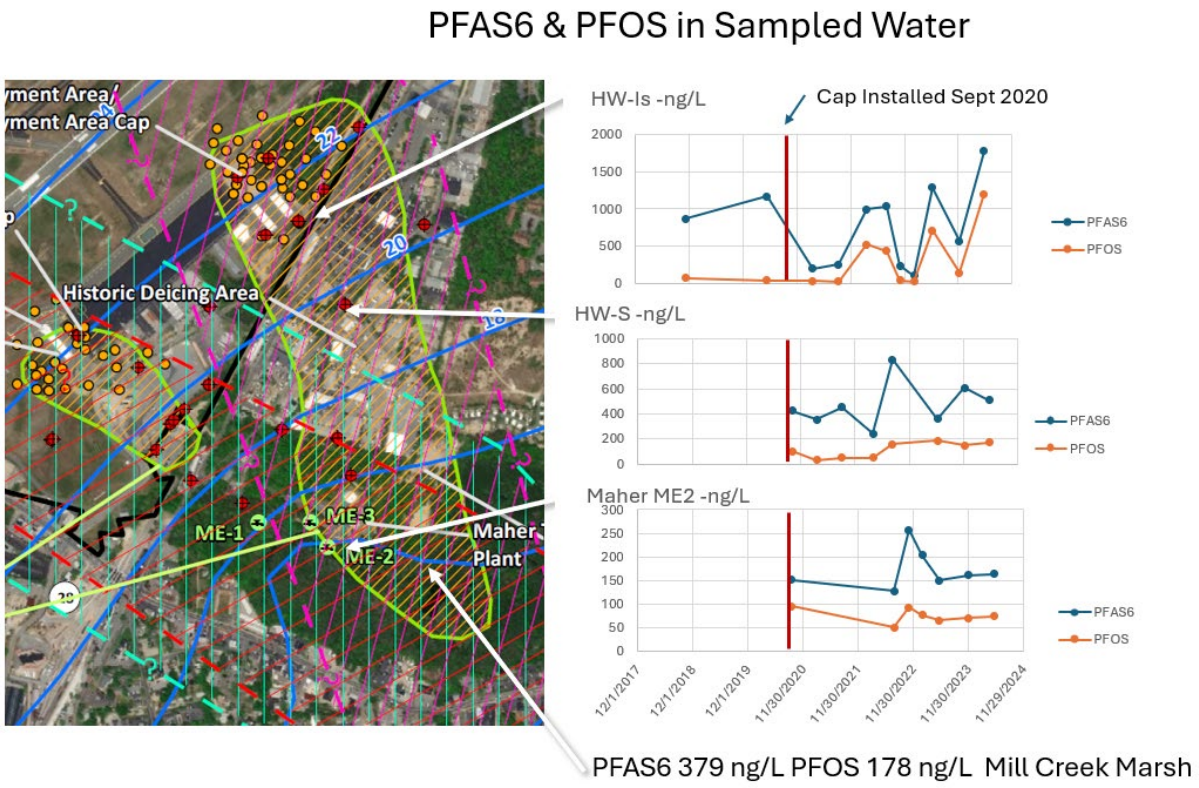


Figure 2. PFAS6 and PFOS in Deployment Area Monitoring Wells and the Maher ME2 Well. Map (from Airport)

The concentration of 6:2 FTS, the fluorotelomer associated with AFFF, used by the Airport, is similarly high in these identified shallow source wells indicating they are from the same source area and migrating along the same flow path. The fluorotelomer 6:2 FTS in HW-Is was 999 ng/L, 1,600 ng/L at HW-S, and 48 ng/L at ME2 in April 2024 and 1,250 ng/L in the Mill Creek Marsh sample in May 2024. The concentrations for PFAS6 and the 6:2FTS at ME2 are lower than the Marsh sample due to dilution with groundwater drawn from a wider area. PFAS6 in the Maher ME2 well increased 70% from 2020 to the same time that 6:2 FTS arrived in 2022.

The series of graphs of Figure 2 showing PFAS 6 and PFOS in the source well HW-Is, Intermediate well HW-S and HPCA Mill Creek System PFAS results raises some questions about the Airport's predictive groundwater model of PFAS and its use in weighting the evidence to make their PFAS contamination appear so exclusive. The groundwater solute transport model was not well documented in the Phase II report. The model used the highest observed PFAS6 concentration in the plume and reported the computed downgradient concentrations in a predictive mode. The computed concentrations were not compared to observed concentrations, as typically conducted in modeling to validate and verify the model's capability. The conclusions from the modeling effort stated:

> *it is expected that the entire Airport groundwater plume will be less than the MassDEP Sum of Six within nine years of the cap installation (2029)... The model predicts that the Airports Plume is less than that the current GW-1 standard by the time its peak concentration reaches the Maher Wells. If the plume migrates more to the south towards the wells, the concentration at wells ME-2 and ME-3 would increase but would most likely not exceed the 0.02 ug/l GW-1 standard for the Sum of Six PFAS compounds(PFAS6).*

In response to questions from the community about impacts to Mill Creek the Airport responded:

> The Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEPs website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater (Figure 3). The Airport is not responsible for controlling non-airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility.

