



7. Implementation Plan and Financials

This chapter presents the Airport Layout Plan (ALP) Drawing Set, Project Phasing Plan, and the Airport’s Capital Improvement Program (CIP) for the Cape Cod Gateway Airport (HYA or the Airport), which comprise the final recommendations of the Master Plan Update (MPU) for the Airport. It also details the public participation process that informed the planning of the MPU for the Airport.

The proposed development depicted on the ALP Drawing Set is derived from the Recommendation for the ALP presented in Chapter 6, *Alternatives*. The Project Phasing Plan presents a recommended phasing schedule for implementing the proposed improvements shown on the ALP over the 20-year planning period, while the CIP details the potential funding mechanisms and costs for implementing those projects. The ALP, Project Phasing Plan, Federal Aviation Administration (FAA) Airport Capital Improvement Plan (ACIP), which is typically the first five years of the CIP are all subject to review and comment by the FAA. After final review and approval, these documents will become the final recommendations of the MPU.

The major components of this chapter are listed below:

- Airport Layout Plan Drawing Set
- Project Phasing and Capital Improvement Plan
- Sources of Funding and Project Eligibility
- Airport Financial Analysis
- Public Participation Process

7.1. AIRPORT LAYOUT PLAN DRAWING SET

The ALP Drawing Set has been prepared in accordance with generally accepted planning practices and FAA guidance materials, including the following:

- FAA Advisory Circular 150/5070-6B, *Airport Master Plans*
- FAA Advisory Circular 150/5300-13A, *Airport Design*
- FAA Advisory Circular 150/5360-9, *Planning and Design of Airport Terminal Facilities at Non-Hub Locations*
- FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*
- Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*
- FAA Standard Operating Procedures (SOP) 2.0, Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)
- FAA Memorandum on Airport Sustainable Master Plan Pilot Program, May 27, 2010

The ALP Drawing Set for the Airport consists of a Title Sheet and 27 drawings as follows:

<u>Sheet No.</u>	<u>Title</u>
1	Existing Airport Layout Plan



<u>Sheet No.</u>	<u>Title</u>
2	Airport Layout Plan
3	Airport Data Sheet
4	Terminal Area Plan
5	Airport Airspace Plan
6	Outer Airport Airspace Plan Runway 15
7	Outer Airport Airspace Plan Runway 24
8	Inner Approach Plan Existing Runway 6
9	Inner Approach Plan Existing Runway 24
10	Inner Approach Plan Proposed Runway 24
11	Inner Approach Plan Runway 6-24 Tables
12	Inner Approach Plan Existing Runway 15
13	Inner Approach Plan Existing Runway 33
14	Inner Approach Plan Existing Runway 15-33 Tables
15	Inner Approach Plan Proposed Runway 15
16	Inner Approach Plan Proposed Runway 33
17	Inner Approach Plan Proposed Runway 15-33 Tables
18	Departure Surface Runway 6
19	Departure Surface Runway 24
20	Departure Surface Runway 15
21	Departure Surface Runway 33
22	Departure Surface Runway 33 Tables
23	Land Use Plan
24	Land Use Plan Tables
25	Airport Property Map Exhibit "A"
26	Airport Property Map Tables
27	Airport Environmental Inventory Map

The ALP Drawing Set is provided in **Appendix L**. Narrative descriptions of each of the drawings are provided below.

7.1.1. Title Sheet

The *Title Sheet* provides identifying information for the ALP Drawing Set. This information includes a drawing index listing each of the sheets within the set, as well as the specific FAA and Massachusetts Department of Transportation (MassDOT) project numbers and information on the preparer of the document. Two maps are also placed on the cover sheet to identify the location of the Airport within the context of the Commonwealth of Massachusetts (location map) and the area immediately adjacent to the Airport (vicinity map).

7.1.2. Existing Airport Layout Plan

The *Existing Airport Layout Plan* (Sheet 1) provides the current configuration and existing airport facilities at the Airport. Details shown include airport buildings, airport infrastructure, local roads and neighborhoods, property lines, and water bodies on or adjacent to the Airport. These details are based on aerial photography and photogrammetric mapping obtained in 2019.



This sheet also serves as a base upon which development proposed within this MPU is placed upon in future sheets. The current dimensions of the airside and landside facilities are depicted within the sheet, as well as the dimensions of applicable FAA safety and object free areas, protection zones, and other dimensions relevant to airport design. A Title Block and Revisions Table are also provided.

7.1.3. Airport Layout Plan

The Airport Layout Plan (Sheet 2) illustrates the recommended development at Airport over the 20-year planning period. The ALP serves as the approved planning document for the Airport and is used by the FAA to allocate federal grant funding and to approve Passenger Facility Charge (PFC) collections for projects. As a result, this sheet is a key deliverable as part of the MPU. The major recommended airside and landside improvements depicted on the ALP are discussed in further detail below. The proposed improvements included within the Airport Layout Plan, and described below, were developed in consideration of safety, design standards, and the Airport’s sustainability goals and objectives, along with a concern and respect for other environmental conditions, as applicable. The tables included on the ALP are like those included within Sheet 1, but also include information for future conditions. The sheet also includes signature boxes for the acceptance of the ALP by the Airport, MassDOT, and the FAA. The major recommended airside, terminal, and landside (including general aviation, terminal, and support facilities) improvements depicted on the ALP are described in the following sub-sections.

Airside Improvements

The airside development presented on the ALP is derived from the recommended alternative selected in Chapter 6, Alternatives. The major airside alternatives address:

- Meeting and exceeding current FAA design standards, to the extent practicable
- Improving the airfield to meet FAA geometry standards and capacity needs, to the extent practicable
- Acquiring properties to meet FAA design standards and protect airspace

The primary airside development components are described below.

Runway Extension

The preferred alternative proposes a runway extension to both ends of Runway 15-33. The Runway 15 end would be lengthened by 895 feet with a 695-foot displaced threshold. The Runway 33 end would be lengthened by 400 with a 550-foot displaced threshold.

Runway Safety Area Enhancement

The preferred alternative would install a 200-foot by 400-foot engineered material arresting system (EMAS) to the Runway 24 end.