However, the regulated PFAS, PFAS6 and PFOS among others show continuous release and increasing concentrations exceeding the 20 ng/L Maximum Contaminant Level after the cap was installed (Figure 4).

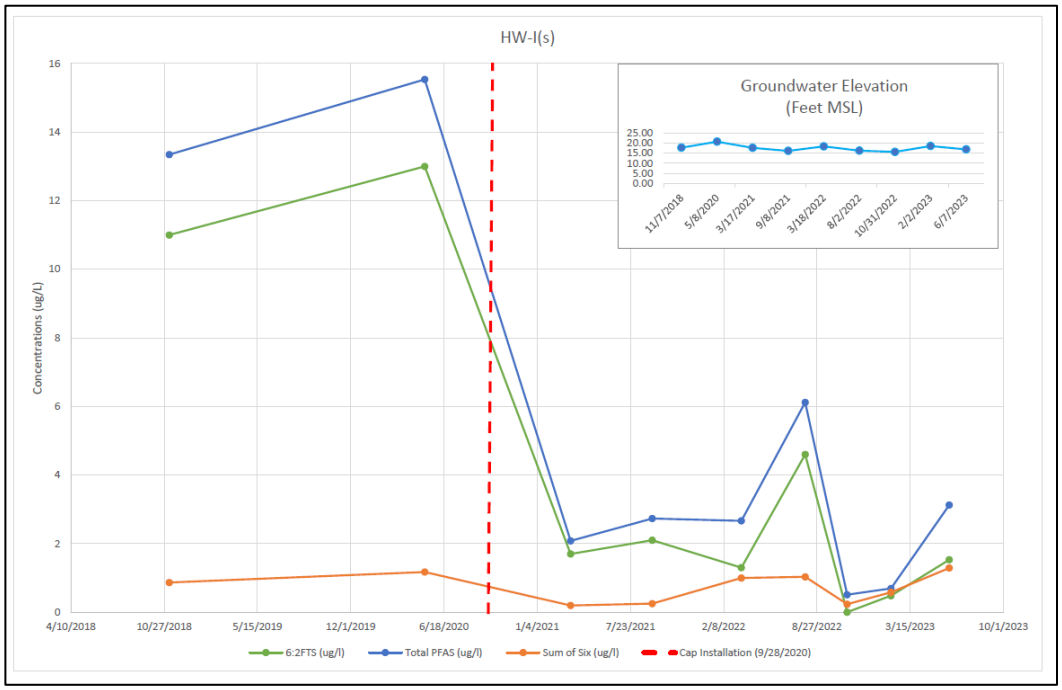


Figure 3 Graphic From Airport's Phase IV Report concluding significant PFAS reduction from the Cap Installation focusing on the non-regulated 6:2 FTS