Taxiway Modifications

The preferred alternative shows an extension of Taxiway A to meet the standards of a full-length parallel taxiway to Runway 15-33. A partial parallel taxiway to the northeast side of Runway 15-33



is also shown, along with a reconfiguring of taxiways to meet the most current geometry standards.

This alternative also shows a reconfiguring of taxiways along Runway 6-24 that meet FAA geometry standards and allow for future aeronautical development.

Land/Easement Acquisition

It is recommended that runway protection zones (RPZs) be under Airport control. Approximately 44.1 acres of land within the existing Runway 6-24 and proposed Runway 15-33 RPZs are off Airport property and are recommended to be acquired as an aviation easement or in fee on a willing seller basis. It is also recommended that approximately 0.3 acres of land within the proposed Taxiway A taxiway object free area (TOFA), approximately 0.2 acres of land within the proposed Runway 33 runway safety area (RSA), and 1.3 acres of land within the Runway 33 runway object free area (ROFA) be acquired.

Terminal Improvements

In Chapter 5, *Facility Requirements*, an overall deficit of 5,000 to 10,000 square feet (SF) of terminal space was identified to meet 150 peak hour passenger requirements. The ALP depicts an expansion of the passenger terminal to accommodate for this. This includes reconfiguration of the existing terminal as well as additional space to accommodate for deficiencies in the following areas: secure holdroom, security screening checkpoint and queue area, outbound baggage screening and makeup, and baggage claim and inbound baggage handling.

General Aviation (GA) Improvements

While the planning period facility requirements did not identify a need for specific facilities, the ALP shows areas where the Airport could expand GA opportunities, should activity grow faster than forecast and as demand warrants.

Non-Aeronautical Land Use Development Areas

Potential non-aeronautical development areas were also identified on the ALP. Approximately 97.2 acres of land, comprised by eight specific parcels, are potential revenue generating sources. Two of these areas, spanning approximately 25 acres, are being used for the existing solar panel array. Non-aeronautical areas on airport-owned property are generally best utilized as industrial or commercial land uses.

7.1.4. Airport Data Sheet

The *Airport Data Sheet* (Sheet 3) includes several tables that provide relevant information about the Airport as required by the FAA. These include wind coverage, airport data, facilities, runway data, modification to design standards, declared distances, and runway safety area determination tables. Data for both existing and proposed conditions are depicted in the airport data, runway data, declared distances, and runway safety area determination tables.



7.1.5. Terminal Area Plan

A Terminal Area Plan (Sheet 4) has been included at a scale to clearly illustrate all of the changes that have been proposed within the terminal vicinity. Sheet 4 depicts an expanded view of the terminal area and provides a more detailed layout of the terminal development being proposed for this MPU, including the expansion of the passenger terminal as well as identification of areas on the Terminal Ramp to be protected for proposed electric aircraft charging.

7.1.6. Airport Airspace Plans

Title 14 of the CFR, Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace, regulates the airspace surrounding airports through the establishment of "Imaginary Surfaces," which include the primary, approach, transitional, horizontal, and conical surfaces.

The Airport Airspace Plan (Sheet 5) depicts the 14 CFR Part 77 Imaginary Surfaces for the Airport. Sheet 5 depicts those imaginary surfaces directly adjacent to and above the Airport. The Outer Airport Airspace Plan Runway 15 (Sheet 6), and the Outer Airport Airspace Plan Runway 24 (Sheet 7), show the outer areas of the precision approach surfaces to Runways 6 and 24, respectively, which extend out 50,200 feet from the ends of those runways (50,000 feet from the ends of the primary surfaces). The intent of the airport airspace plans is to identify obstructions to the outer portions of the 14 CFR Part 77 surfaces.

The 14 CFR Part 77 surfaces are shown over a United States Geological Survey (USGS) Topographic Map to orient the surfaces over the Airport and surrounding community. Additionally, an isometric view of the 14 CFR Part 77 surfaces is shown to provide an understanding of what is being depicted in a three-dimensional view.

Based on the analysis of the 14 CFR Part 77 surfaces identified on these sheets, ground, pole, or tree penetration areas were identified within the conical, horizontal, and Runway 15 and 24 outer approach surfaces. Potential obstructions to the inner approach surfaces are shown on the Inner Approach Surface Plans.

7.1.7. Existing and Proposed Inner Approach Surface Plans

Multiple sheets were created to depict close-in obstructions to the existing and future 14 CFR Part 77 primary, approach, and transitional surfaces, as well as obstructions to the appropriate surfaces identified in FAA's Airport Design approach/departure standards (Engineering Brief 99A, Changes to Tables 3-2 and 3-4 of Advisory Circular 150/5300-13A, Airport Design). These surfaces are referred to on the sheets as Airport Design Approach Surfaces (ADAS). The sheets include both plan and profile views of the runway, the RPZ, and the various surfaces. A composite view of obstructions in the profile view illustrates the height of obstructions relative to the runway elevations. Obstructions to the various imaginary surfaces are identified with a symbol and a numeric identifier. These sheets do not show a comprehensive obstruction review but instead are filtered based on the scale of the sheet. Sheet 8 shows the existing and future Runway 6 surfaces, Sheet 9 shows the existing Runway 24 surfaces, and Sheet 10 shows the proposed Runway 24 surfaces. Sheet 11 provides the obstruction tables for the existing and proposed Runways 6 and 24 obstructions. There are changes proposed to both Runway 15 and 33 runway ends. Existing conditions are depicted in Sheets 12 and 13, with obstruction tables located on Sheet 14. The



proposed conditions are depicted on Sheets 15 and 16, with obstruction tables located on Sheet 17.

The obstruction tables referenced list the obstructions, elevation of the surface and object, and the how many feet of penetration (or near penetration indicated in negative numbers). A recommended action is also presented for each obstruction. A recent tree removal project cleared all existing ADAS (threshold siting surfaces (TSS)) of tree and vegetation obstructions. There are trees within the Runway 24 TSS that should be monitored should they become a future obstruction.