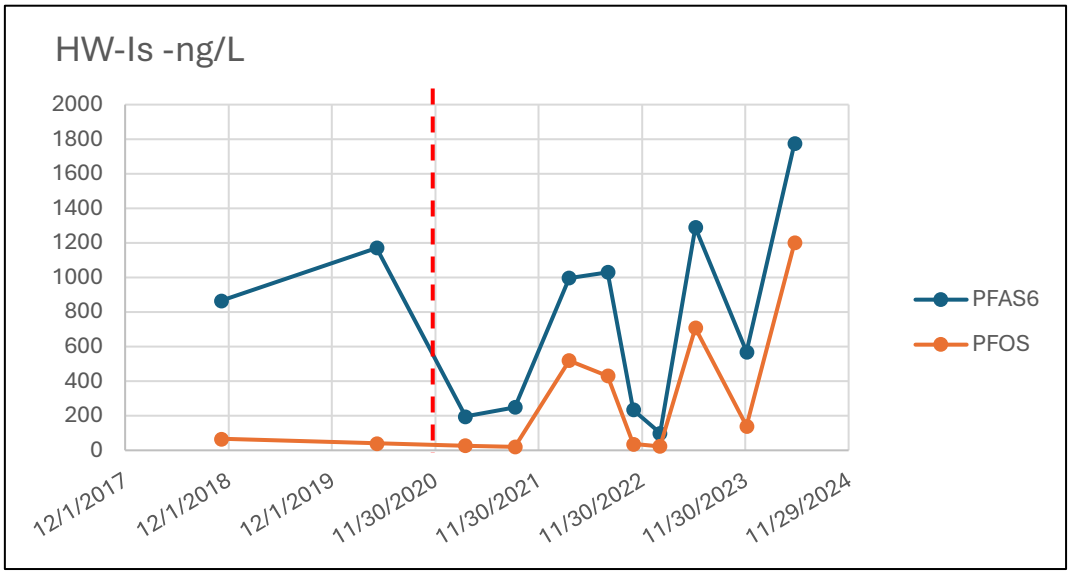


Figure 4 Shallow Deployment Area Monitoring Well showing continuous release and increasing concentrations of Regulated PFAS6 and PFOS after Cap Installation

The Airport also responded to a similar question about Mill Creek and potential PFAS including the 6:2FTS in the Final Phase V Report:

... the PFAS detected in Mill Creek (referring to the Harvad 2018 results) is not consistent with the Airports PFAS release. Additionally, the Airport's PFAS plume has never exceeded GW-3 and has been modeled to be below the GW-1 standard (based on the Airport's PFAS contribution only).

The Airport's fingerprint compound, 6:2 FTS was detected at 1,250 ng/L in the HPCA-Mill Creek Marsh sample and 34.4 ng/L at the Grist Mill. The high concentration of the Airport's 6:2FTS in the Marsh has strong association with the Deployment area monitoring wells HW-Is and HW-S less than 2,000 feet upgradient.

The recent PFAS6 concentrations are compared to the predicted PFAS 6 concentrations from the model as depicted in Figure 5. The model was used to demonstrate reduced PFAS6 concentrations along the plume flow path at its maximum extent (Figure 5). Because PFAS6 includes five other compounds, the comparison includes PFOS and the Airport's 6:2 FTS (Table 1). The predicted maximum PFAS6 concentration at the source well, HW-Is, is 200 ng/L, the actual PFAS6 concentration in June 2023 is 1,290 ng/L/ The model predicts a PFAS6 concentration of at less than 20 ng/L in Maher ME2, while the actual PFAS6 concentration in December 2023 was 161 ng/L. The model indicates that the PFAS6 concentration of discharge into Mill Creek Marsh is 20 ng/L, but the June 2024 PFAS6 concentration is 379 ng/L.

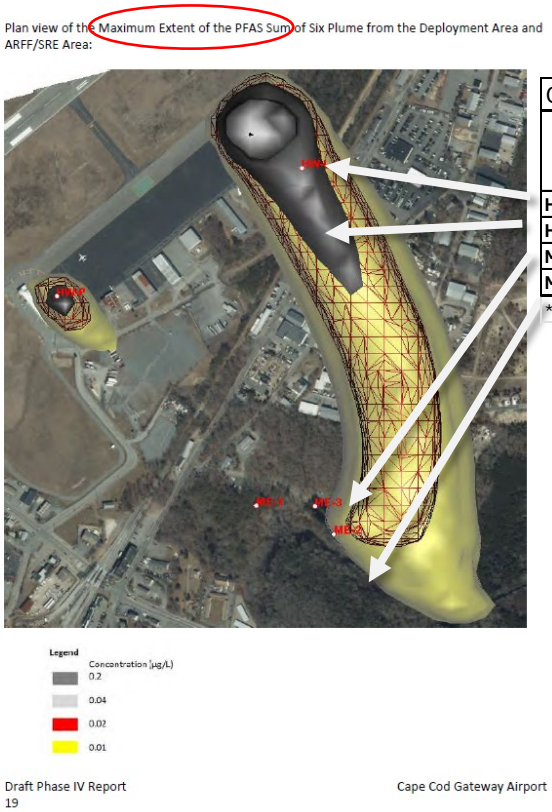


Table 1 Compared Model and Observed PFAS Concentrations

Groundwater Model Predicted vs Observed PFAS6 Concentrations*							
		2023			2024		
	GW Model	**Obseved PFAS6**	**Observed PFOS**	**Observed 6:2 FTS**	**Obseved PFAS6**	**Observed PFOS**	**Observed 6:2 FTS**
HW-Is	200	1,290	708	1,530	1,777	1,200	990
HW-Ss	200	358	185	1,150	509	170	1,600
Maher ME2	<20	150	65	45	161	70	70
Mill Creek Marsh	<20				379	178	1,250

* Airport October 2023 Rpt, 2024 Data and Hyannis Park Civic Asso May 2024

Figure 5 Comparison of Airport Groundwater Modeling Predictions of Maximum Extent and Observed PFAS6 Concentrations (Graphic from the Airport's Report)

Conclusions

The observations of 6:2FTS and PFAS6 from the shallow wells of the Deployment area plume are similar in space and time at the source and downgradient. The significant PFAS6 concentrations in the deployment source area wells and downgradient Mill Creek System indicate the continued leaching of recalcitrant PFAS compounds associated with legacy and telofluoromer AFFFs. The observed fluctuations of PFAS in the observation wells are typical of chronic and episodic release of slugs of contaminants over time that occurs from significant sources of contamination. In this case, small concentrations of residual PFAS in soil can dissolve low amounts but regulatorily high concentrations into groundwater for a long time with associated impacts downgradient.