CFR Part 77 surfaces are reporting surfaces and are not as critical as ADAS/TSS. The obstruction tables on Sheets 8 through 11 indicate that most existing CFR Part 77 obstructions for Runway 6-24 are trees. These obstructions should be removed where feasible. In instances where removal of vegetation obstructions may not be feasible, as well as for poles, buildings, railroad, terrain, and other identified obstructions, the installation of obstruction lights should be considered. The obstruction tables on Sheets 12 through 17 indicate most existing and proposed obstructions for Runway 15-33 are trees and poles. These obstructions should be removed where feasible. In instances where removal of these obstructions, as well as terrain, fences, signs, buildings, and other identified obstructions, the installation of obstruction lights should be considered.

7.1.8. Departure Surface Plans

The development of plan sheets assessing ADAS #9 (departure surface) is considered optional and depicts departure surfaces associated with instrument departures. Sheets 18 and 19 depict the close-in obstructions to the departure surface based on the existing runway configuration for Runways 6-24 while Sheets 20 through 22 depict close-in obstructions to the departure surface for both the existing and future configuration of Runway 15-33. Obstructions identified within the departure surfaces affect departure minimums (cloud height and visibility). Objects within the surface should be removed, if possible, to maintain the lowest possible departure minimums and to remove potential hazards to pilots departing the airport. Existing departure procedures take into considering the existing obstructions. Therefore, no changes to obstructions are required, but it is always encouraged to remove as many obstructions as possible.

Obstructions to the departure surface can be addressed in two ways at the Airport per FAA guidelines. If an obstacle cannot be removed, non-standard climb rates and/or non-standard departure minimums can be established to mitigate the potential hazard these obstacles pose to aircraft. All obstacles to the departure surfaces for each runway end are identified within the tables on the plan, including the type of obstruction, the elevation of the object, the elevation of the surface, the level of penetration, and the proposed action. Obstructions identified to the existing departure surface to Runway 6-24 are primarily trees, with additional penetrations in the forms of poles, roads, railroad tracks, and others. Obstructions identified to the existing and proposed departure surfaces to Runway 15-33 are primarily trees and poles, with additional penetrations in the forms of buildings and fences. There have been ongoing efforts by the Airport to remove obstructions to both all runway ends.



7.1.9. Land Use Plan

The Land Use Plan (Sheet 23) and Land Use Plan Tables (Sheet 24) provide general guidance for future land development on and adjacent to Airport property. Existing land uses, such as residential, commercial, and industrial uses are shown on Sheet 23.

Since aircraft noise is a major factor influencing land use compatibility, FAA’s Aviation Environmental Design Tool (AEDT) was used to anticipate noise levels in the year 2040 based upon the forecasted activity of 73,001 annual operations.

The AEDT estimates aircraft noise levels (in decibels – dB) at ground level. Noise levels were quantified according to the A-weighted scale (which approximates the range of human hearing) using the Day-Night Average Noise Level (DNL). A DNL of 65 dB is considered by the FAA to be the threshold of impact for noise sensitive areas. The AEDT output includes noise contours, which are lines of equal loudness, with higher levels centered on the runway and quieter levels expanding outward.

As shown on Sheet 23, the proposed 65 dB noise contours do not extend off airport property except for a few small areas where it extends into railroads or commercial uses bordering the Airport. None of the 65 dB noise contours encroach upon land uses that would be identified as noise sensitive and non-compatible by the FAA, such as residences, places of worship, schools, and parks.

In addition to land use, this sheet also identifies properties within the existing and future RPZs. All four RPZs depicted on Sheet 23 include portions of parcels that extend beyond the current boundary of the Airport. Easements are in place for portions of the RPZs off the Runway 15 and 24 ends. While some land uses within the RPZs are compatible, there are also non-compatible land uses, primarily in the form of residential properties. Guidance included within FAA Memorandum Interim Guidance on Land Uses Within a Runway Protection Zone notes that residential land uses are not considered compatible within an RPZ. It is recommended that the airport pursue the voluntary easement or fee acquisition of these properties, on a willing seller basis. Sheet 24 lists existing easements as well as parcels to be acquired as part of an RPZ control plan and parcels where no action is required.

7.1.10. Airport Property Map

The Airport Property Map Exhibit “A” (Sheet 25) and Airport Property Map Tables (Sheet 26) identify the Airport’s current property boundaries as obtained through the Airport and Barnstable County. Sheet 25 shows all the individual properties and easements that make up the entire Airport. Sheet 26 includes tables listing all the properties that were acquired to date. Information in the tables includes a numerical identifier, tax parcel number, the grantor, acreage, and the FAA Airport Improvement Program (AIP) grant number (for parcels that were acquired through funding received from the FAA. Sheet 26 also shows proposed properties to be acquired in fee or easement.



7.1.11. Airport Environmental Inventory Map

The *Airport Environmental Inventory Map* (Sheet 27) identifies the current environmental considerations on the Airport which includes, but is not limited to, wetlands, vernal pools, Town of Barnstable water sources, and endangered species habitat. An all-encompassing list of environmental considerations can be found in Chapter 3, *Environmental Overview*.

7.2. PROJECT PHASING AND CAPITAL IMPROVEMENT PLAN

The phasing plan presents a phased implementation of 20-year planning projects identified on the ALP as well as other major projects, such as design and environmental projects. Projects that are not included in the phasing plan are projects including basic airfield maintenance and long-term pavement rehabilitation projects.

The phasing recommendations have been developed to coordinate with the aviation forecasts presented in Chapter 3 of this report. The forecasts project aviation demand through 2040 from a base year of 2019. Because funding for Fiscal Year (FY) 2021 has already been allocated, the projects shown in the CIP begin with FY 2022 projects. The Phasing Plan has been divided into three phases as follows:

- Phase I covers the short-term airport growth (2022 to 2026)
- Phase II covers the medium-term airport growth (2027 to 2031)
- Phase III covers the long-term airport growth (2032 to 2040)

7.2.1. Capital Improvement Plan

Table 7-1 presents the proposed phasing of projects over the 20-year planning period. Projects were phased to prioritize addressing immediate needs in Phase I. The phasing plan may change if forecasted demand changes. If aviation demand is less than forecasted, then demand-based projects may be deferred to a later date. However, should demand increase, these projects would be moved to an earlier timeframe. The phasing plan may also be altered if federal, State, or local funds are not available.

Table 7-1: HYA Capital Improvement Plan

Project	Total	Federal	State	Local	CARES
Phase I Projects					
Replace Runway 6 EMAS	\$7,500,000	\$6,750,000	\$375,000	\$375,000	\$0
Reconstruct Runway 6-24	\$15,770,000	\$14,193,000	\$788,500	\$788,500	\$0
PFOS Phase III: Reporting, Testing, Mitigation, Monitoring	\$200,000	\$0	\$0	\$200,000	\$0
Replace Snow Removal Equipment (SRE) #32	\$61,700	\$0	\$49,360	\$12,340	\$0
Extension of Mary Dunn Way	\$5,005,000	\$0	\$0	\$0	\$5,005,000
Fleet Hangar Façade	\$692,500	\$0	\$0	\$0	\$692,500
Replace SRE #31	\$77,400	\$0	\$0	\$0	\$77,400



Project	Total	Federal	State	Local	CARES
Replace Airfield Mowing Equipment #29	\$165,000	\$0	\$0	\$0	\$165,000
Replace SRE #27	\$76,000	\$0	\$0	\$0	\$76,000
Environmental Assessment	\$1,003,000	\$902,700	\$50,150	\$50,150	\$0
Replace Aircraft Rescue and Firefighting Equipment #820	\$978,000	\$880,200	\$48,900	\$48,900	\$0
PFOS Phase IV: Reporting, Testing, Mitigation, Monitoring	\$1,109,000	\$0	\$0	\$1,109,000	\$0
Replace Mo-Gas and Diesel Fuel Con-Vault, Gas Boy & Alarm	\$600,000	\$0	\$480,000	\$120,000	\$0
Permitting -Airport Master Plan Short-Term Projects	\$525,000	\$472,500	\$26,250	\$26,250	\$0
Security Camera Upgrades	\$650,000	\$585,000	\$32,500	\$32,500	\$0
Replace SRE #47	\$385,000	\$346,500	\$19,250	\$19,250	\$0
Relocate and Extend Taxiway B	\$8,800,000	\$7,920,000	\$440,000	\$440,000	\$0
Reconstruct and Realign Taxiways D and E	\$15,500,000	\$13,950,000	\$775,000	\$775,000	\$0
Replace SRE #38	\$100,000	\$0	\$80,000	\$20,000	\$0
Replace SRE #32	\$80,000	\$0	\$64,000	\$16,000	\$0
Terminal Upgrades	\$1,500,000	\$0	\$1,200,000	\$300,000	\$0
Runway Extension Easements ²	\$13,400,000	\$12,060,000	\$670,000	\$670,000	\$0
Construct/Acquire Electric Aircraft Equipment	\$450,000	\$0	\$360,000	\$90,000	\$0
Phase I Project Costs	\$74,627,600	\$58,059,900	\$5,458,910	\$5,092,890	\$6,015,900
Phase II Projects					
Phase III Tree Clearing for Runway 15-33 Extension	\$750,000	\$675,000	\$37,500	\$37,500	\$0
Extension Runway 15-33 ³	\$20,000,000	\$18,000,000	\$1,000,000	\$1,000,000	\$0
Construct Seasonal SRE/Maintenance Facility	\$1,210,000	\$1,089,000	\$60,500	\$60,500	\$0
Enhance Land Use Control (Easement/Fee) - Ongoing ²	\$2,500,000	\$2,250,000	\$125,000	\$125,000	\$0
Phase II Project Costs	\$24,460,000	\$22,014,000	\$1,223,000	\$1,223,000	\$0
Phase III Projects					
Install Runway 24 EMAS	\$13,400,000	\$12,060,000	\$670,000	\$670,000	\$0



Project	Total	Federal	State	Local	CARES
Enhance Land Use Control (Easement/Fee) - Ongoing ²	\$4,500,000	\$4,050,000	\$225,000	\$225,000	\$0
Phase III Project Costs	\$17,900,000	\$16,110,000	\$895,000	\$895,000	\$0

¹Coronavirus Aid, Relief, and Economic Security Act

²This cost may be lower should the FAA not require all easements to be acquired.

³ Does not include lowering or removing two high tension transmission towers

Sources: HYA Airport Management, 2021 and Airport Solutions Group analysis, 2021.

Table 7-2 identifies projects not identified on the CIP that could be added should demand warrant.

Table 7-2: As Warrant Demands Projects

Project
Construct 10-Unit T-hangar Building Including Associated Apron
Construct 50' by 50' Box Hangar
Construct 80' by 80' Conventional Hangar
Construct Apron – Light GA (Around T-hangars)
Construct Apron – Corporate (G-V Aircraft)
Design and Construct Terminal Upgrades
Redesign Main Terminal Ramp
Construct Avgas Tank and Install Card Reader at 100LL Fuel Farm for Self-Fueling
Plan and Design Access Road

¹ Cost estimates will be provided as project demand arises.

Source: McFarland Johnson, 2021.

According to FAA guidance, pavement, on average, should be rehabilitated every ten years and reconstructed every 20 years. Accordance to baseline thresholds provided by MassDOT Aeronautics, the pavement condition index (PCI) threshold for preventative maintenance is 65 or above for ramps and T-hangars, 70 or above for taxiways and helipads, and 75 or above for runways. Anticipated pavement projects should be evaluated based on PCI prior to undertaking any pavement rehabilitation or reconstruction. Future pavement maintenance projects through 2040 and the estimated year of need are shown in Table 7-3. All pavement maintenance projects are listed according to new taxiway nomenclature presented on the ALP.