The results of the community-based sampling of Mill Creek and TAG analysis of recent Airport monitoring indicate the Airport's assertion that the engineered barriers (caps) have significantly reduced downstream PFAS6 concentrations appears to be supported only by the Airport's model, not actual field observations. The Airport's model was not validated and verified with observed PFAS6 concentrations and is therefore an invalid tool for demonstrating PFAS6 concentrations in IRA status reports and to inform regulatory decisions. These results call into question the Airport's claim that it is not responsible for PFAS6 contamination of downgradient wells and surface waters.

The model output was used to support the calculation of PFAS6 damage to the Maher wells to determine the amount of restitution to the community. The Maher Well Treatment cost approximately $10 million dollars, the amount of contribution from the Airport was approximately $410,000 (less than 5%) for capital costs and approximately $7,800 year for operation and maintenance.

The PFAS results of the Mill Creek System and a continuing PFAS6 source indicates that further investigation of the Airport plumes and models with more frequent monitoring is needed to better understand the long-term nature and downgradient extent and interaction with the Maher wells and Mill Creek System.

Attachment: Hydrogeologic Tech Memo June 2024

Hydrogeologic Technical Memo 1#

TO: Linda Bolliger
President
Hyannis Park Civic Asso.
P.O. Box 561
West Yarmouth, MA 02673
(508)843-8878
linda@hyannispark.org

FROM: Tom Cambareri
DATE: June 24, 2024

RE: **Community Action Works PFAS Sampling Project for the Mill Creek System**

I am pleased to provide you and the Hyannis Park Civic Association with the results of the sampling of the Mill Creek System. The HPCA applied for and received a grant from the Community Action Works (CAW) for $4000 to provide technical information about the occurrence of PFAS in the surface waters of Mill Creek. The Mill Creek System was sampled for PFAS in 2018 by Harvard investigators and in 2023 by DEP.

The Mill Creek System is downgradient from the Gateway Municipal Airport and the Barnstable County Fire Training Academy (Figure 1). The use of Aqueous Film Forming Foam (AFFF) for fire training resulted in groundwater contamination that migrates to discharge in the Mill Creek system and to Barnstable Water Supply Division Public Supply Wells. The sampling program was undertaken by HPCA to enhance the understanding of PFAS in the impacted surface waters in the community.

The budget allowed for four samples to be analyzed for PFAS using an isotope dilution method that detects 24 different PFAS compounds. The locations of the sampling sites were discussed with the HPCA and sampling was conducted on May 21, 2024, by Sole Source Consulting. The samples were analyzed by Alpha Analytical (Pace). The locations shown in the map below include Mill Creek North, the Grist Mill, Mill Creek Park Upgradient and Park Street downgradient of the Hospital Bogs.

Results

PFAS was detected in surface waters at all sampling points (Table 1). The highest concentrations were detected in Mill Creek Marsh. The Mill Creek Marsh is the western upgradient portion of the system. Clear surface water with a slight pulsing motion indicates

direct groundwater discharge. The location is adjacent to the Maher Wells which has been impacted by the Gateway Airport with PFAS from legacy and recent Telomer type of AFFF. Total PFAS was 2,329 ng/l. PFAS6 was 379 ng/l. PFAS compounds associated with the Telomer AFFF used by the Gateway Airport comprised a sizable portion of the Total