Table 7-3: Pavement Maintenance Plan

Pavement Maintenance	Estimated Year
Rehabilitate Taxiway A	2024
Rehabilitate East Ramp	2024
Rehabilitate Terminal Ramp	2024
Rehabilitate "New" Taxiway E	2025
Rehabilitate North Ramp	2025
Rehabilitate Runway 15-33	2027
Rehabilitate "New" Taxiways A2 and A3	2027
Rehabilitate Taxiway C and "New" C1	2027
Rehabilitate Runway 6-24	2032
Reconstruct Taxiway A	2034
Reconstruct East Ramp	2034
Reconstruct Terminal Ramp	2034
Rehabilitate New Taxiways B, B2, and B3 and "New" B2	2035
Rehabilitate New Taxiway C2	2035
Rehabilitate New Taxiway D	2035
Reconstruct "New" Taxiway E	2035
Rehabilitate "New" Taxiway F	2035
Reconstruct North Ramp	2035
Reconstruct Runway 15-33	2037
Rehabilitate New Taxiways A1 and A4	2037
Reconstruct "New" Taxiways A2 and A3	2037
Reconstruct Taxiway C and "New" C1	2037

Sources: McFarland Johnson analysis, 2021 and MassDOT Pavement Management Plan, 2016.

7.3. SOURCES OF FUNDING AND PROJECT ELIGIBILITY

To cover project costs as well as the local share, the Airport has several ways to fund projects. These methods include FAA grant funding, MassDOT grant funding, and local funding options. These funding channels are summarized in the following sections.

7.3.1. FAA Grant Funding

For public-use facilities like HYA, the FAA AIP provides up to 90 percent of the funding for public, non-revenue generating elements of airports such as runways, taxiways, aprons, and lighting, as well as necessary planning and environmental studies. The remaining ten percent is typically split between the Sponsor and MassDOT. FAA funding available for the Airport’s CIP is comprised of:

- **Entitlement Funds:** The Airport receives entitlement funding from the FAA based on the number of passengers that are enplaned at the Airport annually, but maintains a floor of \$1 Million. Entitlement funding is applied to projects eligible for federal funding and is dedicated towards the highest priority project on the Airport’s CIP, as determined by the FAA’s National Priority Ranking (NPR) for AIP projects.



- **Discretionary Funds:** Funding above the entitlement amount is then obtained from the FAA through discretionary funding. It should be noted that discretionary funding is competitive and HYA competes for these funds nationally as well as with regional airports.

7.3.2. MassDOT Grant Funding

The State share of federally funded projects is five percent. The MassDOT Aeronautics Division also provides funding for planning and development projects that are not eligible for AIP funding. MassDOT provides up to 80 percent of funding for these projects or up to 100 percent for security improvement projects.

7.3.3. Local Funding Options

The local share for federally funded projects at the Airport is five percent. The Airport has several options to fund its local share, which are summarized in this section.

Passenger Facility Charges (PFC)

With oversight from the FAA, HYA has the authority to impose PFCs up to the nationwide maximum of \$4.50 for each passenger enplaning at the Airport. PFCs are collected by the air carriers on behalf of the Airport and are remitted monthly. The Airport has been utilizing PFCs since 2011, with a current program in place through October 1, 2024, at the current FAA-approved level of \$2.00 per enplanement. Of the 368 airports in the United States collecting a PFC (as of December 31, 2021), HYA is one of 10 that is collecting an amount less than \$4.50 per enplanement. Approved collections for all approved PFC application at the Airport total \$2,573,600.

PFCs can be utilized on projects that are considered AIP eligible, as well as for additional improvements to the passenger terminal. A summary of eligible uses of PFC revenues include:

- All or part of the allowable cost of an FAA approved project,
- Debt service and financing costs associated with bond issuance, and
- Combined with AIP and Aviation Capital Grants on eligible projects as the local match to reach 100 percent funding.

To be considered eligible for PFC funding, projects must meet certain criteria and address one or more of the following:

- Preserve or enhance safety, security, or capacity of the national air transportation system;
- Reduce noise or mitigate noise impacts resulting from an airport; and
- Present opportunities to enhance competition between or among air carriers.

Use of PFC collections is restricted to projects identified in the PFC application and approved by the FAA. To fund new projects added to the Airport’s CIP from this MPU, the existing PFC program at the Airport can be amended or extended by following the FAA application projects.



Airport Operating Revenues

The Airport has the option to utilize any operating surplus income or monies from the Airport reserve fund to fund airport improvements. Depending upon the financial performance of the Airport, and general fund levels for its town sponsor such funding may not be available consistently. Therefore, funding projects through the Airport’s operating revenues or town general funds are likely most appropriate to bridge gaps in federal, state, and PFC revenue for eligible projects, or for projects that are not eligible for grant funding.

Private Funding

There are several projects identified in the section labeled “As Demand Warrants” of the Airport’s CIP that are most appropriately funded by private interests, such as GA hangar development. These types of projects are most appropriate for private funding because airports are not often positioned to spend limited public resources on speculative projects.

However, in some instances project funding can be mobilized more quickly by partnering with private interests to advocate for state tax incentives or job creation tax credits if the projects are of a substantial scale and scope. In this way, the Airport can partner with private interests to broker development deals that will benefit the Airport over the long term by increasing operations, utilization of other on-airport maintenance and service providers, and fuel sales.

Public Financing Programs or Bonds

For large projects that are not eligible for federal or State funding but may have widespread local public impact and interest, airports frequently utilize federal financing programs or capital market bonds to finance long-term construction projects.

The Transportation Infrastructure Finance and Innovation Act (TIFIA) program provides credit assistance for up to 33 percent of the eligible cost of qualified projects of regional or national significance. This funding source can be used in the event that private funding for projects is not available. There are three types of credit assistance offered through the program. A summary of these assistance types is as follows:

- **Secured (Direct) Loan:** Offers flexible repayment terms for a maximum term of 35 years following project completion.
- **Loan Guarantee:** Provides federally backed guarantees of a borrower’s repayments to a non-Federal lender.
- **Standby Line of Credit:** Represents a contingent Federal loan as a secondary source of funding during the first ten years of project operations after the project completion.

There are four basic types of municipal bonds available to the Airport: general obligation (GO) bonds, general airport revenue bonds (GARB), PFC-backed bonds, and special facility bonds. A summary of these bonds is as follows:



- **GO Bonds:** Supported by the overall tax base of the issuing entity (the airport sponsor), GO bonds often carry the lowest interest rate.
- **GARB:** Repaid by the revenues generated by the airport, or other revenues as defined in the bond indenture, GARBs are the most common form of airport debt.
- **PFC-Backed Bonds:** Either stand-alone or “double-barrel”, PFC-backed bonds are backed solely by PFC revenues or by PFC revenues and other airport revenues generated by rentals, fees, and charges. General airport revenues can be pledged as a backup (“double-barrell”) if enplanement activity decreases and PFC revenues do not meet the obligation.
- **Special Facility Bonds:** Special facility bonds are used to construct a terminal or facility for a named airline and are backed by lease payments which are structured to cover debt service to the bonds.

7.4. AIRPORT FINANCIAL ANALYSIS

This section describes and summarizes information and analysis related to the financial performance of the Airport, and is presented in the following sections:

- Airport governance, financial structure, and business policies
- Historical operating revenues and expenses
- Forecast of baseline airport operating financial performance
- Summary financial analysis

7.4.1. Airport Governance, Financial Structure, and Business Policies

Cape Cod Gateway Airport is owned and operated by the Town of Barnstable. The Airport is managed by the Cape Cod Gateway Airport Commission which is made up of seven individuals. The Airport is an enterprise fund.

Minimum Standards

The objective of minimum standards as set forth in FAA Advisory Circular 150/5190-7, *Minimum Standards for Commercial Aeronautical Activities, 2006*, (AC 150/5190-7) is to promote safety in all Airport activities, protect Airport users from unlicensed and unauthorized products and services, maintain and enhance the availability of adequate services for all Airport users, promote the orderly development of Airport land, and ensure efficiency of operations. Additionally, for public-use airports that accept federal grants through the FAA’s AIP program, minimum standards also aid those airports in complying with FAA grant assurances pertaining to Economic Discrimination (Grant Assurance 22) and Exclusive Rights (Grant Assurance 23).

Minimum standards at the Airport set the threshold of entry for current and future operators, such that they are applied objectively and uniformly, and avail the opportunity to any entity that can meet the standards provided suitable space is available for the conduct of the operation.

The minimum standards in place at the Airport are thorough, well-organized, and complete. The minimum standards are separated into the following sections:



- General Provisions and Definitions (Revised April 2008)
- Guidelines for Construction, Alteration, and Improvements (Revised 2000)
- Self-Service (Revised August 2000)
- General Aviation (Revised April 2008)

Each section of the minimum standards should be revisited as necessary to assure guidance is still applicable and not outdated.

Airline Agreements

The Airport has lease use agreements in place with airlines providing scheduled passenger service, which set forth rights and obligations to air carriers operating at the Airport. There are two types of airline agreements: signatory and non-signatory.

- **Signatory Airline:** As described in the FAA’s Order 5190.6B, *Airport Compliance Manual*, a signatory airline is one that commits to a long-term agreement with an airport, leasing space in airport facilities that supports the development and operation of the airport. The debt for airport facilities is typically secured by signatory tenant leases. In return for their financial commitment, signatory carriers may have a rate, fee, and rental structure that differs from non-signatory carriers that choose not to make the same financial commitment.
- **Non-Signatory Airline:** A non-signatory airline does not make the same commitment to an airport. Non-signatory airline agreements often on a month-to-month term basis and with a separate rate, fee, and rental structure for the use of airport facilities. Obligations for non-signatory carriers are generally less restrictive than those imposed on signatory airlines; however, rights of use for spaces in the terminal building are assigned by the Airport and can be less preferable than space allocations negotiated by signatory airlines.

Due to the seasonality of the Airport, the type of agreements in place are non-signatory agreements. Both JetBlue and Cape Air have non-signatory agreements with the Airport.

7.4.2. Historical Operating Revenues and Expenses

Historical revenue and expense statements for the Airport was provided by Airport management for the 2017-2021 FY period. The FY for the Airport runs from July 1st through June 30th. This information gives some indication of trends that can be useful for forecasting future financial performance. **Table 7-4** shows the historical operating revenues and expenses from 2017 to 2021.

Table 7-4: Historical Operating Revenues and Expenses

Category	2017	2018	2019	2020 ¹	2021 ¹	CAGR ²
Operating Revenues						
Intergovernmental Aid	\$83,640	\$110,040	\$0	\$48,340	\$83,700	0.0%
Fees, Licenses, and Permits	\$640,683	\$659,729	\$687,219	\$2,226,726	\$1,739,720	28.4%



Category	2017	2018	2019	2020 ¹	2021 ¹	CAGR ²
Charges for Services	\$4,632,131	\$5,013,524	\$5,845,809	\$5,497,859	\$5,769,669	5.6%
Interest and Others	\$346,119	\$360,690	\$538,170	\$450,642	\$402,038	3.8%
Transfers In	\$487,035	\$0	\$0	\$0	\$499,800	0.7%
Total Operating Revenues	\$6,189,608	\$6,143,983	\$7,071,198	\$8,223,567	\$8,494,927	8.2%
Direct Operating Expenses						
Personnel	\$1,681,278	\$1,691,058	\$1,730,817	\$1,707,410	\$1,801,306	1.7%
Benefits	\$516,982	\$528,608	\$511,549	\$162,446	\$583,094	3.1%
Operating Expenses	\$3,128,863	\$3,607,408	\$3,875,259	\$4,247,748	\$3,932,235	5.9%
Capital Outlay	\$9,158	\$61,574	\$12,223	\$8,436	\$195,516	115.0%
Debt Service	\$68,229	\$170,344	\$187,616	\$218,358	\$643,450	75.2%
Transfers Out	\$435,498	\$838,128	\$199,297	\$201,000	\$193,268	-18.4%
Total Direct Operating Expenses	\$5,840,008	\$6,897,120	\$6,516,761	\$6,545,398	\$7,348,869	5.9%
Net Direct Operating Income/(Loss)	\$349,600	\$(753,137)	\$554,437	\$1,678,169	\$1,146,058	34.6%
Total Net Direct Operating Income/(Loss) 2017-2021					\$2,975,127	

¹ COVID-19 Relief Funding is not included

² CAGR – compound annual growth rate

Source: HYA airport management, 2021.

As shown in **Table 7-4**, the Airport showed positive net direct operating income each year except for 2018, which showed a deficit of \$753,137. Net income for the period was about \$2.98 million. The Airport has been able to self-fund operating expenses and add to the reserve fund for the local share of future AIP eligible projects.