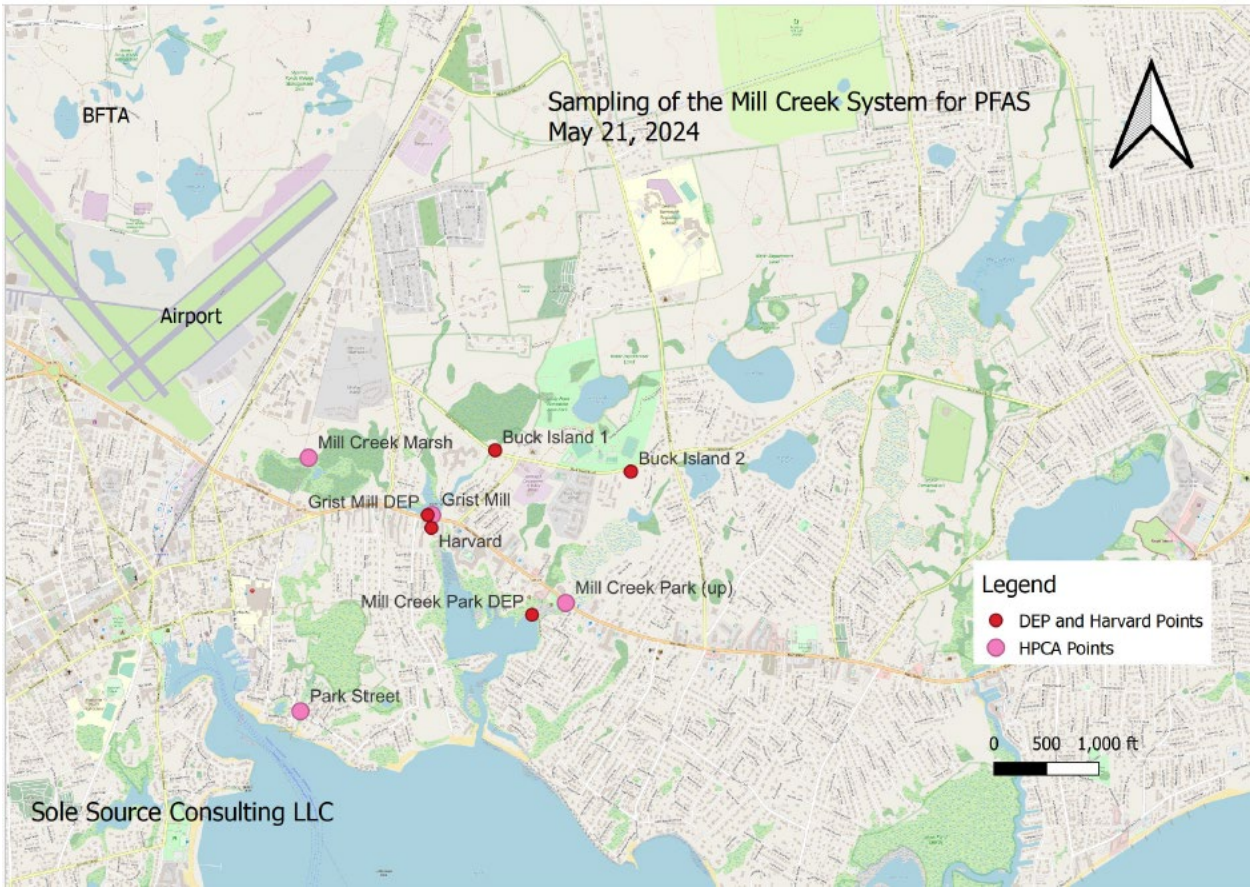


Figure 1 Map of the Area with sample locations and Major Point Source of PFAS Contamination

concentrations with the 6:2 FTS at 1250 ng/l and 610 ng/l of associated PFCAs. Surface water from Marsh flows in surface water into the open water of Mill Creek where PFAS was sampled by HPCA and DEP at the Grist Mill and by Harvard researchers slightly more downgradient, south of Route 28.

HPCA total PFAS at the Grist Mill was 210 ng/l, PFAS6 was 106 ng/l and associated PFCA was 58 ng/L. Comparison to previous samples at the Grist Mill indicate a consistent concentration of PFAS since 2018 with the Harvard results in 2018 being slightly higher (Table 2). The consistency indicates a stable source of PFAS in the Mill Creek system from the Airport which is directly 2,700 feet upgradient and potentially the BFTA which is 1.44 miles upgradient.

The HPCA samples from Mill Creek Park to the east detected Total PFAS of 25 ng/L , PFAS6 at 10 ng/l and 7 ng/L of PFCA. These concentrations are significantly lower than the DEP samples of Mill Creek Park collected in 2023. The HPCA targeted an upgradient

location to sample. Unfortunately access to sampling points is constrained by private property. The HPCA sampling point just south of the Route 28 overpass samples surface water that is derived from the bog system and contributing area to the east. The DEP Mill