Airport Revenues from Aeronautical Uses, Leases, and Fees

Aeronautical operators at the Airport are obligated to pay to the Airport a variety of charges and fees associated with their activities. Charges and fees are based on rates established by the Airport but can be the subject of negotiation with operators. Rates and charges of fees at airports can vary, but often consist of the following:

- Rent for hangars, terminal and building facilities, and land leases on the airfield
- Fees for aircraft landing, parking, and tie-down positions
- Fuel sales/flowage fees, airline/tenant concessions, and other operating revenues



Aeronautical operations at the Airport represent the Airport’s most valuable revenue-generating assets. This is evident by the portion of operating revenues associated with rent and fee payments made to the Airport by tenants of existing facilities and users of the airfield. A summary of these anticipated aeronautical revenues budgeted for 2022 is presented in **Table 7-5**.

Table 7-5: Summary of Aeronautical Revenues

Revenue Sources	2022 Budgeted Revenues
Hangar Rents	\$127,930
Terminal/Building Rents	\$120,373
Land Leases	\$375,529
Aircraft Landing Fees	\$331,000
Aircraft Parking Fees	\$13,200
Tie-Down Position Rents	\$27,223
Fuel Sales/Fuel Flowage Fees	\$3,594,663
Airline/User/Tenant Concessions	\$79,350
Total	\$4,669,268
2022 Budget Operating Revenues	\$7,421,765
Percent of 2022 Operating Budget Revenues	62.9%

Source: HYA airport management, 2021.

As shown, aeronautical revenues make up approximately 62.9 percent of budget operating revenues. Fuel sales and fuel flowage fees make up the largest portion of this income accounting for approximately 77 percent of all aeronautical revenues.

Passenger Facility Charge Revenues

Use of PFC collection monies is restricted to capital projects approved by the FAA; therefore, PFC collections has a significant impact on the Airport’s ability to complete projects on the CIP.

A snapshot of the current PFC program in place at the Airport includes the following:

- The Airport’s current PFC program is approved through 2024.
- They are approved to collect \$2,573,600 at \$2.00 per passenger.
- The PFCs collected from 2017 to 2021 totaled approximately \$228,713.

The average annual PFCs collected from 2017 to 2021 totaled approximately \$45,743 per year.

Non-Aeronautical Revenues

Non-aeronautical land leases and fees represent a valuable revenue-generating sources for the Airport. These non-aeronautical revenue sources at the Airport consist of the following:

- Non-aeronautical terminal and land leases
- Rental car parking spaces and concessions
- Parking concessions
- Advertising concessions
- Water well lease with the Town of Barnstable



- Renewable energy credits
- Event fees for use of space on the Airport

A summary of non-aeronautical revenue sources is shown in Table 7-6.

Table 7-6: Summary of Non-Aeronautical Revenues

Revenue Sources	2022 Budgeted Revenues
Non-Aeronautical Terminal Leases	\$51,317
Non-Aeronautical Land Leases	\$1,594,700
Rental Car Parking Spaces	\$76,407
Rental Car Concessions	\$350,000
Parking Concessions	\$50,000
Advertising Concessions	\$20,000
Water Well Lease	\$53,760
Renewable Energy Credits	\$362,538
Event Fees	\$35,000
Total	\$2,593,722
2022 Budget Operating Revenues	\$7,421,765
Percent of 2022 Operating Budget Revenues	34.9%

Source: HYA airport management, 2021.

Non-aeronautical land leases alone account for approximately 21.5 percent of the Airport’s budget operating revenues. When adding in other non-aeronautical revenue sources, that number grows to approximately 34.9 percent of the total budget operating revenues.

7.4.3. Forecast of Baseline Airport Operating Financial Performance

When developing the baseline forecast of Airport operating financial performance, both historical performance as well as anticipated recovery from the effects of the COVID-19 pandemic were taken into consideration. Table 7-7 shows the forecast of baseline operating revenues and expenses from FY 2023 to 2027. Since FY 2022 has already been budgeted for, 2023 was used as the starting year for the forecast projections.

Table 7-7: Forecast of Baseline Operating Revenues and Expenses

Category	2023	2024	2025	2026	2027
Operating Revenues					
Intergovernmental Aid	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
Fees, Licenses, and Permits	\$1,830,080	\$1,884,983	\$1,941,532	\$1,999,778	\$2,059,772
Charges for Services	\$5,315,058	\$5,474,509	\$5,638,745	\$5,807,907	\$5,982,144
Interest and Others	\$439,128	\$452,302	\$465,871	\$479,847	\$494,243
Transfers In ¹	\$0	\$0	\$0	\$0	\$0
Total Operating Revenues	\$7,644,266	\$7,871,794	\$8,106,148	\$8,347,532	\$8,596,158
Direct Operating Expenses					



Category	2023	2024	2025	2026	2027
Personnel	\$1,873,359	\$1,948,293	\$2,026,225	\$2,107,274	\$2,191,565
Benefits	\$606,418	\$630,674	\$655,901	\$682,137	\$709,423
Operating Expenses	\$4,089,524	\$4,253,105	\$4,423,230	\$4,600,159	\$4,784,165
Capital Outlay	\$200,000	\$208,000	\$216,320	\$224,973	\$233,972
Debt Service	\$250,000	\$260,000	\$270,400	\$281,216	\$292,465
Transfers Out	\$200,000	\$208,000	\$216,320	\$224,973	\$233,972
Total Direct Operating Expenses	\$7,219,301	\$7,508,073	\$7,808,395	\$8,120,731	\$8,445,561
Net Direct Operating Income/(Loss)	\$424,965	\$363,721	\$297,752	\$226,801	\$150,598

¹ Transfers in are not included in the forecast due to their sporadic nature

Source: McFarland Johnson analysis, 2021.