Table 1 PFAS from Hyannis Park Civic Association Sampling May 21, 2024

PFAS Compounds May 21, 2024	Mill Creek Marsh	Grist Mill	Hospital Bogs @Park Street	Mill Creek Park @ Rt 28
Field Id	MCK	GM	PST	MCP
Perfluorobutanoic Acid (PFBA)	87.7	8.3	4.29	4.8
Perfluoropentanoic Acid (PFPeA)	404	35.5	8.72	2.88
Perfluorobutanesulfonic Acid (PFBS)	2.54	3.87	6.26	3.12
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ND	ND
Perfluorohexanoic Acid (PFHxA)	206	22.2	8.96	4.41
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	2.15	ND
Perfluoroheptanoic Acid (PFHpA)	101	10	4.69	2.28
Perfluorohexanesulfonic Acid (PFHxS)	26.6	12.4	18.6	ND
Perfluorooctanoic Acid (PFOA)	40.2	8.48	9.04	4.06
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1250	34.1	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND
Perfluorononanoic Acid (PFNA)	12.4	3.65	2.62	ND
Perfluorooctanesulfonic Acid (PFOS)	178	72	23.3	3.21
Perfluorodecanoic Acid (PFDA)	ND	ND	ND	ND
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	21	ND	ND	ND
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ND	ND
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeF	ND	ND	ND	ND
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ND	ND
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOS	ND	ND	ND	ND
Perfluorododecanoic Acid (PFDoA)	ND	ND	ND	ND
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ND	ND
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ND	ND
PFAS6	379.2	106.53	58.25	9.55
Total PFAS	2329.44	210.5	88.63	24.76

Creek Park sample was collected further south and its groundwater contributing area is directly north. PFAS6 in the DEP sample was 127 ng/l and the 6:2 FTS was 72 ng/l indicating a strong Telomer AFFF type of source. Potential sources of this may include

residual AFFF used in a fire fighting response and/or the Yarmouth Fire Building further upgradient on Buck Island Road.

The Mill Creek Marsh also has a historic outlet across route 28 into the Hospital Bogs. Access to this area and the Hospital Bogs is constrained by private property. The HPCA sample was taken from the culvert directly upgradient of Park Street at the south end of the bogs prior to discharge into the Lewis Bay system. Total PFAS was 25 ng/l and PFAS 6 was 10 ng/L. The low concentrations indicate a connection to a PFAS source which could be septic systems in the Hyannis area or diluted PFAS from the Mill Creek Marsh.

Table 2 Comparison of PFAS Test Results in the Mill Creek System

PFAS Compounds Comparison Between DEP (10/24/2023), HPCA (05/21/2024 and Harvard	Concentration (ng/L)					
	Sample ID					
	MILL CREEK PARK-DEP	Mill Creek Park-HPCA	BAXTER GRISTMILL DEP	Grist Mill - HPCA	Mill Creek Harvard	Mill Creek Harvard
	10/24/2023	5/21/2024	10/24/2023	5/21/2024	7/11/2018	4/9/2019
Perfluorooctane Sulfonic acid (PFOS)	**76.30**	3.21	**31.70**	72.00	31.82	20.50
Perfluorooctanoic Acid (PFOA)	14.80	4.06	9.96	8.48	13.91	8.46
Perfluorohexane Sulfonic Acid (PFHxS)	12.50	ND	16.60	12.40	19.71	14.56
Perfluorononanoic Acid (PFNA)	8.64	ND	3.44	3.65	5.54	3.91
Perfluoroheptanoic Acid (PFHpA)	12.80	2.28	14.80	10.00	18.61	9.72
Perfluorodecanoic Acid (PFDA)	2.16	ND	ND (1.92)	ND	0.61	0.41
SUM of PFAS6	**127.20**	**9.55**	**76.50**	**106.53**	**90.20**	**57.56**
6:2 FTS	72.30	ND	58.90	34.10	30.02	36.89
PFPeA	47.90	2.88	53.00	35.50	66.64	34.32
PFHxA	27.90	4.41	33.30	22.20	45.02	23.49

Implications

The sampling of PFAS by the Hyannis Park Civic Association has revealed a strong direct source from the Airport in the Mill Creek System. PFAS from the Marsh pervades through the system to the Grist Mill into Mill Creek. Results from Mill Creek Park compared to previous investigators indicates a local Telomer AFFF type of source. Results at the Hospital Bogs at its downgradient extent indicate local septic sources or dilute contamination from a distant point source.

The results of the Mill Creek North indicate further investigations of the Airport plumes to better understand the downgradient extent and interaction with the Maher wells and to determine what potential portion the County Fire Training Aea may be contributing to the Marsh and Mill Creek System.

Finally, although the PFAS concentrations detected are above the DEP drinking water concentrations of 20 ng/L for PFAS6 in most locations, they are below the present thresholds for aquatic toxicity. In addition, the area is served by public water supply so this exposure path to human health has been addressed. Further scientific research and regulatory changes on PFAS in the environment may reveal a cause for future concern.