As shown in **Table 7-7**, operating revenues are forecasted to grow from \$7,644,266 in 2023 to \$8,596,158 in 2027. Individual categories were forecasted using different growth rates and different anticipated recovery dates. These growth rates are as follows:

- Intergovernmental aid remains flat.
- Fees, licenses, and permits show a growth recovery rate of nine percent until 2025 when recovery is reached and then growth at the historical rate of 3.5 percent.
- Charges for services recovered in 2022 and growth beyond is depicted at the historical rate of 5.9 percent.
- Interest and other revenue areas show a growth recovery rate of 7.0 percent until 2024 when recovery is reached and then growth at the historical rate of 9.2 percent.

Forecasted direct operating expenses were grown at four percent annually. Overall, the Airport is anticipated to operate at a positive net direct operating income.

7.4.4. Summary Financial Analysis

The purpose of the financial analysis is to determine the Airport’s ability to fund the local share of projects in the short-term. Cost estimates were gathered for each project and broken up based on the anticipated share of each project between FAA, State, local, and COVID-19 relief funds. A summary of CIP and local share costs is shown in **Table 7-8**.

Table 7-8: Summary of CIP and Local Share Costs

Period	Funding Sources				
	Total	FAA	State	Local	CARES
Total Phase I	\$74,627,600	\$58,059,900	\$5,458,910	\$5,092,890	\$6,015,900
Total Phase II	\$24,460,000	\$22,014,000	\$1,223,000	\$1,223,000	\$0
Total Phase III	\$17,900,000	\$16,110,000	\$895,000	\$895,000	\$0
Total 20-Year Costs	\$116,987,600	\$96,183,900	\$7,576,910	\$7,210,890	\$6,015,900

Source: McFarland Johnson analysis, 2021.



As shown, the total investment in the Airport expected over the next 20-years totals just about \$117 million. When divided between FAA, State, local, and CARES/CRRSAA relief funding, the local share for the 20-year period is roughly \$7.2 million, with about \$5.1 million coming in Phase I, or the next 5-year period. The feasibility of the Airport to fund the local share of CIP projects is shown in **Table 7-9**.

Table 7-9: Short-Term Financial Performance Forecast

Category	2022 Budget	2023	2024	2025	2026
Operating Revenues	\$7,421,765	\$7,644,266	\$7,871,794	\$8,106,148	\$8,347,532
Direct Operating Expenses	\$7,421,765	\$7,219,301	\$7,508,073	\$7,808,395	\$8,120,731
Net Direct Operating Income/(Loss) ¹	\$0	\$424,965	\$363,721	\$297,753	\$226,801
Net Direct Operating Income/(Loss) 2022-2026					\$1,313,240

¹ COVID-19 Relief Funding is not included
Source: *McFarland Johnson analysis, 2021.*

As previously shown in **Table 7-4**, recent historical net income for the 2017-2021 period was about \$3.0 million. **Table 7-9** shows that baseline net income for 2022-2026 period (coinciding with the short-term, Phase I CIP) is forecast to be a cumulative of about \$1.3 million (this does not include any COVID-19 relief funding received by the Airport during that period). The cumulative total of recent and forecasted baseline combined net operating income is about \$4.3 million from 2017 through 2026.

As presented in **Table 7-8**, the total Phase I and Phase II local funding need is about \$6.3 million. To build up a reserve for Phase II projects, it is recommended the Airport has a full reserve of Phase I and II local share funding saved up by the end of 2026. **Table 7-10** calculates on average what the Airport needs to save on an annual basis to meet this goal.

Table 7-10: Average Annual Local Share Funding Needs

Category	2022	2023	2024	2025	2026
Short-Term Funding Need	\$1,018,578	\$1,018,578	\$1,018,578	\$1,018,578	\$1,018,578
Annual Reserve for Mid-Term	\$244,600	\$244,600	\$244,600	\$244,600	\$244,600
Total Annual Need	\$1,263,178	\$1,263,178	\$1,263,178	\$1,263,178	\$1,263,178

Source: *McFarland Johnson analysis, 2021.*

As shown, an average of approximately \$1,263,178 per year is required to meet annual local share funding needs to implement the CIP and reserve funds for the 2022-2031 period.

As described, baseline net direct operating income is anticipated to add up to about \$4.3 million 2022 through 2026. The local funding needs to implement the CIP is about \$5.1 million for the same period and \$6.3 million for combined Phases I and II local share. This indicates that a funding gap of about \$2.0 million may need to be overcome to implement the full CIP for the Phase I and Phase II periods. However, this funding need may be able to be met utilizing Airport reserve funds



or projects could be moved to a later year. Additionally, \$670,000 of this local share cost during Phase I depends on the FAA’s interpretation for land/easement acquisition within RPZs in the draft FAA AC 150/5190-4B, *Airport Land Use Compatibility Planning*. A total of \$15,900,000, with a local share of \$795,000, of Phase I and II costs are associated with easement acquisition.

7.5. PUBLIC PARTICIPATION PROCESS

The ALP Drawing Set, Project Phasing Plan, and CIP are the culmination of a planning process that was designed to permit comment from interested parties. The planning process included Planning Advisory Group (PAG) meetings held at key stages in the planning process. A series of interim reports, documenting the various stages of the planning process, were presented to the PAG for their review/comment. Copies of the presentations provided at each of the meetings, along with copies of the sign-in/attendance sheets, are provided in **Appendix M**.

Due to the COVID-19 pandemic, alternate methods were employed to gather input from the public. To present general information about the Airport to the public and detail the aviation forecast and environmental overview, a series of videos were released on YouTube. A virtual public meeting was also held to present information on facility requirements and terminal, airside, and landside alternatives. A draft recommended alternative was provided for feedback. There was a comment period that lasted 30 days following the final public meeting. Notices were published by the Airport in local newspapers, the Airport’s webpage and Facebook pages, and postcards were sent to the local community to publicize the release of the video series as well as the virtual public meeting. Additionally, the Airport created a website dedicated to the MPU. A compiled list of frequently asked questions, along with responses, and other public comments received are provided in **Appendix N**.

The meetings were held on the following dates:

- PAG Meeting No. 1 February 18, 2020
- Virtual PAG Meeting No. 2 June 9, 2020
- Public Video Release No. 1 June 2020
- Virtual PAG Meeting No. 3 January 26, 2021
- Virtual Public Meeting No. 2 March 22, 2021
- Combination Virtual/In Person
PAG Meeting No. 4 September 23, 2021