Strysky, Alexander (EEA)

From: MEPA (EEA)
Sent: Tuesday, November 12, 2024 10:32 AM
To: Strysky, Alexander (EEA)
Cc: Mejia, Josbel (EEA)
Subject: FW: Att: Rebecca L. Tepper, EEA #16640 Final Environmental Impact Report (FEIR), Hyannis, MA

Hi Alex,

Please see below from the MEPA inbox.

Jennifer Hughes
Deputy Director
Massachusetts Environmental Policy Act (MEPA) Office
100 Cambridge Street| Boston, MA 02114|617.455.7063

The MEPA Office has issued straw proposals to update the 2010 MEPA Greenhouse Gas Emissions Policy and Protocol and the 2021 MEPA Interim Protocol on Climate Change Adaptation and Resiliency.
More information is available on the MEPA website

From: karen ingemie <kareningemie@comcast.net>
Sent: Saturday, November 9, 2024 12:01 AM
To: MEPA (EEA) <mepa@mass.gov>
Subject: Att: Rebecca L. Tepper, EEA #16640 Final Environmental Impact Report (FEIR), Hyannis, MA

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Attachments available until Dec 9, 2024

Attention: Rebecca L. Tepper, Secretary Executive Office of Energy and Environmental Affairs

EEA #16640 Final Environmental Impact Report (FEIR) - November 7, 2024

I am writing and oppose the expansion involving runway extensions, facility upgrades, and additional hangar capacity to serve private jets.

Click to Download
Sept 2 2024 11.35am.MOV
23.3 MB

Click to Download
#16640 Jet Traffic .zip
3.5 MB

No one should have to live with the noise and the constant flow and exposure to high levels of aviation noise and exhaust emissions from aircraft flying over. Our fundamental quality of life has been violated by destroying the enjoyment, peace and tranquility living in the Hyannis Park neighborhood.

Thank you

Strysky, Alexander (EEA)

From: Betty Ludtke <bettyludtke@verizon.net>
Sent: Sunday, November 10, 2024 12:00 AM
To: Strysky, Alexander (EEA)
Subject: Re: Cape Cod Gateway Airport

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Alex,

Thank you for the reply and for advising me that my attachments did not come through correctly. I tried to attach two slides from a presentation I did for the Cape and Islands Sierra Club. The club has an ongoing program titled, "Tuesday Talks." They asked me to discuss the need for a regional air transportation study for the Cape and Islands. The presentation is readily available for public viewing on their website. The PFAS presentation that many commenters have mentioned in their comments on the Gateway Airport FEIR is also available on the Sierra Club site.

I will load the two screen shots, which I feel show the stark difference between the runway environment at Joint Base Cape Cod and that of Gateway Airport, at the end of this email. I mentioned what the city of Denver did after decades of trying to make the encroached Stapleton Airport "work" - they realized it would never work and wisely moved the airport by building Denver International. This allowed the former Stapleton airport, close to the city, to be developed into a livable community.

This reasonable alternative, that being the relocation of Gateway airport to Joint Base Cape Cod to create a joint military civilian airport, needs to be fully studied before this FEIR is complete. It has not been studied in the FEIR and therefore the FEIR is not complete.

The screen shots from google earth were taken at the same scale. They show the difference between the airfield that comprises Gateway Airport and the airfield at Joint Base Cape Cod. These airports are about 12 miles apart from one another, each fully functional, each underutilized.

The first is Gateway Airport, completely encroached by Hyannis. Gateway proposes parallel taxiways be built as part of their expansion, one going through a wetland.

The second is Joint Base Cape Cod. This is what Gateway wants to look like with parallel taxiways for each runway. The Air Guard pulled out their F-15 mission years ago leaving ample opportunity to accommodate a civil air facility. The military representatives are open to this idea.

When we are considering the enormous amount of money proposed to be invested at Gateway airport and the environmental impacts associated with the proposed development, coupled with the marginal gains, it is unconscionable to consider this FEIR to be complete until all reasonable alternatives have been thoroughly studied.

Thank you for your consideration of my comments,

Betty


Safari 11:09 PM Sat Nov 9
88%
Fins Up! Water Park
Hyannis Ponds
Wildlife
Management
Area
Cape Cod
Gateway
Airport
John F. Kennedy
Hyannis Museum
3D



Sent from my iPad

On Nov 8, 2024, at 4:16 PM, Strysky, Alexander (EEA) <alexander.strysky@mass.gov> wrote:

Thank you for submitting comments on the Cape Cod Gateway Airport Final Environmental Impact Report (FEIR) via the Public Comments Portal. There were two PDF files uploaded with your comments, one named Joint Base Cape Cod Airfield and the other Cape Cod Gateway Airport. However, they appear to be identical documents. Did you mean to submit a different document? Also, the document appears to be a presentation entitled Cape & Islands Regional Air Study – Asset Overview, but it is not dated or credited. Could you provide some background information on who prepared it and when?

Regarding issuance of the Certificate, the MEPA statute and regulations require, for all EIRs, that a Certificate be issued one week after the close of the comment period. The Certificate could close MEPA review of the project or require that a supplemental FEIR be prepared.

Alex Strysky
MEPA Office
100 Cambridge Street
Boston, MA 02114
Cell: (857) 408-6957

Note: the MEPA Office has issued straw proposals to update the 2010 MEPA Greenhouse Gas Emissions Policy and Protocol and the 2021 MEPA Interim Protocol on Climate Change Adaptation and Resiliency.

More information is available on the MEPA website

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
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Maura Healey
Governor

Kim Driscoll
Lt. Governor

Rebecca Tepper
Secretary

Elizabeth Mahony
Commissioner

14 November 2024

Rebecca Tepper, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Cape Cod Gateway Airport, Hyannis, EEA #16640

Cc: Jo Ann Bodemer, Director of Energy Efficiency, Department of Energy Resources
Elizabeth Mahony, Commissioner, Department of Energy Resources

Dear Secretary Tepper:

We've reviewed the Final Environmental Impact Report (FEIR) for the proposed project. The proposed master plan project is contemplating the following:

- a 30,000-sf terminal expansion (this size may change);
- New hanger building(s);
- Equipment storage building(s).

The DOER previously reviewed the details of the proposed hanger. Our comments on that review are presented again, below. This review adds additional recommendations for potential hanger and other buildings.

Cape Cod Gateway Airport, 16640
Hyannis, MA

Terminal Expansion

In the DEIR, the airport committed to building the terminal expansion to 2023 Stretch Code standards[1], with efficient electrification. In detail:

- The addition will be built in accordance with C502.1 of the Stretch Code which requires:
    - If the addition is less than 20,000-sf, the prescriptive requirements of C401.3, C402 through C406, and Section C408 apply.
    - If the addition is 20,000-sf or larger, the addition shall be built in accordance with C401.2 Part 3, relative performance, which requires conformance with C401.3, C402.1.5, C402.2.8, C402.3, C402.4, C402.5, C402.6, C402.7, C403.5, C403.7, C405.2.4, C405.13, C406, C407.2, C408, and ASHRAE 90.1-2019 Appendix G (modified by C407.2).
- Key mandatory sections in both pathways above include:
    - C402.1.5 which establishes minimum, above-grade vertical envelope performance which cannot be "traded off" with other building improvements.
    - C402.3, solar readiness
    - C402.4, revised fenestration performance of U-0.30/0.32
    - C402.5, air leakage
    - C402.7, thermal bridge derating
    - C403.5, economizers
    - C403.7, ventilation energy recovery
    - C405.13, electric vehicle readiness
    - C406, additional energy efficiency
- 100% of building space heating will be provided by electric air source heat pumps.

We also recommend water heating with either electric resistance or heat pump hot water heaters so that no gas or other fossil fuels are necessary.

[1] Note that Barnstable is not currently a Stretch Code community. Accordingly, building to the Stretch Code, which contains higher energy efficiency standards, is the project mitigation.

Cape Cod Gateway Airport, 16640
Hyannis, MA

Other buildings

The master plan also contemplates construction of other buildings, including new hangers, equipment storge buildings, and possibly other buildings. We recommend that these buildings also be constructed to the Stretch Code standards, and efficiently electrified, if there is any space conditioning (heating and/or cooling) provided in the building(s), including small unit heaters and/or radiant floors, and/or other space heaters. No gas or fossil fuels should be used in these buildings for either space or water heating.

Accordingly, new buildings containing any space heating and/or cooling shall be built as follows;

- If the building is less than 20,000-sf, the prescriptive requirements of C401.3, C402 through C406, and Section C408 apply.

- If the building is 20,000-sf or larger, the addition shall be built in accordance with C401.2 Part 3, relative performance, which requires conformance with C401.3, C402.1.5, C402.2.8, C402.3, C402.4, C402.5, C402.6, C402.7, C403.5, C403.7, C405.2.4, C405.13, C406, C407.2, C408, and ASHRAE 90.1-2019 Appendix G (modified by C407.2).

- As noted for the terminal expansion discussion above, these provisions contain mandatory requirements for air infiltration, thermal bridge mitigation, ventilation energy recovery, and envelope performance which exceed the requirements of the base code.

- 100% of building space heating should be provided by electric air source heat pumps.

- 100% of water heating should be provided with air source heat pump water heaters or electric resistance water heaters.

Sincerely,



Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources