



# Terminal Planning Study

November 2022

PREPARED FOR  
Town of Islip  
Long Island MacArthur Airport

Prepared by:  
Landrum & Brown, Incorporated





## Contents

<b>1</b>	<b>Background / Introduction</b>	<b>8</b>
<b>2</b>	<b>Executive Summary</b>	<b>8</b>
<b>3</b>	<b>Existing Conditions Assessment</b>	<b>10</b>
3.1	Concourse A	10
3.2	Concourse B	11
3.2.1	Concourse B Gate Positions	12
3.2.2	Concourse B Passenger Flows	13
3.3	Concourse A and Concourse B Comparison	17
3.3.1	Concourse A and Concourse B “Space” Comparison	17
3.4	Central Terminal (Rotunda)	21
3.5	South Terminal Area Constraints & North Terminal Area Opportunities	25
<b>4</b>	<b>Aviation Activity Forecast</b>	<b>29</b>
4.1	Approach and Methodology	29
4.2	Current Activity Profile, Recent Forecast and General Assumptions	29
4.2.1	Historical Traffic	32
4.3	Air Service Development	36
4.3.1	Catchment Area	38
4.4	2019 Passenger Forecast Update	40
4.4.1	Methodology and Assumptions	40
4.4.2	Annual Passenger Forecast	42
4.5	Operations Forecast	47
4.5.1	Methodology and Assumptions	47
4.5.2	Annual Operations Forecast	48
4.6	Peak Period Forecast	51
4.7	Base Forecast Summary	54
4.8	Alternative Forecasts	55
4.9	TAF Comparison	58
<b>5</b>	<b>Facility Requirements</b>	<b>60</b>
5.1	Three Gate Extension TSP	61
5.2	New North Terminal TSP	63
5.2.1	Landside Parking Requirements	67
<b>6</b>	<b>Alternatives Development and Evaluation</b>	<b>69</b>
6.1	Summary of Initial Alternatives Analysis	70
6.1.1	Alternative 1	72
6.1.2	Alternative 2	75

6.1.3	Alternative 3	76
6.1.4	Alternative 4	78
6.1.5	Alternative 5	83
6.1.6	Initial Alternatives Evaluation	85
6.2	Summary of Final Alternatives Analysis	86
6.2.1	Final Alternatives Evaluation	89
<b>7</b>	<b>Preferred Concept G</b>	<b>90</b>
7.1	Preferred Concept G – Site Plan	90
7.1.1	Preferred Alternative - Airside	90
7.1.2	Preferred Alternative – LIRR Connectivity	92
7.1.3	Preferred Alternative - Landside	93
7.2	Preferred Concept G – Floor Plans	95
7.2.1	Ground/Apron Level	95
7.2.2	Concourse / LIRR Connection Level	97
7.2.3	Upper Level	99
7.3	Preferred Concept G – Building Section	100
7.4	Preferred Concept G – Passenger Flows	101
7.4.1	Ground / Apron Level Passenger Flow	101
7.4.2	Concourse / LIRR Connection Level Passenger Flow	102
7.4.3	Upper Level Passenger Flow	103
<b>8</b>	<b>Implementation Plan – Preferred Alternative</b>	<b>104</b>
8.1	Phasing	104
8.2	Schedule – Preferred Alternative	107
<b>9</b>	<b>Financial Analysis – Preferred Alternative</b>	<b>108</b>
9.1	Introduction	108
9.1.1	Goals of Financial Analysis	108
9.1.2	Method of Financial Analysis	108
9.2	Construction Costs – Preferred Alternative	109
9.2.1	Original Cost Estimates (Not Used in Model)	109
9.2.2	Updates to Cost Estimates	110
9.2.3	Updated Cost Estimates (Used in Model)	111
9.3	New Terminal Capital Improvement Program (CIP) – Preferred Alternative	112
9.3.1	Projects and Timing of Cash Flows	112
9.3.2	Funding Sources	112
9.4	Pro Forma Projections – Preferred Alternative	114
9.4.1	Approach	114
9.4.2	Projection of Funding Sources	115
9.4.3	Projection of traffic, operating expenses, and revenues	116
9.5	Summary of Findings and Conclusion	117
9.5.1	Summary of findings and conclusion	117

<b>10</b>	<b>Potential Environmental Requirements – Preferred Alternative</b>	<b>120</b>
10.1	Regulatory Setting	120
10.1.1	National Environmental Policy Act (NEPA)	120
10.1.2	FAA Reauthorization Act of 2018	121
10.1.3	Other Special Purpose Laws	121
10.2	Purpose and Need	121
10.3	Environmental Impact Categories	121
10.3.1	Air Quality	122
10.3.2	Biological Resources	123
10.3.3	Coastal Resources	124
10.3.4	Climate	125
10.3.5	Department of Transportation Act Section 4(f) Resources	125
10.3.6	Farmlands	126
10.3.7	Hazardous Materials, Pollution Prevention, and Solid Waste	126
10.3.8	Historical, Architectural, Archeological, and Cultural Resources	127
10.3.9	Land Use	127
10.3.10	Noise and Noise-Compatible Land Use	127
10.3.11	Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks	128
10.3.12	Visual Effects	128
10.3.13	Water Resources	129
10.4	Summary and Environmental Strategy	131
<b>11</b>	<b>Sustainability Assessment</b>	<b>133</b>
11.1	Definition of Sustainability	133
11.2	Sustainability within the Airport Industry	134
11.3	Sustainability Benefits	134
11.4	Current Airport Sustainability Initiatives	135
11.5	Potential Future Sustainability Initiatives for the Terminal Program	137
<b>12</b>	<b>South Terminal Reuse Study</b>	<b>139</b>
12.1	Overview of Study Area	140
12.1.1	Study Area Context	140
12.2	Methodology	142
12.2.1	Guiding Strategies	142
12.2.2	Aeronautical Use vs Non-Aeronautical Use	143
12.3	Reuse Options	143
12.3.1	Air Cargo Development	144
12.3.2	Advanced Air Mobility	146
12.3.3	Aircraft Maintenance	147
12.4	Next Steps	148
<b>13</b>	<b>Appendix A – Preferred Concept Plans</b>	<b>149</b>

<b>14</b>	<b>Appendix B – Presentations</b>	<b>150</b>
<b>15</b>	<b>Appendix C – Stakeholder Outreach</b>	<b>151</b>
<b>16</b>	<b>Appendix D – Public Outreach</b>	<b>152</b>

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<b>List of Tables</b>		<b>Page</b>
TABLE 4-1	ISP AIRCRAFT OPERATIONS HISTORY BY SEGMENT (2000-2018)	35
TABLE 4-2	ENPLANED PASSENGERS FORECAST – REGRESSION INPUTS	43
TABLE 4-3	ENPLANED PASSENGERS FORECAST – REGRESSION INPUTS	44
TABLE 4-4	ISP COMMERCIAL PASSENGER FLEET MIX FORECAST	49
TABLE 4-5	ISP TOTAL OPERATIONS FORECAST SUMMARY	51
TABLE 4-6	ISP PEAK PERIOD ENPLANED PASSENGERS FORECAST	53
TABLE 4-7	ISP PEAK PERIOD PASSENGER OPERATIONS FORECAST	53
TABLE 4-9	TAF FORECAST COMPARISON TABLE – APPENDIX C (2021 FAA TAF)	59
TABLE 5-1	THREE GATE EXTENSION PROGRAM – PART 1	62
TABLE 5-2	THREE GATE EXTENSION PROGRAM – PART 2	62
TABLE 5-3	THREE GATE EXTENSION PROGRAM – PART 3	63
TABLE 5-4	EXISTING AIRPORT OFFICES	64
TABLE 5-5	NORTH TERMINAL PROGRAM – PART 1	65

TABLE 5-6	NORTH TERMINAL PROGRAM – PART 2	66
TABLE 5-7	NORTH TERMINAL PROGRAM – PART 3	67
TABLE 5-8	NORTH TERMINAL PARKING REQUIREMENTS	68
TABLE 9-1	ORIGINAL PROJECT COST	109
TABLE 9-2	UPDATED COST ESTIMATES	111
TABLE 9-3	FAIRLY CERTAIN FUNDING SOURCES	112
TABLE 9-4	POSSIBLE FUNDING SOURCES	113
TABLE 9-5	ALTERNATIVE FUNDING SOURCES	113
TABLE 9-6	PROJECTION OF FUNDING SOURCES	115
TABLE 9-7	PRO FORMA ASSUMPTIONS	116
TABLE 10-1	LIST OF THREATENED, ENDANGERED AND CANDIDATE SPECIES	123

List of Exhibits		Page
EXHIBIT 3-1	GATE LAYOUT	10
EXHIBIT 3-2	JET BRIDGE	12
EXHIBIT 3-3	FLOW AND CONCOURSE LOCATION MAP	13
EXHIBIT 3-4	TICKETING	13
EXHIBIT 3-5	ESCALATORS FROM CHECKPOINT	14
EXHIBIT 3-6	ESCALATORS FROM CONCOURSE A	14
EXHIBIT 3-7	ELEVATOR FROM CONCOURSE A	15
EXHIBIT 3-8	RAMP TO CONCOURSE B	15
EXHIBIT 3-9	CONCOURSE SECTION	16
EXHIBIT 3-10	CONCOURSE AREA COMPARISON	17
EXHIBIT 3-11	CONCOURSE DEPTH COMPARISON	18
EXHIBIT 3-12	CONCOURSE B HOLDROOMS	19
EXHIBIT 3-13	CONCOURSE B VENDING	20
EXHIBIT 3-14	CONCOURSE A HOLDROOMS	20
EXHIBIT 3-15	CONCOURSE A CONCESSIONS	21
EXHIBIT 3-16	EXIT LANE	22
EXHIBIT 3-17	VACANT SPACES	23
EXHIBIT 3-18	ROTUNDA VENDING	24
EXHIBIT 3-19	SITE CONSTRAINTS	25
EXHIBIT 3-20	GTC	26
EXHIBIT 3-21	PART 77 ANALYSIS	27
EXHIBIT 3-22	NORTH TERMINAL SITE OVERVIEW	28
EXHIBIT 4-1	ISP AIR SERVICE MARKETS (2018)	30
EXHIBIT 4-2	ISP ENPLANED PASSENGERS HISTORY (1985 – 2018)	32
EXHIBIT 4-3	ISP FORECAST TRACKING AND AIR SERVICE CHANGES	33
EXHIBIT 4-4	ISP AIRCRAFT OPERATIONS HISTORY (2000-2018)	34
EXHIBIT 4-5	ISP SHARES OF AIRCRAFT OPERATIONS BY SEGMENT	36
EXHIBIT 4-6	ISP SCHEDULED MONTHLY DEPARTING SEATS (2016-2020)	37
EXHIBIT 4-7	ISP SCHEDULED MONTHLY DEPARTING SEATS (2016-2020)	37
EXHIBIT 4-8	ISP CATCHMENT AREA MAP	39
EXHIBIT 4-9	LOCAL POPULATION DENSITY MAP	40
EXHIBIT 4-10	REGIONAL SOCIOECONOMIC TRENDS (NASSAU AND SUFFOLK COUNTIES)	41
EXHIBIT 4-11	ISP YIELD REGRESSION VALIDATION	44
EXHIBIT 4-12	ISP BASE ENPLANED PASSENGER FORECAST	46
EXHIBIT 4-13	ISP BASE COMMERCIAL PASSENGER OPERATIONS FORECAST	50
EXHIBIT 4-14	ISP EXAMPLE OF TYPICAL FLIGHT SCHEDULE (2018/2019)	52
EXHIBIT 4-15	ISP BASE ENPLANED PASSENGER FORECASTS COMPARISON CHART	55
EXHIBIT 4-16	ISP ALTERNATIVE HIGH SCENARIO #1	57
EXHIBIT 4-17	ISP ALTERNATIVE HIGH SCENARIO #1	57
EXHIBIT 5-1	EXISTING PARKING AREAS	68
EXHIBIT 6-1	ALTERNATIVE 1 GATE LEVEL	73
EXHIBIT 6-2	ALTERNATIVE 1 APRON LEVEL	73
EXHIBIT 6-3	ALTERNATIVE 1 SECTION	74
EXHIBIT 6-4	ALTERNATIVE 2 GATE LEVEL	75
EXHIBIT 6-5	ALTERNATIVE 2 APRON LEVEL	75
EXHIBIT 6-6	ALTERNATIVE 2 SECTION	76

EXHIBIT 6-7	ALTERNATIVE 3A GATE LEVEL	77
EXHIBIT 6-8	ALTERNATIVE 3 APRON LEVEL	77
EXHIBIT 6-9	ALTERNATIVE 3A SECTION	78
EXHIBIT 6-10	ALTERNATIVE 3B GATE LEVEL	78
EXHIBIT 6-11	ALTERNATIVE 4 OVERVIEW	79
EXHIBIT 6-12	ALTERNATIVE 4A GATE LEVEL	79
EXHIBIT 6-13	ALTERNATIVE 4A APRON LEVEL	80
EXHIBIT 6-14	ALTERNATIVE 4B GATE LEVEL	80
EXHIBIT 6-15	ALTERNATIVE 4B APRON LEVEL	81
EXHIBIT 6-16	ALTERNATIVE 4C GATE LEVEL	81
EXHIBIT 6-17	ALTERNATIVE 4C APRON LEVEL	82
EXHIBIT 6-18	ALTERNATIVE 4 SECTION	82
EXHIBIT 6-19	ALTERNATIVE 5	83
EXHIBIT 6-20	2017 MASTER PLAN NORTH TERMINAL LAYOUT	84
EXHIBIT 6-21	PROS AND CONS ANALYSIS	85
EXHIBIT 6-22	CONCEPT OVERVIEW	86
EXHIBIT 6-23	CONCEPT B	87
EXHIBIT 6-24	CONCEPT E	87
EXHIBIT 6-25	FINAL EVALUATION	89
EXHIBIT 7-1	CONCEPT G AIRSIDE OVERVIEW	91
EXHIBIT 7-2	CONCEPT G LIRR CONNECTION	92
EXHIBIT 7-3	CONCEPT G LANDSIDE OVERVIEW	93
EXHIBIT 7-4	CONCEPT G FUTURE COMMERCIAL DEVELOPMENT	94
EXHIBIT 7-5	GROUND / APRON LEVEL	96
EXHIBIT 7-6	CONCOURSE / LIRR CONNECTION LEVEL	98
EXHIBIT 7-7	UPPER LEVEL	99
EXHIBIT 7-8	BUILDING SECTION	100
EXHIBIT 7-9	GROUND / APRON LEVEL PASSENGER FLOW	101
EXHIBIT 7-10	CONCOURSE / LIRR CONNECTION LEVEL PASSENGER FLOW	102
EXHIBIT 7-11	UPPER LEVEL FLOW	103
EXHIBIT 8-1	PHASE 0	105
EXHIBIT 8-2	PHASE 1	105
EXHIBIT 8-3	PHASE 2	106
EXHIBIT 8-4	PHASE 3	106
EXHIBIT 11-1	EONS APPROACH TO AIRPORT SUSTAINABILITY	133
EXHIBIT 12-1	STUDY AREA	139
EXHIBIT 12-2	ON-AIRPORT LAND USE	141
EXHIBIT 12-3	OFF-AIRPORT LAND USE	141
EXHIBIT 12-4	AIR CARGO DEVELOPMENT	144
EXHIBIT 12-5	ADVANCED AIR MOBILITY DEVELOPMENT	146
EXHIBIT 12-6	AIRCRAFT MAINTENANCE	148

# 1 Background / Introduction

The Town of Islip (Town) and Long Island MacArthur Airport (ISP or the Airport) originally selected Landrum & Brown (L&B) to conduct a West Concourse Terminal Planning Study (WCT) in 2019, which was funded by the Federal Aviation Administration (FAA) through an Airport Improvement Plan (AIP) grant. The intent of the WCT study was to analyze the functionality of the existing west concourse (Concourse B), validate the Airport's forecast based on recent traffic trends at ISP, define the Airport's terminal space requirements for current and future needs, and identify a development concept to accommodate those needs. Multiple alternatives were studied that included replacement of the west concourse (in the same location), an east concourse extension, and a new North Terminal complex with direct connectivity to the Long Island Railroad (LIRR).

Based upon extensive stakeholder (including FAA) and public engagement, the Town of Islip and the majority of the stakeholders decided that a new greenfield terminal located on the north side of the Airport provided the most long-term benefits for the Airport and Town. The selection of the North Terminal concept as a preferred alternative meant that the WCT study was no longer in alignment with the intent of the original FAA AIP grant, which led to the closure of the grant. The Town subsequently decided to proceed with a Terminal Planning Study that would allow the Airport to focus on the North Terminal concept as a preferred concept. Where appropriate, analyses and documentation that was prepared as part of the WCT Study is included in this document.

## 2 Executive Summary

The existing terminal facilities at ISP include two concourses, the east concourse (Concourse A) and west concourse (Concourse B). Concourse A has 8-gates, was completed in 2004, funded by Southwest Airlines (Southwest), and is leased under contract by Southwest. The main terminal processor is a single level building with ticketing, baggage claim, and other support functions. There are significant deficiencies in the terminal, baggage claim, and Concourse B.

The cost for the Town to lease the Concourse A gates is prohibitive due to high per square-foot rent cost imposed by Southwest Airlines. ISP determined that leasing Southwest gate positions was not a viable alternative to provide the additional gate capacity that will be required in the near-term. In addition, Southwest has not made any significant investments to repair/replace or upgrade Concourse A. As a result, when Concourse A exceeds its useful life (25 years) it will have a high repair or replacement cost for the Town. While a Concourse A building condition assessment was not part of the scope for this study, based on a qualitative assessment, it is apparent that significant maintenance will be necessary once the operation and maintenance of Concourse A reverts to the Towne.

Concourse B is a ground-level building with two jet bridges and was originally developed as prefabricated trailers that have exhausted its useful life. There is one ground-loaded aircraft position that is located near the central terminal building, known as the rotunda. Concourse B can support three simultaneous aircraft operations. Concourse B provides an unacceptable Level of Service (LOS) due to insufficient holdroom,

circulation space, and the lack of passenger amenities such as concession spaces. LOS is a measurement of the quality of service provided inside the terminal in terms of ease of flow, available space, and propensity for delays defined by the International Air Transport Association (IATA). Optimum LOS corresponds to an overall good level of service, where flows are stable, delay levels are acceptable, and a good level of comfort is provided in terms of square feet per passenger. This LOS metric is specifically developed for use in airport design and planning and is used to define spatial requirements and to measure performance. Additionally, the walking distance from the Security Checkpoint is long and difficult due to multiple vertical transitions. This journey can be difficult for some passengers and lacks redundancy if there are maintenance issues with vertical conveyances. There are no backup or alternate elevators in the event that the elevator at this location fails. In order to provide an optimal LOS, Concourse B would need to be replaced with modern facilities that provide significantly more space.

This Terminal Planning Study identifies and evaluates multiple alternatives to replace the west concourse (in the same location), an east concourse extension alternative, and a new North Terminal development alternative that has direct connectivity to the Long Island Railroad (LIRR). Each alternative has a unique set of benefits and challenges that has been evaluated. The alternatives were developed based on gate requirements and a terminal space program (TSP). Two separate facility programs were developed to cover all contingencies; the first is based on a 3-gate concourse extension with a new Customs and Border Protection (CBP) FIS/GAF (Federal Inspection Services/General Aviation Facility) and the second is based on a new North Terminal concept that would replace the existing terminal.

The development of alternatives occurred in two phases; the initial alternatives development phase focused mainly on the gate expansion at the existing terminal but included one placeholder option for the North Terminal. The final alternatives development phase maintained the best west concourse expansion alternative and added two refined versions of the North Terminal alternative. As previously mentioned, upon extensive stakeholder (including FAA) and public engagement, the Town of Islip and the majority of the stakeholders decided that a new greenfield terminal located on the north side of the Airport provided the most long-term benefits for the Airport and Town.

The benefits of a replacement terminal to the north include providing a higher level of passenger service, providing facilities that meet current code, energy efficiency requirements, additional amenities for passengers, and connectivity to the LIRR at the Ronkonkoma Station. New gates will improve the passenger experience, accommodate future growth, and attract additional commercial service carriers, benefiting the Airport and the Town of Islip. The North Terminal alternative was thoroughly explored through the development of a detailed North Terminal site plan as well as floorplans, building sections, and passenger flows. An implementation plan was also developed that defined the phasing approach to construct the new North Terminal on the proposed greenfield site, which included the roadways, parking garages, surface parking lots, the new terminal, aircraft parking apron, taxiways, and other supporting airside infrastructure.

A North Terminal financial feasibility analysis followed and was conducted to assess the construction costs, project timing and cash flow, funding sources, and operating expenses. Due to the likely impact to the proposed greenfield site, the potential environmental requirements for a north side terminal

development were studied in order to define the regulatory setting, purpose and need, and to assess various environmental impact categories.

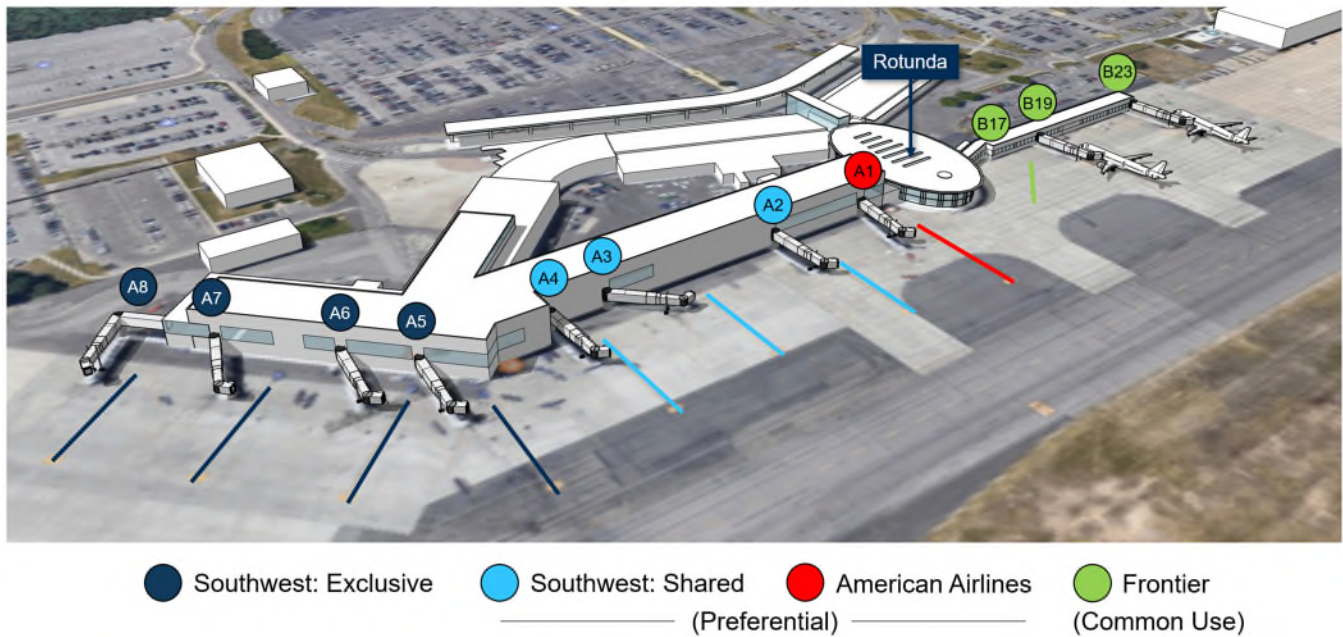
Additionally, a high-level sustainability assessment was conducted in order to define what opportunities there might be to implement sustainability initiatives at the North Terminal, including strategies or methods to reduce energy consumption, reduce waste, and utilize renewable energy such as solar power. Lastly, a reuse study of the South Terminal area was conducted. The purpose of this task was to explore alternate uses for the South Terminal site after operations are moved to the north side of the airfield. The effort identified reuses such as air cargo, advanced air mobility, and aircraft maintenance.

### 3 Existing Conditions Assessment

#### 3.1 Concourse A

Concourse A has eight gate positions, shown in **Exhibit 3-1, Gate Layout**. Gates A1 – A4 are operated by Southwest and A5 – A8 are exclusive Southwest gates. With the exception of Gate A1, the Concourse A gate positions are designed to accommodate A321 aircraft. Gate A1 was modified to accommodate an ERJ aircraft but could be configured back to an A321 position. Southwest built Concourse A with their own funding and signed a 25-year lease with the Town of Islip in 2004. This arrangement prevents other carriers from expanding at ISP affordably. When the Southwest lease ends in 2029, Concourse A will transfer ownership to the Town of Islip.

**EXHIBIT 3-1 GATE LAYOUT**



Source: Landrum & Brown Team analysis, 2019

## 3.2 Concourse B

The west concourse at ISP (Concourse B) is a ground-level building with two jet bridges. In addition to the two jet bridges, there is one ground-loaded aircraft position that is located near the central terminal building, known as the rotunda. Concourse B can support three simultaneous aircraft operations, including the ground-loaded position.

Built in 1990, Concourse B is constructed from a series of temporary prefabricated trailers that form the circulation spaces, holdrooms, restrooms, and other support facilities. The trailers were never intended nor were they designed to serve passengers for thirty years. Concourse B fails to meet the most basic passenger needs in terms of circulation, seating, amenities, and restrooms. This concourse also has substandard heating and cooling systems and has no generator in the event of power failure.

The concourse is far beyond its useful life, provides a sub-optimal LOS, and needs to be replaced. It has insufficient space and lacks the following customer experience amenities, including:

- Concessions or restaurants
- Retail shops
- Children's play area
- Computer and recharge stations
- Business center or lounge
- Service Animal Relief Area (SARA)
- Information Centers
- Wheelchair Storage
- Upgraded or consistent finishes with the remainder of the terminal

It should be noted that existing amenities in Concourse A cannot reasonably be shared with Concourse B due to long walking distances and level changes.

The existing terminal facilities lack modern airport infrastructure and technology. ISP has limited ability to grow, meet customer expectations, and provide safe terminal and airfield infrastructure. The items listed below are currently lacking and could be implemented in a new North Terminal:

- LIRR multimodal connection in proximity to the existing terminal
- Inline baggage connection and associated safety benefits
- FIS/GAF facilities
- State-of-the-art deicing and reclamation
- Sustainability and environmental advantages due to reduced vehicle emissions with direct access to the Ronkonkoma Station (e.g., no shuttles required and ability to access the terminal directly from the station; reducing the need for vehicles).

### 3.2.1 Concourse B Gate Positions

There are three gate positions at Concourse B, including B15 (ground loaded), B19 (jet bridge), and B23 (jet bridge). Concourse B is common use, but the gates are typically operated by Frontier Airlines. Additionally, this concourse does not allow for expansion of aircraft parking positions; this means a replacement concourse would be needed to accommodate new gate positions.

Gates B19 and B23 can handle independent A321 operations from an aircraft gate perspective, however, the holdrooms are crowded and provide a low level of service. This crowding issue occurs on a regular basis, when two A321 aircraft, with a seating capacity of up to 185 passengers (at a 90% load factor), are deplaning simultaneously. The holdroom size was not designed to accommodate this number of passengers.

The B23 jet bridge was included as part of the original construction of Concourse B in 1990 and the B19 jet bridge was added later in 2012. The B19 bridge cannot accommodate a Group II aircraft, including ERJs and some E190/195s, limiting operational flexibility. The preconditioned air (PCA) only connects to the aircraft and there is no diverter to switch airflow from the aircraft to the passenger boarding bridge, which negatively impacts passenger comfort.

The existing boarding bridges at Concourse B, shown in **Exhibit 3-2, Jet Bridge**, are steep, and the path from the ground level to the aircraft sill is difficult for passengers to traverse, providing a poor LOS. These boarding bridges are outdated and consistently delay the deplaning of aircraft. Due to the sloped configuration toward the ground level concourse building, rainwater intrusion is also a constant maintenance issue.

#### EXHIBIT 3-2 JET BRIDGE

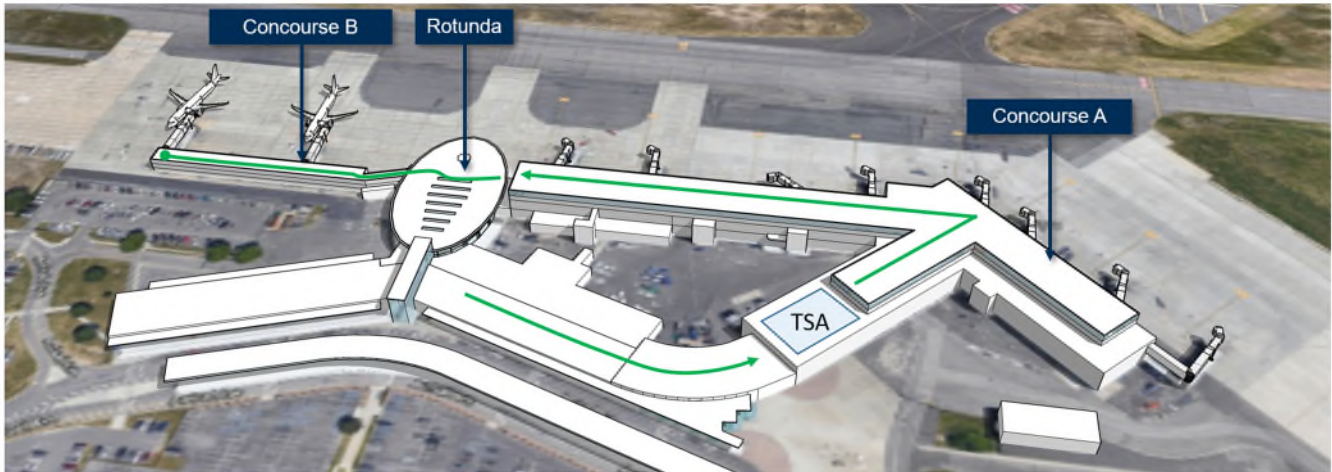


Source: Landrum & Brown Team analysis, 2019

### 3.2.2 Concourse B Passenger Flows

Concourse B has the furthest walking distance from the curb of any gates at ISP. **Exhibit 3-3, *Flow and Concourse Location Map*** shows the flow of passengers to Concourse B. Passengers walk from the ticketing area, process through the security checkpoint, escalate up into Concourse A, walk to and escalate down into the rotunda, and then walk up to Concourse B via a ramp. The multiple vertical movements to Concourse B make it difficult for passengers and the lack of elevator redundancy is an issue. If the elevator at this location fails, there is no alternate elevator to use to transport passenger down to Concourse B. The photos of these areas are shown in **Exhibits 3-4 through 3-8**.

#### EXHIBIT 3-3 FLOW AND CONCOURSE LOCATION MAP



Source: Landrum & Brown, 2019

#### EXHIBIT 3-4 TICKETING



Source: Landrum & Brown, 2019

**EXHIBIT 3-5 ESCALATORS FROM CHECKPOINT**



Source: Landrum & Brown, 2019

**EXHIBIT 3-6 ESCALATORS FROM CONCOURSE A**



Source: Landrum & Brown, 2019

**EXHIBIT 3-7 ELEVATOR FROM CONCOURSE A**



Source: Landrum & Brown, 2019

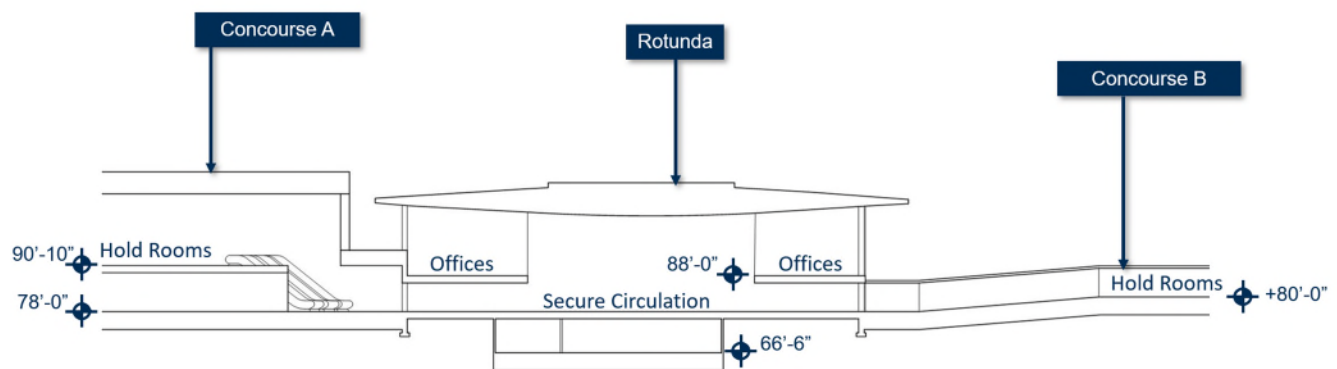
**EXHIBIT 3-8 RAMP TO CONCOURSE B**



Source: Landrum & Brown, 2019

Wayfinding to Concourse B is not intuitive, which is partially due to the relocation of the security checkpoint from its former location in the central rotunda to the current Concourse A facility. As a result, Concourse B passengers must circulate through Concourse A and the rotunda to reach their gates. ISP has received passenger complaints related to walking distance (horizontal and vertical) to Concourse B. There are three vertical transitions and the distance from the terminal entry to the furthest Concourse B gate is approximately 1,800 feet or a 7.2-minute walk based on a walk-speed of 250 feet/minute. Golf cart usage has been discussed, however this will be difficult due to a lack of circulation width in Concourse B. There are no moving walkways at ISP. An industry rule of thumb regarding walk distance is that if the distance is more than 1,000 feet then some form of mechanical assistance should be provided. There is also a lack of elevator redundancy down from Concourse A. This means that, in the event of an escalator failure, there is not enough capacity to transport passengers to and from Concourse A. When the elevator is down, passengers must circulate through the exterior courtyard to Concourse B from the checkpoint, which is a poor customer experience and is problematic during inclement weather. **Exhibit 3-9, Concourse Section**, shows the elevation changes from Concourse A to the rotunda, where there is a set of escalators and an elevator (not shown). There is a ramp that transitions up from the rotunda and into Concourse B.

**EXHIBIT 3-9 CONOURSE SECTION**



Source: Landrum & Brown, 2019

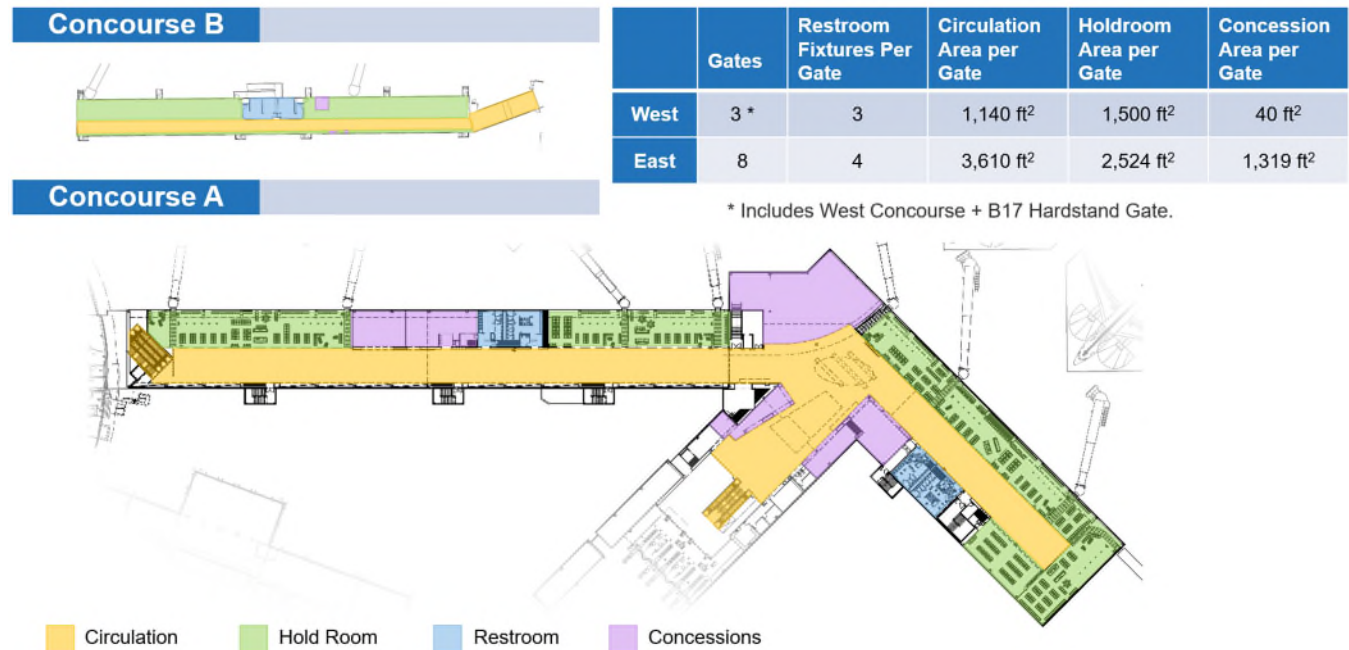
### 3.3 Concourse A and Concourse B Comparison

#### 3.3.1 Concourse A and Concourse B “Space” Comparison

Concourse B, constructed in 1990, is an apron level, one story facility and is constructed from prefabricated trailers. It has been determined that this building is beyond its useful lifespan and does not provide an acceptable customer experience.

The primary challenge with Concourse B is poor LOS due to insufficient holdroom and circulation space. The concourse also lacks passenger amenities, including concession spaces. **Exhibit 3-10, Concourse Area Comparison** shows on a per gate basis that Concourse B has significantly less space than Concourse A. The purpose of this comparison is to provide a reference point and to demonstrate the space deficiency of Concourse B. Concourse B has virtually no concession space other than vending, the holdrooms are 40% smaller than Concourse A, and concourse circulation areas are over 68% smaller.

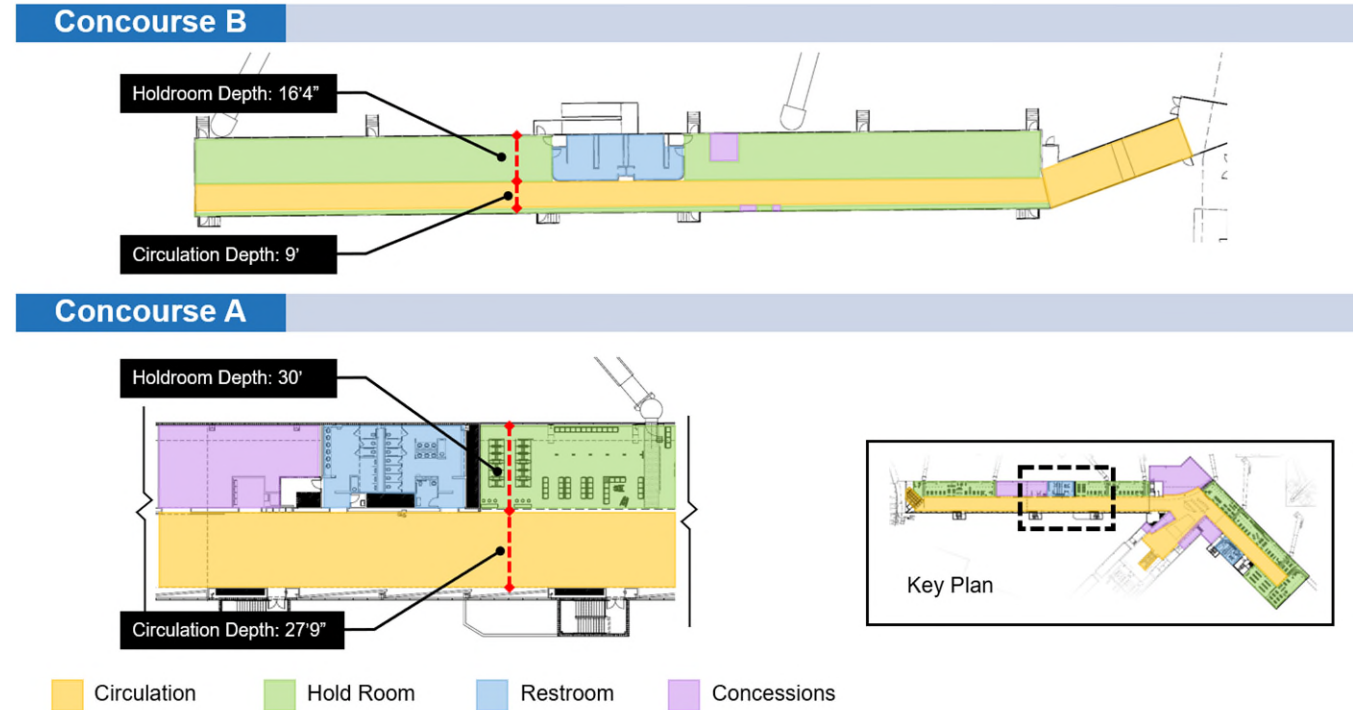
**EXHIBIT 3-10 CONCOURSE AREA COMPARISON**



Source: Landrum & Brown, 2019

The overall depth of the holdrooms and circulation corridor are less than half of Concourse A, as shown in **Exhibit 3-11, *Concourse Depth Comparison***.

**EXHIBIT 3-11 CONCONOURSE DEPTH COMPARISON**



Source: Landrum & Brown, 2019

The LOS issues on Concourse B is in part caused by airline up-gauging to larger aircraft, which are serving ISP. The larger Airbus A321 has a higher seating capacity than the aircraft that Concourse B was originally designed for. This causes sub-optimal LOS issues in Concourse B.

During peak times, there are often two A321 aircraft simultaneously unloading the inbound arriving passengers, meanwhile the outbound departing passengers are dwelling in the Concourse B holdrooms. Concourse B has insufficient space to accommodate these passenger volumes during concurrent gate operations.

In order to provide an optimal LOS, Concourse B would need to be replaced with modernized facilities that provide sufficient circulation and holdroom space, along with improved restrooms, concession spaces, and other terminal support functions.

The new concourse would also require two levels, including international arrivals at the apron level and departures at the upper level, to resolve issues with jet bridge loading, aircraft compatibility, and accommodating commercial international arrivals.

**Exhibits 3-12** and **3-13** show existing holdroom and vending areas in Concourse B. To provide additional seating capacity, seats have been placed along the back wall, further reducing the effective concourse circulation width. Concourse B has vending as well as an abandoned “pop-up” concession vendor.

By comparison, **Exhibits 3-14** and **3-15** show the larger holdrooms, circulation spaces, and concessions within Concourse A. Concourse A was constructed 14 years after Concourse B and was designed based on modern airport planning standards for narrowbody aircraft. Concourse A is nearing its end of useful life and there is no planned reinvestment in the building and the maintenance systems that routinely fail. There are also no adequate elevators in Concourses A or B, for when there is an escalator failure.

Concourse A has ample circulation space that was designed for bi-directional passenger flow, the circulation area is also large enough to accommodate passenger queues and exit paths during the gate boarding and deplaning process. This ensures that the circulation areas are never obstructed.

The high ceilings and visual sight lines improve passenger wayfinding through Concourse A. The open layout of Concourse A also provides visibility to gate number and other signage throughout the concourse, improving passenger LOS.

The holdrooms in Concourse A have a minimum depth of 30 feet. These holdrooms were designed to accommodate larger narrowbody aircraft and ensure that there is sufficient space for both seating and standing passengers. The seats in Concourse A also provide outlets for charging electronic devices.

Concourse A has a concession node that includes a sit-down restaurant, fast food, coffee, and news & gifts. While Concourse B passengers must pass through these concessions, none of these amenities are in proximity to the Concourse B gates and therefore many Concourse B passengers likely do not stop, which reduces the potential revenue generation from the outlets.

#### EXHIBIT 3-12 CONOURSE B HOLDROOMS



Source: Landrum & Brown, 2019

**EXHIBIT 3-13 CONCOURSE B VENDING**



Source: Landrum & Brown, 2019

**EXHIBIT 3-14 CONCOURSE A HOLDROOMS**



Source: Landrum & Brown, 2019

**EXHIBIT 3-15 CONCOURSE A CONCESSIONS**



Source: Landrum & Brown, 2019

### 3.4 Central Terminal (Rotunda)

The Central Terminal (rotunda), located between Concourse A and Concourse B, is primarily used as a pass through or transitional space for secure passengers and is not a historically protected building. At the center of the rotunda is an exit lane and on the non-secure side there is open space that is utilized for airport events, shown in **Exhibit 3-16, *Exit Lane***.

**EXHIBIT 3-16**      **EXIT LANE**



Source: Landrum & Brown, 2019

A security checkpoint was located in the central rotunda event area prior to the development of Concourse A. The relocation of the checkpoint to Concourse A increased the walking distance for Concourse B passengers. It was determined in past studies that the existing central rotunda does not have sufficient width to support modern TSA equipment.

Town of Islip administration offices and other support spaces are located on the upper level of the rotunda and a CBP General Aviation Facility (GAF) for General Aviation (GA) passengers is located on the ramp level. This GAF is not in an ideal location (and not properly sized per CBP standards) and should be relocated to eliminate mixed uses with commercial service operations. The rotunda building cannot meet the requirements for a FIS or GAF facility due to limited square footage and ceiling heights. Additionally, due to layout and limited usable space in the rotunda, it was difficult to comply with and meet CBP specifications. There are no other spaces within the existing terminal or concourse that can support an FIS/GAF.

Other areas of the rotunda on the ramp level and upper level are vacant (shown in **Exhibit 3-17, *Vacant Spaces***), including vacated concession spaces. Once Concourse A was constructed and the associated security area activated, most passengers bypassed the rotunda, eliminating the financial viability of concession spaces in the rotunda.

#### EXHIBIT 3-17 VACANT SPACES



Source: Landrum & Brown, 2019

The only passenger amenity located in the rotunda area are vending machines, shown in **Exhibit 3-18, *Rotunda Vending***. Due to different floor elevations, the rotunda is also not well integrated into the existing concourse facilities, requiring vertical circulation via ramps and escalators to Concourse A and B.

The rotunda is obsolete and no longer operates as a node of passenger activity due to the construction of Concourse A and the relocation of concessions activity and security checkpoint that originally operated in the central rotunda.

Additionally, there are mechanical systems in the basement of the rotunda that require upgrades, as well as costly maintenance upgrades within the central rotunda area, including a roof replacement. The structural system and floor elevations also complicate the potential for a simplified expansion of Concourse B. The high costs of these improvements supported the decision to replace the rotunda being selected as the preferred approach.

**EXHIBIT 3-18 ROTUNDA VENDING**



Source: Landrum & Brown, 2019

An additional constraint of the existing building is the lack of an inline baggage handling system (BHS) that would accommodate proper screening of baggage per TSA standards. Currently, each airline has screening equipment in the ticketing hall which obstructs the view to ticket counters and reduces the amount of available ticketing positions. Baggage is then carried to the back of house – outbound area. Overall, the process is not efficient and not conducive to the Airport’s future growth.

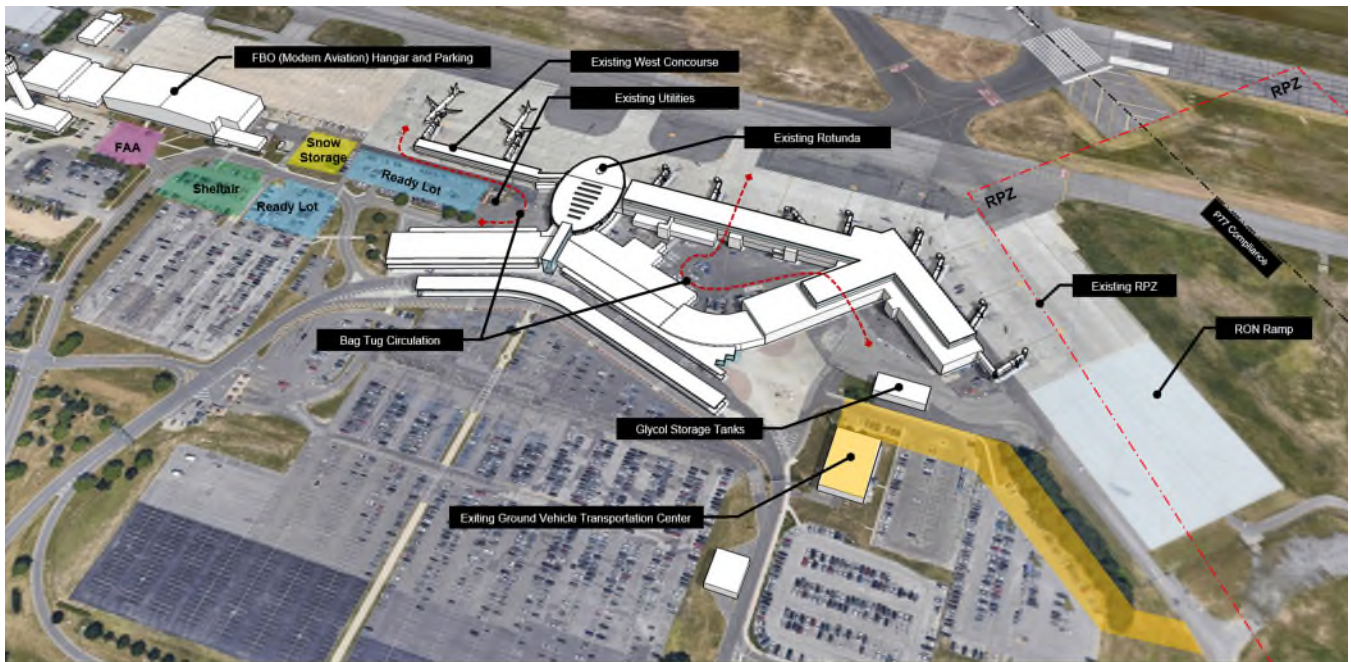
The lack of an inline BHS is a significant deficiency that limits the potential growth of aviation activity at ISP. An inline BHS is needed to increase capacity, improve safety, and more efficiently screen checked baggage. Without an inline BHS ISP may not be able to accommodate new carriers or increase passenger activity. Building a new inline BHS at the existing terminal would be costly and there is limited available space at the terminal processor.

### 3.5 South Terminal Area Constraints & North Terminal Area Opportunities

ISP has site constraints that limit the airports ability for long-term gate expansion, shown in **Exhibit 3-19, Site Constraints**. On the west end of the terminal, the gate expansion constraint is the existing Modern Aviation Fixed-Base Operator (FBO) hangar and parking area. Therefore, extending the terminal further west would require the relocation of the FBO. Due to these site contract, replacing and extending Concourse B has limited ability to support long-term gate expansion.

There is no centrally located TSA checkpoint that is convenient to all gates, which means that passengers using Concourse B have a longer walk. The checkpoint is located adjacent to the Concourse A gates. There is also a lack of a deicing technology at the terminal; as such, there is a need for deicing systems that are environmentally reliable and use state of the art technology.

**EXHIBIT 3-19 SITE CONSTRAINTS**



Source: Landrum & Brown, 2019

The east end constraint to gate expansion, which refers to an extension of Concourse A, is the existing Runway 33L Protection Zone (RPZ) and the Ground Transportation Center (GTC), shown in **Exhibit 3-20, GTC**. L&B conducted a Part 77 analysis to identify the height limitations on the east end of site; this is shown on **Exhibit 3-21, Part 77 Analysis**. A line-of-sight analysis was not conducted as part of this study.

This analysis showed that the existing terminal building obstructs the inner transitional and inner approach transitional surfaces in four areas and are mitigated by obstruction lights located on the building. The Part 77 analysis indicated that an eastern site development or gate expansion would increase the number of airspace obstructions.

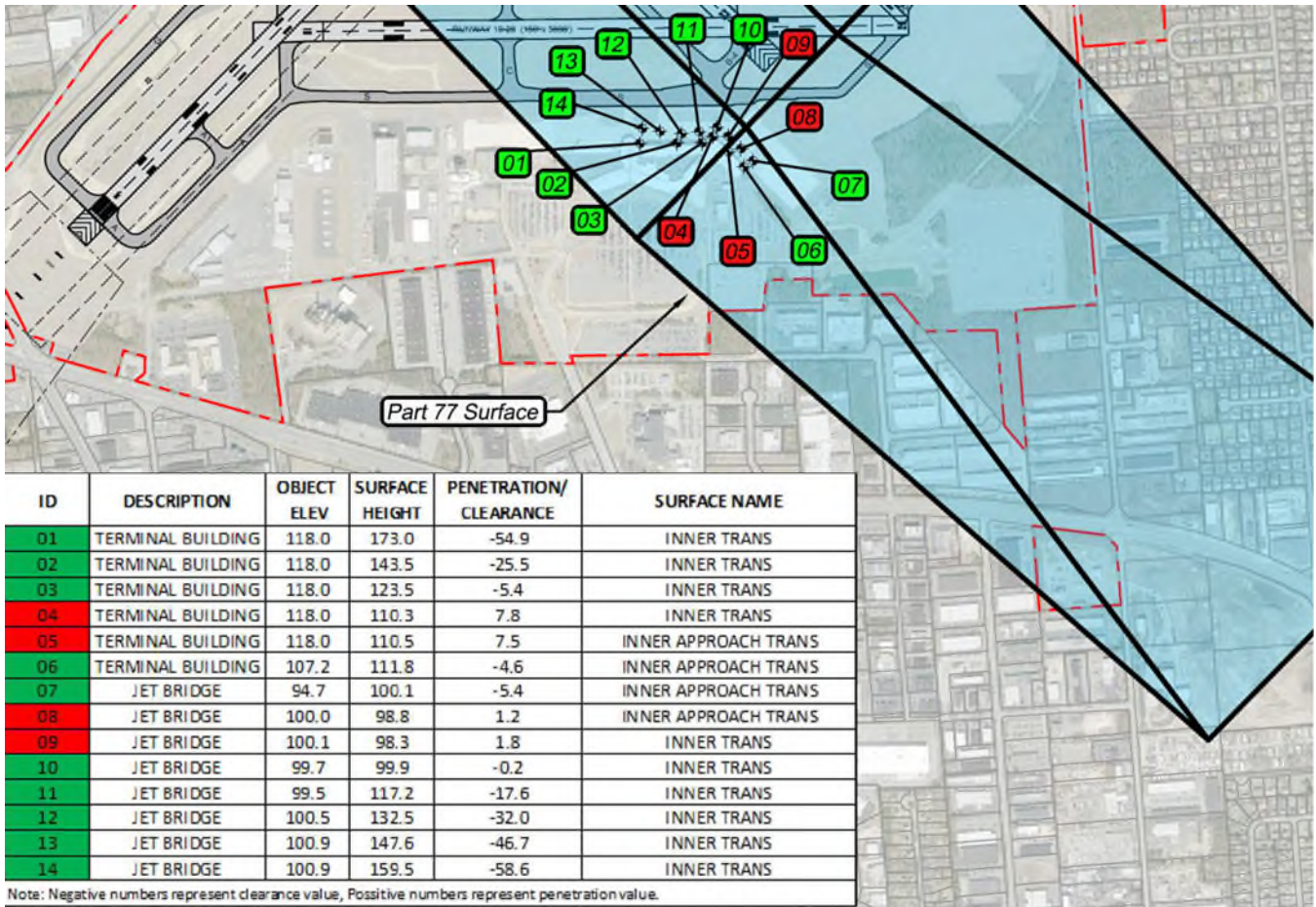
There are other site constraints that limit the replacement options of Concourse B. These include utility infrastructure, the rotunda, bag tug circulation paths, lack of an inline baggage handling system, and the existing Concourse B building itself. These constraints were considered as part of the alternatives development and evaluation process.

**EXHIBIT 3-20**      **GTC**



Source: Landrum & Brown, 2019

**EXHIBIT 3-21 PART 77 ANALYSIS**



Source: Landrum & Brown, 2019

**Exhibit 3-22, North Terminal Overview** shows the opportunities and constraints at the North Terminal site. Site constraints include the existing compost facility, existing LIRR parking (not on airport property, but required to connect the LIRR Ronkonkoma Station to a future terminal building), and runway and taxiway safety areas. The main site constraint is the compost facility, which will eventually require relocation.

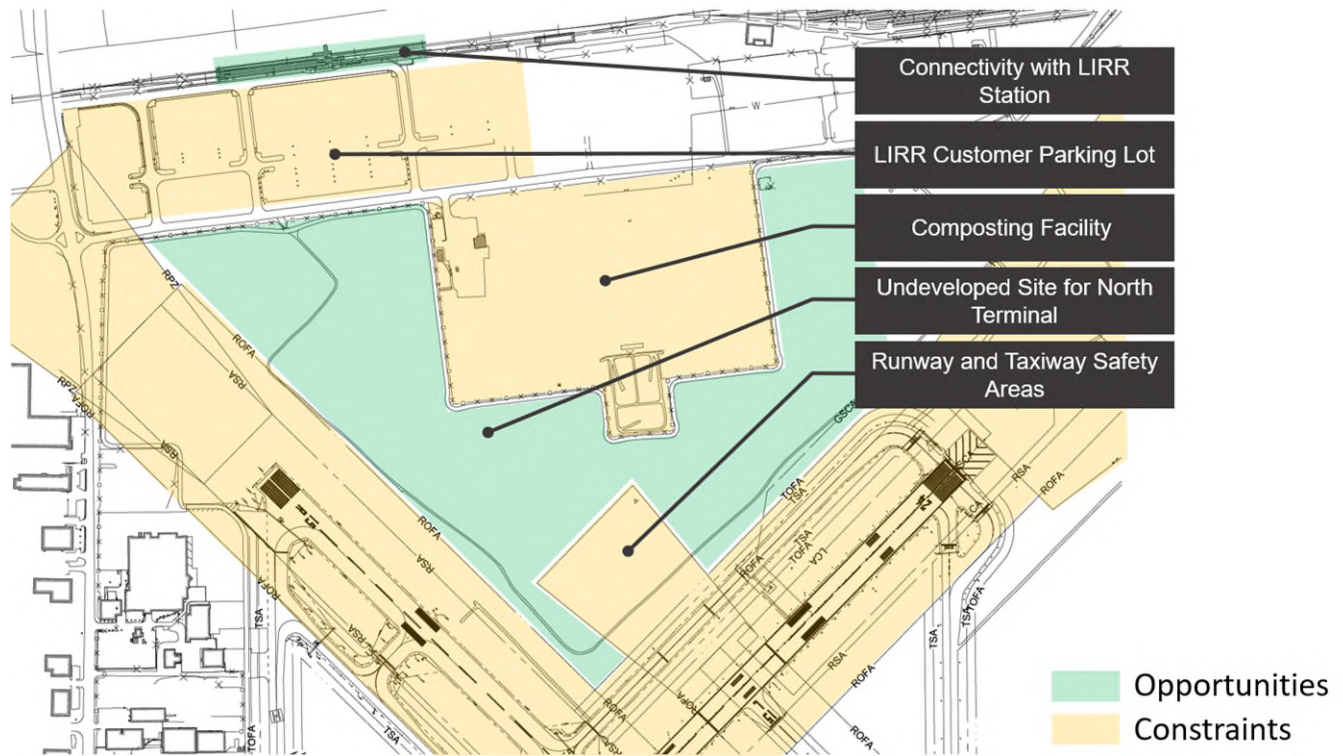
There are numerous site opportunities and advantages when moving to a North Terminal development option, these include the following:

- LIRR multimodal connection (only benefits passengers with access to LIRR)
- Inline baggage connection
- CBP FIS/GAF facilities (including the ability to accommodate international arriving GA aircraft parking and passenger processing on an ad-hoc basis)
- State-of-the-art deicing and reclamation

- Sustainability and environmental advantages due to reduced vehicle emissions with direct access to the Ronkonkoma Station (e.g., no shuttles required and ability to access the terminal directly from the station; reducing the need for vehicles).

Section 8 describes the North Terminal site existing conditions and the enabling projects that will be required to allow a North Terminal Concept to be constructed.

**EXHIBIT 3-22 NORTH TERMINAL SITE OVERVIEW**



Source: Landrum & Brown, 2019

## 4 Aviation Activity Forecast

### 4.1 Approach and Methodology

This section of the study presents the updated forecasts of aviation activity at ISP. The forecast was primarily developed to update the most recent master plan enplaned passenger forecast from 2013 (adopted into the 2017 Master Plan) and provide demand levels and assumptions to support the evaluation of potential future terminal improvement/development projects. These forecasts present projected annual airport traffic activity levels, for 2019 (estimated) through 2037 with a base year of 2018, which represents a 20-year forecast horizon. Due to the timing of this study, the impact of the COVID-19 pandemic, which significantly impacted air travel in 2020 and 2021, was not included. This forecast was initially completed in 2019 (before the pandemic began). By March 2022, ISP passenger traffic returned to pre-COVID activity levels with both scheduled seats and passenger enplanements exceeding those from March 2019 and January 2020. The forecast has also been validated against the 2021 FAA Terminal Area Forecast (TAF), released in March 2022.

The primary components developed and presented in this forecast include passenger enplanements and aircraft operations. Cargo tonnage was not included in the forecast for ISP as it is historically a minimal component of the Airport's activity and this situation is not expected to change. For the purpose of providing a TAF comparison in this effort, aircraft operations (including General Aviation and Air Taxi) were also forecasted. The forecast includes a simple fleet mix for commercial passenger aircraft, but not general aviation since this segment of aviation activity was not the focus of the overall scope of work. Peak period forecast projections, necessary for the terminal facility assessment and requirements, is included and presented as part of this terminal planning study. This section also includes a brief overview of the demand drivers that were explored as part of the forecast development, such as socio-economic characteristics, historical aviation activity trends, evaluation of the catchment area, and potential for leakage from, or recapture of, lost traffic with respect to other New York City regional airports. General methodologies and assumptions considered and used in the forecast are also presented herein.

Traffic levels at the time this forecast was being prepared were showing inconsistent trends. Passenger traffic in 2018 showed a sizable recovery after years of slowing demand, resulting in-part from the 2007 Great Recession, the world financial crisis of 2008-2009, and the subsequent drop experienced in 2019.

### 4.2 Current Activity Profile, Recent Forecast and General Assumptions

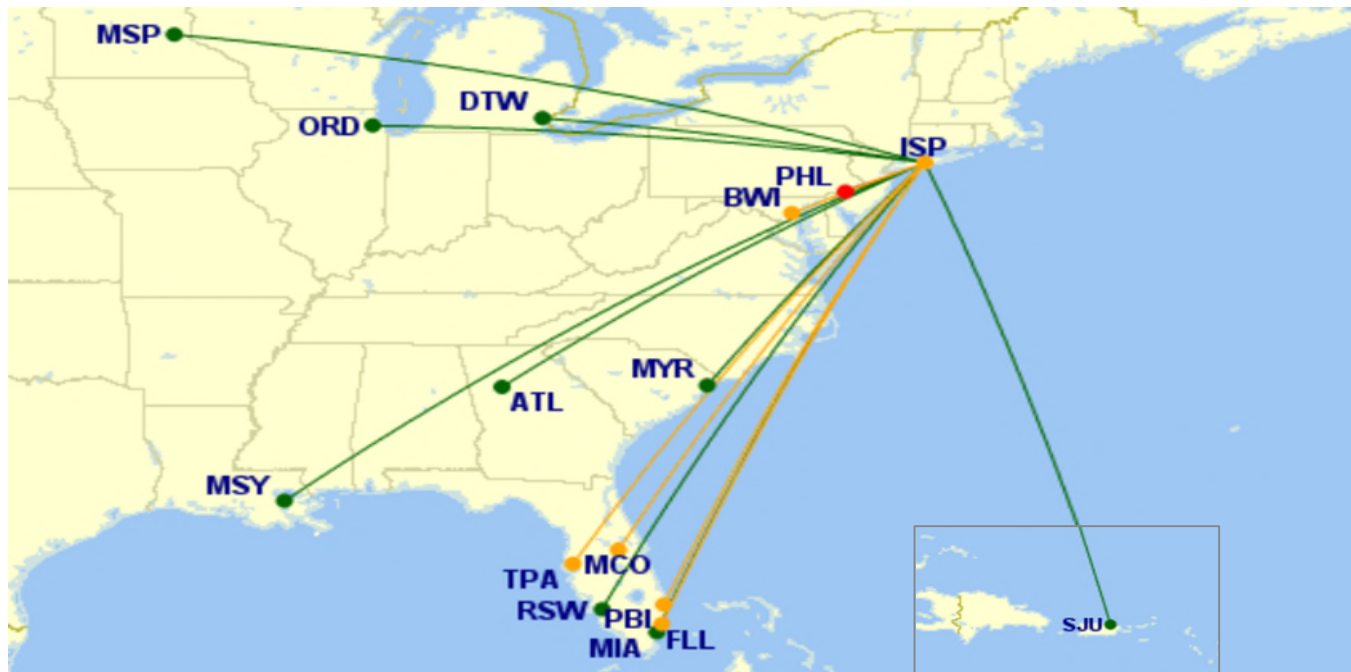
In CY 2018, ISP reported 830,073 enplaned passengers and 132,524 total aircraft operations. Actual traffic compared to the 2013 Master Plan (MP) showed that in the base year of 2018, enplaned passengers were reported at 18.9% above the MP forecast and the 2018 actual total operations (both take offs and landings, or departures and arrivals) were 12.5% below the MP forecast, which was mainly due to larger aircraft being used for commercial passenger operations and decreased demand for GA. Commercial passenger operations in 2018 were reported at 12.0% below the MP forecast, with GA operations 13.9% below and air taxi (AT) operations 57.1% above the MP forecast. The average aircraft size in seats or "gauge" of

commercial aircraft in 2018 was 151 seats, compared to the 123-seat average estimated in the MP forecast. In other words, the number of passengers increased while the number of operations decreased due to the use of larger aircraft.

Before the surge in passengers at ISP in 2018, from 2008 through 2017, passenger traffic demand was decreasing at ISP, which may have been due in part to the lack of a strong enough air service development program with incentives to offset start up risk for new carriers. The introduction of Frontier Airlines and their larger narrowbody fleet in 2017 contributed significantly to the higher number of enplanements reported at ISP and a higher average aircraft gauge for 2018. Average load factor was also higher than projected in 2018 at 79.8% compared to the estimated 75%. In 2018, four airlines had scheduled service at ISP, the smallest of which was Elite Airways, which ended service again in early 2019 and represented less than 1% of passenger traffic in 2018. The 2018 airlines passenger split is shown below, with 2018 air service markets displayed in **Exhibit 4-1, ISP Air Service Markets (2018)**:

- Southwest Airlines (WN) 63% 5 markets in 2018 - 2019
- Frontier Airlines (F9) 33% 13 markets in 2018 (8 in 2019)
- American Airlines (AA) 4% 1 market in 2018 - 2019
- Elite Airways (7Q) < 1%

**EXHIBIT 4-1 ISP AIR SERVICE MARKETS (2018)**



Note: Green lines show Frontier markets, Orange/Yellow lines = Southwest and Red line = American  
Source: Long Island MacArthur Airport, gcmmap.com image, by Landrum & Brown

The MP forecast incorporated a regression analysis in developing the base forecast for ISP enplaned passengers using an inverse economic Yield relationship. The MP forecast predicted that enplaned

passenger traffic in a predominant leisure market would increase as average airfares and yields to airlines decreased or traffic would decrease if average yields increased. Historical trends supported this general association and the FAA domestic Yield forecast from the FAA Aerospace Forecasts was used to predict future levels of base enplaned passenger demand.

With the continuing trend observed since the previous MP, the same general methodology was applied to update the enplaned passenger forecast. In addition to the passenger forecast methodology, the following assumptions and conditions were observed and considered in the 2018 forecast update:

- Leakage/Recapture potential may exist
- High case assumed 'New' entrant (Frontier came, early)
- Economic growth factors still positive
  - (Gross Regional Product, Employment, Population, Personal Income)
- Resilience of the industry
- Growth in Air Taxi segment
- ISP is primarily an O&D domestic market
- ISP is a Low-Cost airport compared to NYC airports

Additionally, the following revised assumptions were made or incorporated into the forecast development process:

- 2018 surge wasn't predicted, but yields were still in line with trends
- 2019 slow down should recover to 2018 levels in 2020
- Aircraft Gauge increases will stabilize (Frontier effect normalized)
- Average Load Factor can increase (was fixed in previous MP)
- GA segment decline wasn't predicted, but can recover (FAA growth applied)

These assumptions/considerations have been included for comparison purposes and impact ISP traffic in general.

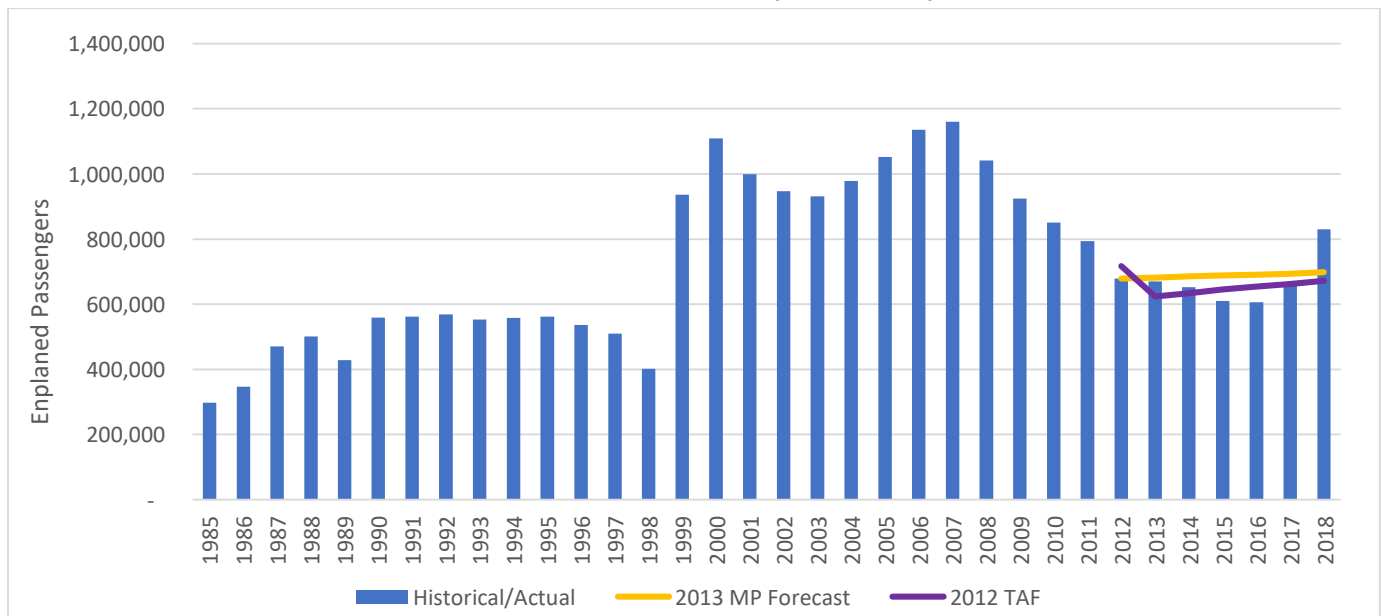
### 4.2.1 Historical Traffic

Total passenger traffic in 2018 at ISP yielded 830,076 enplaned passengers, 13,311 commercial passenger operations, and 132,524 total aircraft operations. Passengers reached an historical high at ISP in 2007 with nearly 1.2 million enplaned passengers, which was almost the same in 2000 before the impact of 9/11 was felt at the Airport. From 2007 to 2012 enplaned passenger levels dropped roughly 46.2% to 678,848 with the impact of the economic recession and the rising cost of fuel, before slowing down and eventually showing signs of recovery in 2017.

#### 4.2.1.1 Enplaned Passengers

Enplaned passenger traffic at the airport has been impacted over a longer history with varying trends showing the effects of economic changes, industry shocks, and air service changes. Since 1985, there have been three periods of rising and falling passenger demand at ISP with the growth in 2018 being the fourth recent period change. A major factor to understand in the passenger traffic trend is the impact of Southwest Airlines at ISP and LGA. Aggressive marketing has shifted many Southwest passengers to LGA from ISP where the share of passengers has decreased from 100% in 2008 down to 25% in 2019. Currently, ISP is aggressively marketing to recapture some of that passenger shift. **Exhibit 4-2, *ISP Enplaned Passengers History (1985-2018)*** presents the historical trend in passenger traffic at ISP with the predicted enplaned passenger forecast levels from 2013 to 2018 for comparison of the 2013 MP forecast and 2012 TAF to actual traffic.

**EXHIBIT 4-2**      **ISP ENPLANED PASSENGERS HISTORY (1985 – 2018)**



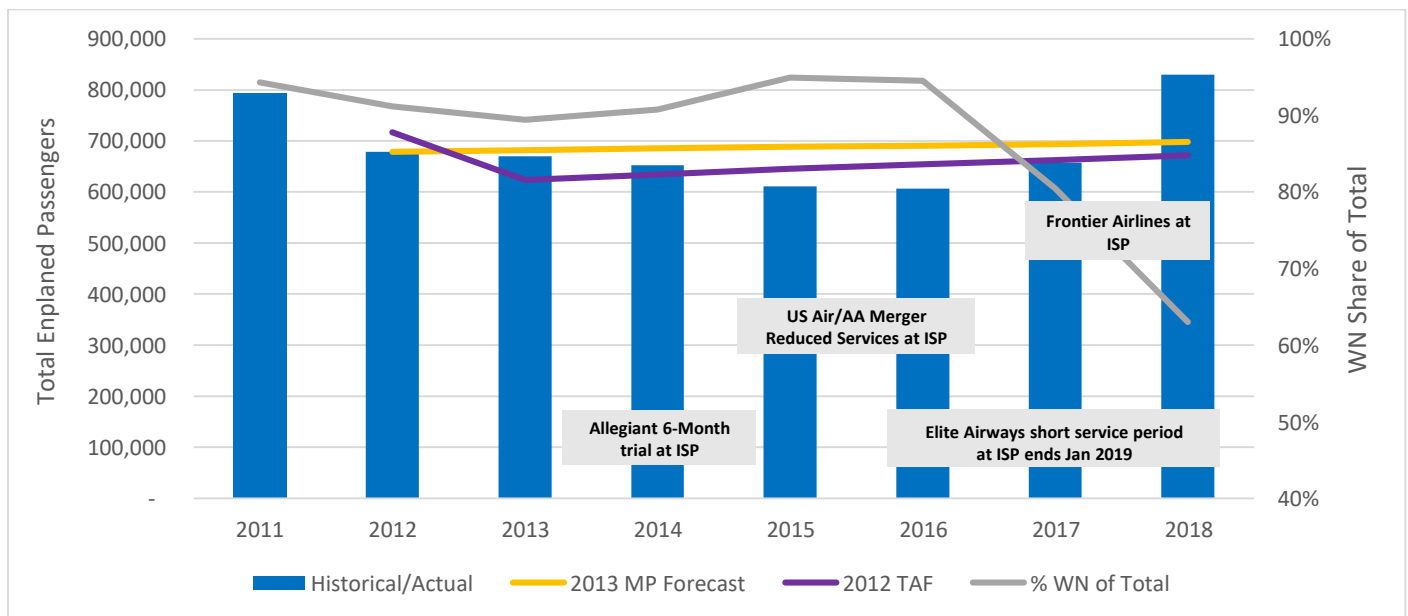
Source: ISP airport data, with Landrum & Brown analysis  
 Note: WN is the abbreviated code for Southwest Airlines

The TAF is represented on a fiscal year basis, compared to the calendar years of the MP forecast and historical data, which is evident in the slight variance in 2012. The two forecasts show similar modest growth projections through 2018, but neither fully anticipated the jump in traffic observed in 2018.

In order to understand the developments which led up to the traffic surge in 2018, **Exhibit 4-3, *ISP Forecast Tracking and Air Service Changes*** illustrates the key changes in air service at the Airport that ultimately led to Frontier Airlines adding service in 2017 and expanding service in 2018. Demand for additional service offerings at ISP appears evident from the three airlines that started service from 2014 to 2017. The true amount of unmet demand may not have been accurately predicted by Frontier Airlines as the surge in 2018 was followed by what may have been more reasonable levels of service started in 2019 with a reduced schedule of fewer markets and seats.

Recent strategic marketing efforts at ISP have shown some success in de-risking the launching of new service or adding new markets. New service from Frontier and new market service to Nashville (BNA) by Southwest are examples of opportunities at ISP to compete more with LGA and JFK. Breeze Airways added service to Charleston, SC and Norfolk, VA in February 2022.

**EXHIBIT 4-3      ISP FORECAST TRACKING AND AIR SERVICE CHANGES**



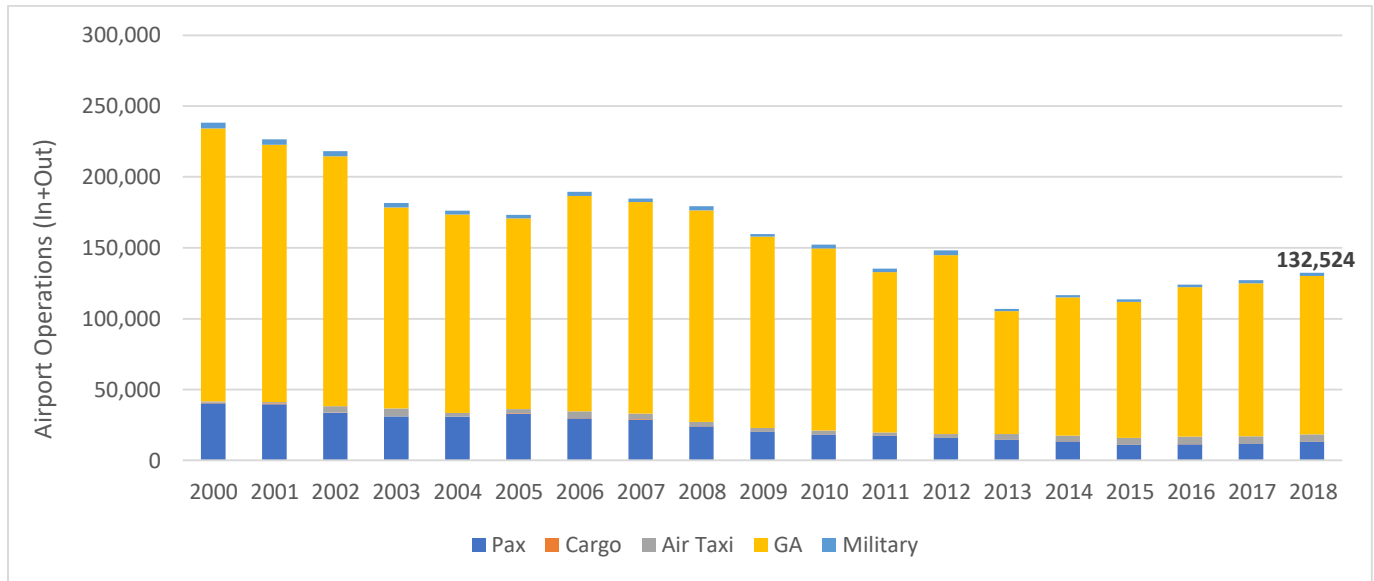
Source: ISP airport data, with Landrum & Brown analysis

Note: WN is the abbreviated code for Southwest Airlines

4.2.1.2 Operations

Historical aircraft operations at ISP were on a decreasing trend from 2000 to 2013, due partly to a shift in Southwest Airlines operations to LGA, up-gauging of commercial aircraft, and reduced commercial passenger traffic; but the majority of the decrease in aircraft operations was due to a drop in General Aviation demand. **Exhibit 4-4, *ISP Aircraft Operations History (2000-2018)*** shows the trends in aircraft operations segments since 2000, with detailed figures provided in **Table 4-1, *ISP Aircraft Operations History by Segment (2000-2018)***.

**EXHIBIT 4-4 ISP AIRCRAFT OPERATIONS HISTORY (2000-2018)**



Source: ISP airport data, with Landrum & Brown analysis

**TABLE 4-1 ISP AIRCRAFT OPERATIONS HISTORY BY SEGMENT (2000-2018)**

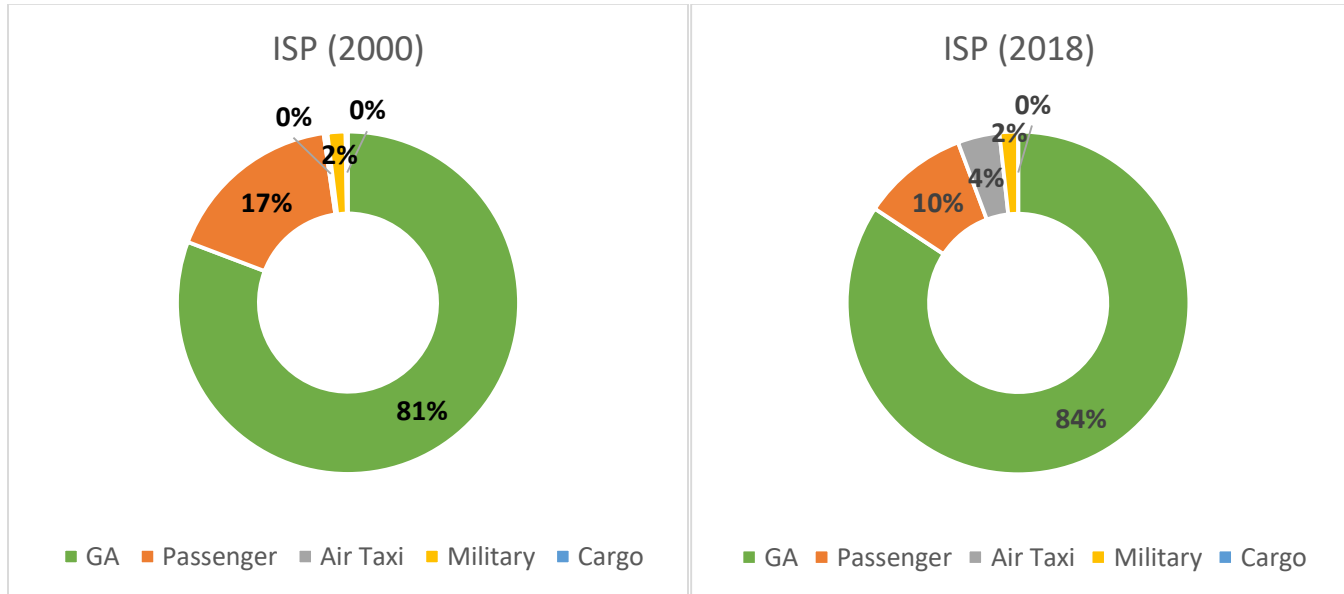
Year	Pax	Cargo	Air Taxi	GA	Military	Total
CY2000	40,411	522	840	192,383	4,083	238,239
2001	39,799	520	958	181,415	3,899	226,591
2002	33,640	140	4,616	176,096	3,561	218,053
2003	31,011	0	5,796	141,551	3,155	181,513
2004	30,953	0	2,717	139,823	2,705	176,198
2005	33,016	285	2,921	134,451	2,462	173,135
2006	29,792	300	4,662	151,744	2,892	189,390
2007	28,944	274	3,844	149,181	2,517	184,760
2008	24,050	132	3,123	149,037	2,888	179,230
2009	20,232	2	2,711	135,052	1,739	159,736
2010	18,266	19	2,999	128,229	2,720	152,233
2011	17,594	5	2,229	112,994	2,443	135,265
2012	16,084	3	2,531	126,241	3,334	148,193
2013	14,663	3	4,140	86,471	1,661	106,938
2014	13,511	14	4,033	97,584	1,392	116,534
2015	11,266	3	4,842	95,818	1,872	113,801
2016	11,452	12	5,398	105,292	2,000	124,154
2017	11,805	8	5,348	107,881	2,187	127,229
2018	13,311	10	5,240	111,648	2,315	132,524

Sources: ISP airport data; U.S. DOT T100 data with L&B analysis

After the 9/11 terrorist attacks shocked the aviation industry from a safety and security perspective, the rising cost of fuel after 2003 and the Great Recession of 2008/2009 GA traffic demand was reduced to a new baseline that started to show signs of new natural growth after 2013. GA aircraft operations made up the largest share of operations at ISP with 84.2% of the 132,524 operations in 2018. Commercial passenger operations represent the second largest segment with 10% followed by the Air Taxi and Military segments at 4% and 2% respectively. There are no scheduled cargo operations at ISP, but there is a very small amount of charter cargo activity.

**Exhibit 4-5, *ISP Shares of Aircraft Operations by Segment*** compares the changes in aircraft segments from 2000 to 2018.

**EXHIBIT 4-5 ISP SHARES OF AIRCRAFT OPERATIONS BY SEGMENT**



Source: ISP airport data, with Landrum & Brown analysis

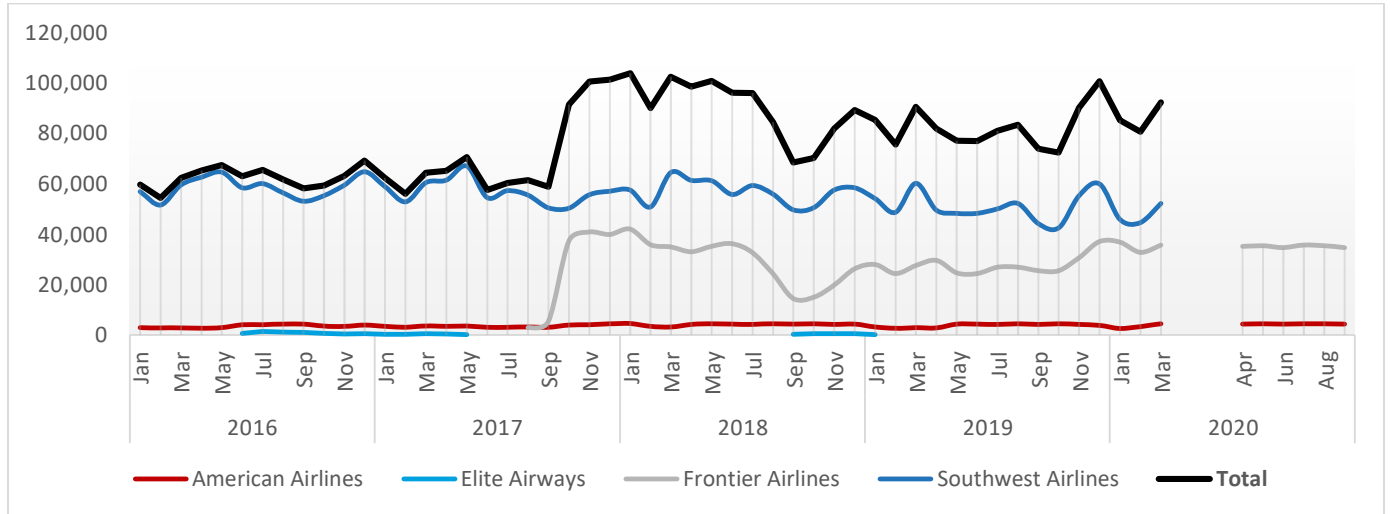
**4.3 Air Service Development**

Near-term scheduled activity showed a decrease of 6.7% for 2019 total scheduled seats, with an estimated increase of 12.6% in scheduled seats for the 2020 (the last three months of 2020 were estimated from previous seasonal trends and the 2020 trend from January to September). In recent years since 2016 scheduled seats have experienced some notable changes; +13.5% in 2017 and +27.3% in 2018 before the -6.7% in 2019 and the estimated +12.6% change for 2020, for an overall estimated increase of 48.5% from 2016 through 2020. The general shares of scheduled seats at ISP have remained similar since Frontier started service at ISP in 2017 with Southwest offering the most seats followed by Frontier and American offering the fewest seats with only service to Philadelphia (PHL). With the expansion of ‘Low Cost’ and ‘Ultra Low Cost’ carriers across the industry, the leisure and O&D demand from ISP seems fitting for the entry of a new carrier to the Airport. While it is known that ISP is competing for additional service from existing carriers, the Airport is also actively engaged in recruiting new carriers and is already under consideration. Breeze Airways began new service in February 2022 from ISP.

**Exhibit 4-6, *ISP Scheduled Monthly Departing Seats (2016-2020)*** shows the monthly and seasonal trends at ISP from 2016 to 2020. **Exhibit 4-7, *ISP Destination Markets***, shows the increased number of markets served from ISP with the entry of Frontier Airlines and markets increasing from six to 14 through 2018 before settling in at nine by mid-2019. Historically, increases or decreases in enplaned passenger activity will either precede or be followed by an increase or decrease in scheduled seats by the airlines as

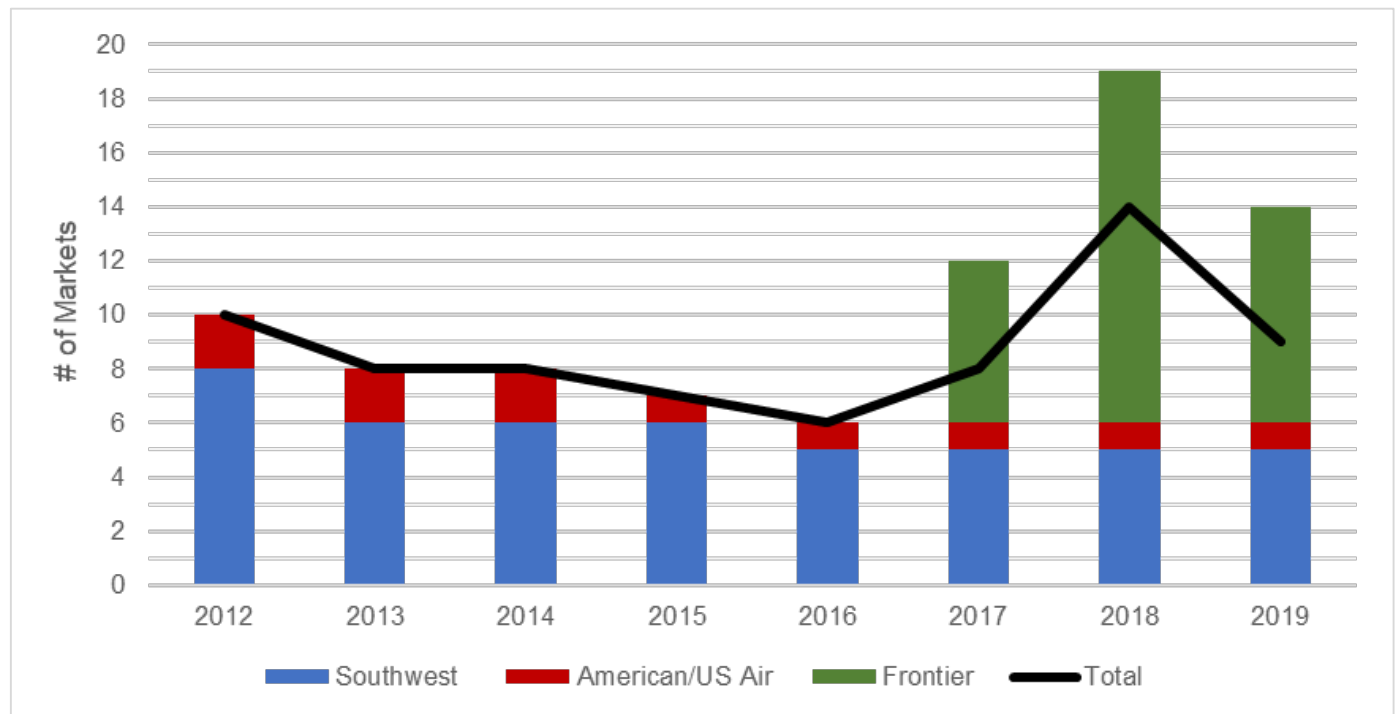
they are proactive or reactive to shifts in passenger demand. In markets like ISP with a fairly consistent fleet mix the increase in enplanements will result in similar changes in the number of scheduled annual departures or total annual operations.

**EXHIBIT 4-6 ISP SCHEDULED MONTHLY DEPARTING SEATS (2016-2020)**



Source: Diio Mi schedule data, with Landrum & Brown analysis

**EXHIBIT 4-7 ISP SCHEDULED MONTHLY DEPARTING SEATS (2016-2020)**



Source: Diio Mi schedule data, with Landrum & Brown analysis

### 4.3.1 Catchment Area

The area providing the population base for aviation demand at the Airport is commonly referred to as the catchment area. Some airports are in close proximity to other competition airports and thus may share catchment areas or have overlapping regions within the broader catchment area. ISP has Nassau and Suffolk counties on Long Island in New York as its primary passenger base. Long Island is part of the New York City Metropolitan Statistical Area (MSA) which had an estimated 19.5 million residents in 2019. Nassau and Suffolk counties had approximately 2.7 million residents of the total. The main focus of the catchment area concern is for commercial passenger demand but can also be relative for cargo demand and GA demand. ISP has direct competition for passenger services with JFK primarily as well as LGA and also has competition for GA demand with Republic Airport less than 20 miles west of the Airport.

The 2013 MP forecast incorporated a study of the airport catchment area that observed the airport choice and preference for commercial passengers of JFK, LGA and ISP. It was determined that ISP captures only a small share of the ‘Swing’ area between JFK/LGA and ISP and about one third of the traffic in the ‘Trade Area’ which is the remaining portion of Long Island to the east. An updated study was performed by AilevonPacific Aviation Consulting in 2016 which confirmed the findings of the 2013 study.

**Exhibit 4-8, *ISP Catchment Area Map*** shows the ISP Swing and ISP Trade areas designated in the AilevonPacific study. When nonstop flights are offered, ISP was retaining about 87% of traffic in the Trade area and 37% in the Swing area according to the 2016 survey. The survey found that ISP captured only 7% of Swing area and 35% of trade area demand due to the strong air service offerings and frequencies at JFK and LGA. In the 2018 base year it is estimated that the ISP capture rate of the Swing area would likely have remained near 7%, but the capture rate of the Trade area may have increased to about 42% with the new service from Frontier and the larger focus on low cost domestic market options in the ISP Trade area.

In considering specifically the New York Metro area O&D passengers<sup>1</sup>, ISP was capturing about 4.1% of the market in 2001 and 3.8% in 2007, whereas today ISP captures an estimated 2.2%. There appears to be reasonable opportunity for both existing and new carriers to gain a greater share of traffic in the New York Metro area.

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<sup>1</sup> U.S. DOT DB1B data- New York Metro area includes ISP, LGA, JFK, EWR, HPN and SWF airports.

**EXHIBIT 4-8      ISP CATCHMENT AREA MAP**



Source: AilevonPacific Aviation Consulting image

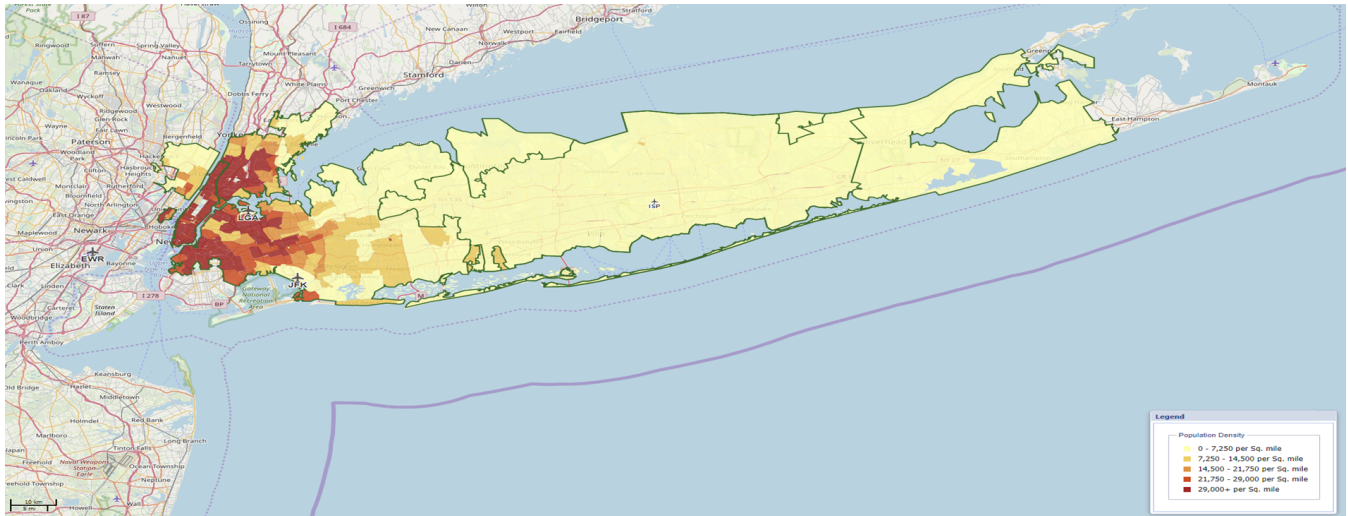
The Long Island Railroad runs throughout Long Island, connecting much of Long Island to New York City where its two large hub airports are a very relevant factor for passengers choosing alternate airports to ISP. The greatest levels of air service offerings are typically located closer to the population centers, which correlates to the majority of the population base living near New York City and the west end of Long Island. See **Exhibit 4-9, Local Population Density Map**.

It was also proposed that new market potential exists but would require more carrier and local community commitment due to the proximity to JFK and LGA.

Some key findings from the Catchment area study suggest the following:

- ISP remains the Low-Fare Airport for the NYC Region
- South Florida is the main destination
- Some previous markets could be re-started (with the right fare)
- Average fares at ISP have increased reducing the benefit to ultra-low-cost carriers (ULCCs)
- Although domestic growth is more likely, international opportunities may exist for ISP as a niche market to Europe
- Passengers prefer more non-stop options and greater frequency in general with comparable fares

**EXHIBIT 4-9 LOCAL POPULATION DENSITY MAP**



Source: Landrum & Brown analysis

## 4.4 2019 Passenger Forecast Update

### 4.4.1 Methodology and Assumptions

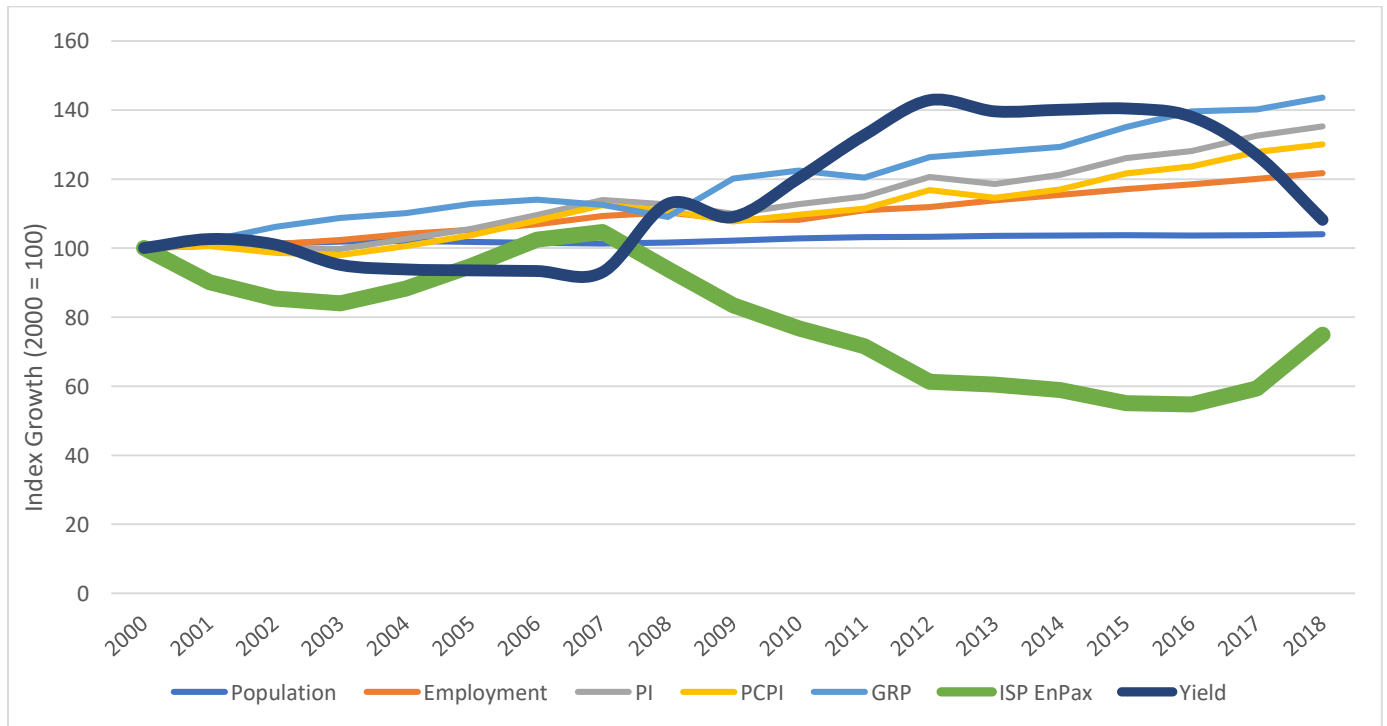
This section presents the forecast of passenger demand at ISP. The passenger forecast is a critical demand element and was prepared as an enplaned passenger forecast. Total passenger traffic represents the sum of passengers enplaning and deplaning commercial passenger aircraft at the Airport. For this forecast update, the enplaned passenger forecast was updated with a similar approach using an econometric regression correlating ISP Revenue Yield to ISP Enplanements to account for the past declines in demand. Passenger traffic at ISP is almost entirely origin and destination (O&D) with a minimal number of passengers that connect from one flight to another through ISP and do not begin or end their trip at the Airport. The level of originating passengers reflects the attractiveness of the region as a place to live, a place to visit, and as a place to work and conduct business. A reasonable forecast of originating passengers is critical in order to estimate future demands for terminal facilities such as ticketing, baggage claim, automobile parking, and access roadways. The associated number of passenger aircraft operations is also derived from the passenger forecast and are used as inputs to evaluate airfield and apron requirements.

With the assumption that ISP is an O&D airport, the prepared forecast update will just look at enplaned passengers in general and not presume that there is a measurable amount of connecting passengers to further estimate. Furthermore, ISP is considered a domestic airport and does not currently have international arrival facilities. Some international activity to Canada or the Caribbean may be considered reasonable with the growth in the service offerings from low-cost and ultra-low-cost carriers, but it was assumed that during the forecast period, new initial international markets (if any) would likely be to precleared destinations.

In the previous master plan, the historical relationships between passenger traffic and socioeconomic conditions showed a lack of correlation between directional trends in socioeconomic variables and enplaned passenger levels at the Airport. Essentially, historical growth in the local economy should have predicted similar patterns in passenger demand but the historical datasets did not show correlations for typical socioeconomic data variables. However, there was a reasonable correlation between enplaned passengers and airline yields (profit per seat per mile) based on airfares and operating costs.

The initial intent of this forecasting effort in support of the terminal planning study was to update the previous forecast methodology, if still valid. **Exhibit 4-10, Regional Socioeconomic Trends (Nassau and Suffolk Counties)** shows the indexed historical trends for socioeconomic conditions in the base catchment area region of Nassau County and Suffolk County, New York. As was evident in the previous master plan, there still exists a valid correlation between enplaned passengers at ISP and airline Yields.

**EXHIBIT 4-10 REGIONAL SOCIOECONOMIC TRENDS (NASSAU AND SUFFOLK COUNTIES)**



Sources: ISP airport data; Woods and Poole CEDDS data, with Landrum & Brown analysis

The proposed relationship is an inverse where, as yield goes up (revenue per passenger mile flown), demand decreases, and vice versa. The typical socioeconomic variables representative of a growing economy or community (population, gross regional product or GRP, employment, personal income, and per capita personal income or PCPI) all exhibited positive growth trends and were more consistent directionally, whereas enplaned passenger levels were decreasing from 2007 to 2016 during these years of economic growth.

#### 4.4.2 Annual Passenger Forecast

The base enplaned passengers forecast is derived from an econometric regression that exhibits a reasonably strong statistical correlation with an inverse relationship between enplaned passengers and ISP Revenue Yield (const. 2018USD). Historical data from 2000 to 2018 was used in the regression analysis, with forecasted Yields estimated from domestic yield growth in the *FAA Aerospace Forecasts Fiscal Years 2019-2039*, Table 16. **Table 4-2, Enplaned Passengers Forecast – Regression Inputs** shows the historical inputs of enplaned passengers at ISP and average passenger yield at ISP for the historical years of 2000 to 2018 and the forecasted yield inputs through 2037.

**TABLE 4-2 ENPLANED PASSENGERS FORECAST – REGRESSION INPUTS**

Calendar Year	Enplaned ISP Passengers	Constant Yield (cents Revenue per passenger mile)
2000	1,108,640	10.14
2001	999,170	10.41
2002	946,640	10.25
2003	930,690	9.65
2004	978,460	9.52
2005	1,051,480	9.49
2006	1,135,300	9.47
2007	1,159,930	9.43
2008	1,040,860	11.44
2009	924,490	11.06
2010	850,600	12.20
2011	793,578	13.46
2012	678,848	14.49
2013	670,399	14.17
2014	652,055	14.21
2015	610,532	14.25
2016	606,491	14.01
2017	657,659	12.88
2018	830,076	10.97
<i>2019F</i>		10.77
<i>2022F</i>		10.55
<i>2027F</i>		10.30
<i>2032F</i>		10.06
<i>2037F</i>		9.76

Sources: ISP airport data; FAA 2019 Aerospace Forecast data and Diio Mi data with Landrum & Brown analysis

Note: Constant yield in 2018USD

The regression analysis provided an adjusted R square value of 0.82 and showed statistical significance with absolute t Stat values greater than 2.0 and P-values less than 0.05. **Table 4-3, *Enplaned Passengers Forecast – Regression Inputs*** provides the resulting statistics from the regression analysis and **Exhibit 4-11, *ISP Yield Regression Validation*** is provided to show the reasonableness of the regression result in comparing the actual historical enplaned passenger levels to the predicted value based on the theoretical regression equation of:

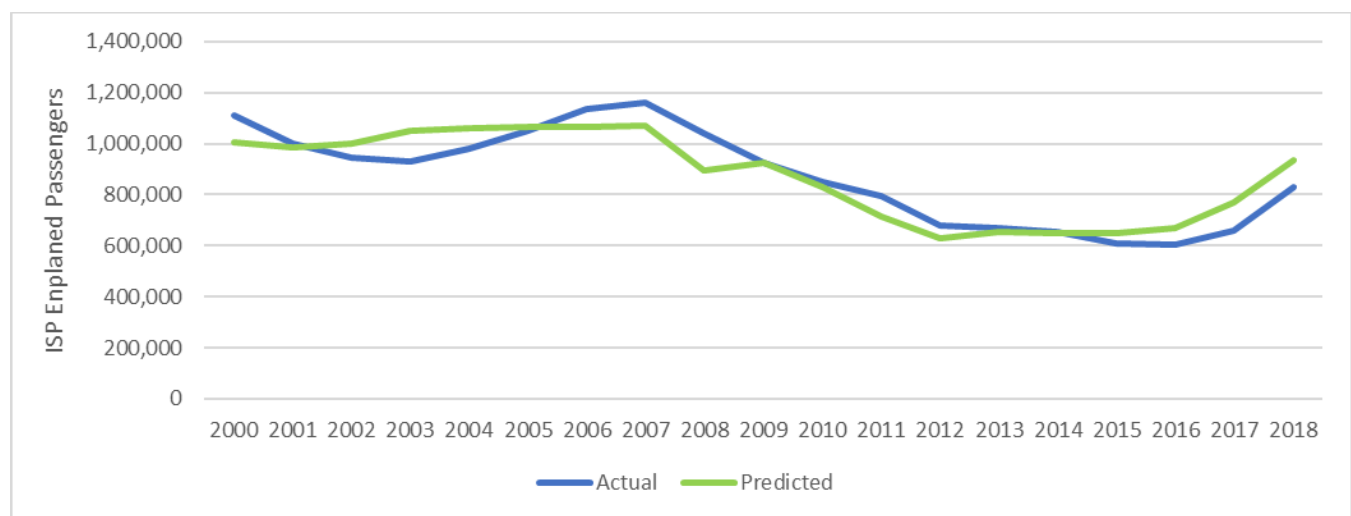
$$ISP\ enplaned\ passengers = 1,896,123.66 - 87,582.1091 \times YIELD$$

**TABLE 4-3 ENPLANED PASSENGERS FORECAST – REGRESSION INPUTS**

Regression Statistics						
Multiple R	0.91065					
R Square	0.82928					
<b>Adjusted R Square</b>	<b>0.81924</b>					
Standard Error	79385.8					
Observations	19					
			<u>Coefficients</u>	<u>Standard Error</u>	<u>t Stat</u>	<u>P-value</u>
		Intercept	1896123.658	113830.0587	16.65749521	5.8049E-12
		ISP Yield	-87582.1091	9637.914132	-9.08724729	6.17745E-08

Source: ISP airport data, with Landrum & Brown analysis

**EXHIBIT 4-11 ISP YIELD REGRESSION VALIDATION**



Source: ISP airport data, with Landrum & Brown analysis

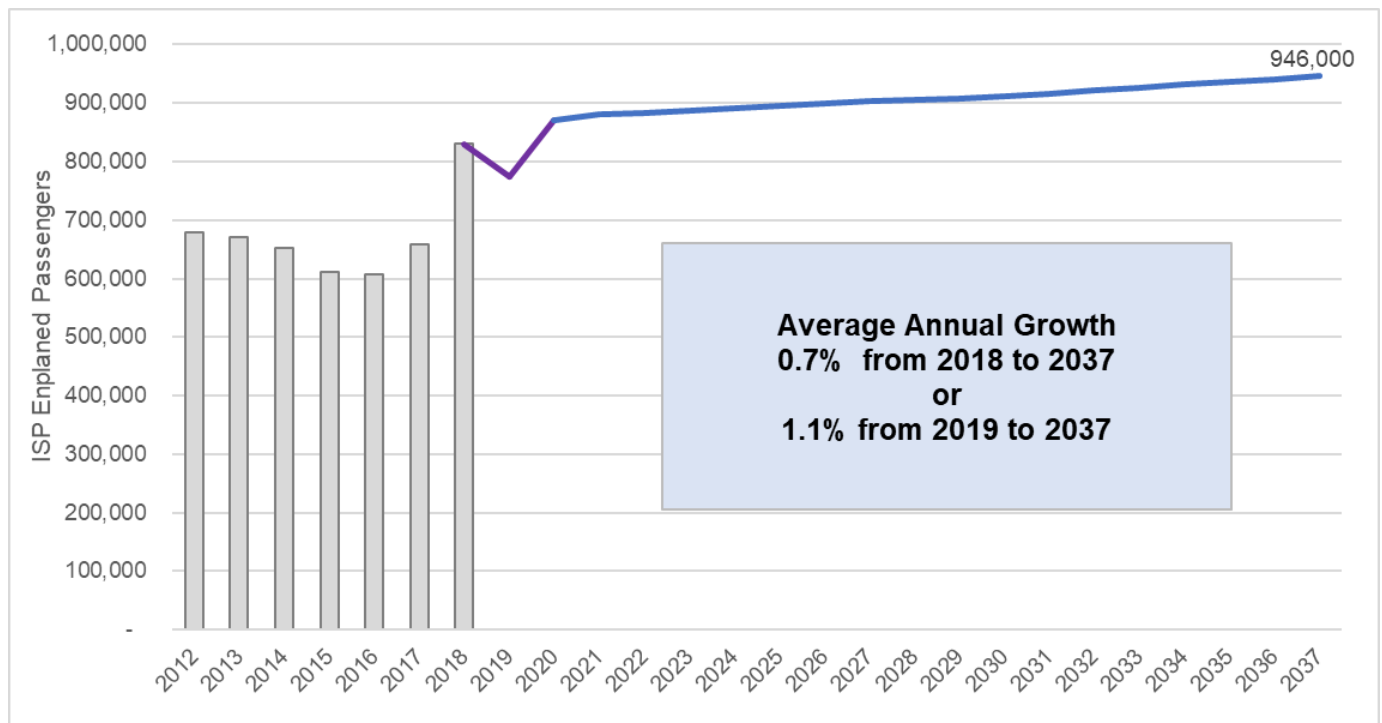
The predicted values of enplaned passengers from the regression equation was not used directly to estimate the enplaned passenger forecast, but the year over year growth rates or annual changes from the regression

model were applied to the 2020 estimated value and then to each new annual estimate there after to develop the annual enplaned passenger forecast for ISP.

The resulting base forecast projects traffic to increase from 830,076 total enplaned passengers to nearly 946,000 enplaned passengers for ISP in 2037 with an average annual growth rate (AGR) of 0.7% per annum. The forecast incorporated 2019 and 2020 near-term estimates which indicates a reduction in demand for 2019 before a projected recovery in 2020. As the forecast was initially developed before the COVID-19 pandemic, the 2019 decrease and the 2020 recovery estimates were based on the changes in scheduled seats established by the main carriers at the Airport.

**Exhibit 4-12, *ISP Base Enplaned Passenger Forecast*** presents the forecast projections for ISP through the forecast period to 2037. From the decreased demand level in 2019, the forecast projects growth of 1.1% AGR in the base case through 2037. The base case passenger forecast is a statistical econometric forecast and does not include possible external factor benefits such as a new multi-modal connection point like the impact at JFK with the introduction of the AirTrain.

**EXHIBIT 4-12      ISP BASE ENPLANED PASSENGER FORECAST**



Source: ISP airport data, with Landrum & Brown analysis  
Note: 2019 and 2020 years are near term estimates.

The base forecast of enplaned passengers presumes that the mix of passengers on commuter aircraft versus air carrier narrowbody aircraft at ISP will remain nearly constant with a small shift to more narrowbody aircraft during the forecast. Commuter passengers share is projected to be approximately 4.6% during the forecast with 95.4% of passengers on air carrier aircraft.

In June 2022, American Airlines announced a withdrawal at ISP. Discussions with the Airport suggest it is a temporary reduction in service due to Pandemic related system shortages and not demand related. The impact to the forecast of passengers is not expected to be significant and is expected to recover. Operations will likely shift from small regional jets to large regional jets or narrowbody jet service due to current system shortages and the higher fuel costs which were not present or predicted at the time of this forecast.

## 4.5 Operations Forecast

This section presents the development of the commercial passenger, air cargo, non-commercial air taxi, general aviation, and military aircraft operations forecasts at ISP. The key focus of this forecast update was on the commercial passenger demand that would impact the airport terminals. The development of the passenger operations forecast is presented with more detail in this section with general discussions of the simple forecast approaches for the non-commercial operations segments at the Airport.

### 4.5.1 Methodology and Assumptions

**Commercial Passenger Operations** are derived from the enplaned passengers forecast which is doubled to account for total passenger and total operations traffic (take offs and landings). The number of commercial passenger operations at an airport is calculated from three factors: total passengers, average load factor (percent of seats occupied) and the average aircraft size or gauge (number of seats). The equation of how this is calculated is shown:

$$\text{Commercial Passenger Operations} = \frac{\text{Total Passengers}}{\text{Average Load Factor (\%)} \times \text{Average Aircraft Size (Seats)}}$$

This relationship permits all reasonable combinations of load factors and average aircraft size given number of passengers. In order to develop reasonable load factor and aircraft gauge assumptions, commercial passenger operations were segmented into air carrier and commuter. For ISP, the air carrier segment includes all large narrowbody aircraft such as the B737 series operated by Southwest Airlines and the Airbus A320 series operated by Frontier Airlines. No widebody aircraft are anticipated to have scheduled operations at ISP during the forecast period. Although international services from ISP were not directly projected in this forecast, likely future considerations were assumed to be to markets in Canada or the Caribbean where narrowbody aircraft are common and sufficient. Commuter activity is expected to occur on small or large regional jets operated for American Airlines. Historically the commuter activity has been on small regional jets (Embraer 145, 50 seats). The future of these small regional jets is uncertain and their removal and replacement with next generation regional jets has been a topic of discussion for a number of years. At the time of this forecast American Airlines did not have a retirement plan in place and thus they are projected to be the future feeder aircraft during the forecast or a similar sized replacement when developed within the industry.

Various sources of data were used to develop the historical passenger operations, load factor, and aircraft gauge data. Diio Mi schedule data; FAA, ATADS and U.S. Department of Transportation (U.S. DOT), Schedule T-100 data was used to develop total departures and seats for each segment. Average Seats per Departure (ASPD) for each of the major group of passenger activity was calculated from total departures and total departing seats. Aircraft load factors were calculated for each group of passenger operations by dividing total enplaned passengers by total departing seats. To calculate total operations, the total number of departures was multiplied by a factor of two.

**Air Taxi Operations** were forecast with a similar approach applied in the 2013 MP forecast with adoption of the projected growth rates from the 2019 FAA Aerospace Forecast. The turbojet 20-year growth rate of 2.2% was assumed to be the most reasonable comparison segment that was forecasted to show modest growth in the 2019 FAA Aerospace Forecast. This segment follows projected growth in the business jet market which has been the most consistent growth segment of non-commercial activity since the long decline in civil aviation demand around 2000.

**General Aviation Operations** were also forecast with the application of the same market share approach as 2013 MP with updated 2019 FAA Aerospace Forecast GA operations projections. Total GA operations in the TAF for all U.S. airports was used as the total demand source and a constant share of U.S. demand of 0.42% was assumed (based on a historical average over the last eight years and nearly the same share for the last three years). Segment splits between Itinerant and Local were not developed as they were not included in the focus of the project scope.

**Cargo and Military Operations forecasts** were each updated to represent status quo ‘no growth’ forecast with the assumption of constant future activity levels based on 2018 activity. For Military operations that are not well rooted in any socioeconomic or measurable indicators the last reported year of activity is generally kept as the constant forecast level moving forward and is the commonly accepted method of the FAA. This is not typically the approach with cargo freighter operations, but in the case of ISP with just 10 reported cargo operations in 2018 and an average of eight annual operations over the last 10 years, the lack of scheduled cargo service makes a solid point that a forecast is not necessary and thus a constant level of operations based on 2018 activity was applied.

## 4.5.2 Annual Operations Forecast

### 4.5.2.1 Commercial Passenger Operations

Total commercial passenger operations were derived from the enplaned passengers forecast. To estimate the total commercial passenger operations (arrivals and departures) enplaned passenger levels were doubled to arrive at total passengers, which is essentially 2x the enplaned passengers. The total passengers forecast was divided by the average passengers per operation which is the average aircraft size in seats each year during the forecast period multiplied by the estimated load factor. During the forecast periods the average gauge was projected to increase slightly from 154 seats in 2018 to 158 seats by 2037 with a similar fleet mix. Load Factors were projected to increase from 80% to 83% during the forecast period. Total commercial passenger operations are forecast to increase from 13,311 operations in 2018 to 14,430 by 2037, representing 0.4% AGR (0.5% AGR from 2019-2037).

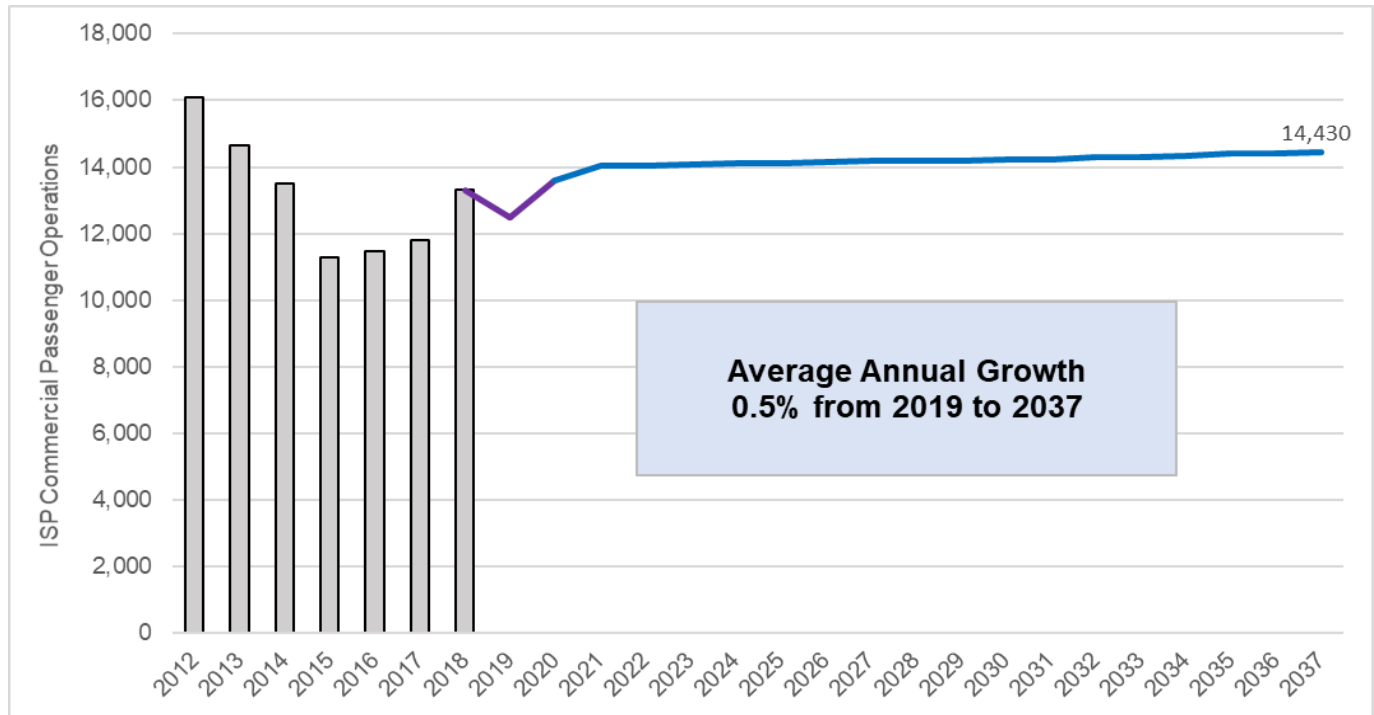
The fleet mix for ISP assumes a modest shift to more usage of Boeing 737-800 and Boeing 737 Max 8 aircraft by Southwest, more Frontier flights on Airbus A321 aircraft with American still operating feeder service with a small RJ 50 seat aircraft. **Table 4-4, *ISP Commercial Passenger Fleet Mix Forecast*** presents the summary of the projected fleet mix at ISP with small changes in the overall passenger fleet. The air carrier segment represents approximately 86% of passenger operations on narrowbody aircraft with 14% in the commuter segment using small regional jets. **Exhibit 4-13, *ISP Base Commercial Passenger Operations Forecast*** presents the overall forecast graphically.

**TABLE 4-4                   ISP COMMERCIAL PASSENGER FLEET MIX FORECAST**

Aircraft Group	Aircraft Type	Seats	2018	2019	2022	2027	2032	2037
Air Carrier	Airbus A319	150	64	-	-	-	-	-
	Airbus A320	180	1,388	545	1,330	1,300	1,270	1,240
	Airbus A321	230	1,685	2,319	2,620	2,730	2,840	2,960
	Boeing 727-200	149	10	-	-	-	-	-
	Boeing 737-700	143	5,721	5,277	5,430	5,290	5,090	4,810
	Boeing 737-800	175	2,485	2,521	2,590	2,630	2,670	2,710
	Boeing B737 Max8	175	82	98	150	240	380	620
	Sub Total		11,435	10,760	12,120	12,190	12,250	12,340
Commuter	CRJ-200	50	13	-	-	-	-	-
	CRJ-700	65	9	-	-	-	-	-
	Embraer-145	50	1,854	1,712	1,930	1,980	2,030	2,090
	Sub Total		1,876	1,712	1,930	1,980	2,030	2,090
	Total		13,311	12,472	14,050	14,170	14,280	14,430

Source:     ISP airport data, with Landrum & Brown analysis

**EXHIBIT 4-13      ISP BASE COMMERCIAL PASSENGER OPERATIONS FORECAST**



Source: ISP airport data, with Landrum & Brown analysis  
Note: 2019 and 2020 years are near term estimates.

*4.5.2.2 Non-Passenger Operations and Total Operations Summary*

**Air Taxi Operations** at ISP since 2012 had experienced an AGR of 12.9% but the most recent three years showed little change. Operations were forecast with application of the 2019 FAA Aerospace Forecast’s 20-year average turbojet growth of 2.2% AGR to the 2018 baseline activity level. This general average growth estimates air taxi operations at ISP to increase from 5,240 in 2018 to 7,920 in 2037.

**General Aviation Operations** at ISP had been showing decreased demand until 2013. Since 2013 GA operations have rebounded and have increased at about 5.2% AGR. GA Operations were forecast with the assumed constant market share of 0.42% of total U.S. GA operations forecast by the FAA. GA operations are estimated to increase from 111,648 in 2018 to 119,130 operations in 2037 for a small 0.3% AGR.

**Cargo and Military Operations Forecasts** (as discussed in the methodology section) are assumed to maintain a ‘status quo’ activity level and are not forecasted to show growth during the forecast period. The constant future activity levels based on 2018 activity estimate a constant 10 Cargo operations and 2,320 Military operations each year.

The cumulative total of all aircraft operations at ISP (passenger and non-passenger) are forecast to increase from 132,524 in 2018 to 143,810 by 2037 representing 0.4% AGR. **Table 4-5, ISP Total Operations Forecast Summary Forecast** shows the summary of the projected operations at ISP by traffic segment through 2037 at five-year horizons.

**TABLE 4-5      ISP TOTAL OPERATIONS FORECAST SUMMARY**

Calendar Year	Commercial Passenger	Cargo	Air Taxi	General Aviation	Military	Total
<b>Historical</b>						
2012	16,084	3	2,531	126,241	3,334	148,193
2013	14,663	3	4,140	86,471	1,661	106,938
2014	13,511	14	4,033	97,584	1,392	116,534
2015	11,266	3	4,842	95,818	1,872	113,801
2016	11,452	12	5,398	105,292	2,000	124,154
2017	11,805	8	5,348	107,881	2,187	127,229
2018	13,311	10	5,240	111,648	2,315	132,524
<b>Forecast</b>						
2022	14,050	10	5,720	113,920	2,320	136,010
2027	14,170	10	6,370	115,600	2,320	138,470
2032	14,280	10	7,110	117,340	2,320	141,050
2037	14,430	10	7,920	119,130	2,320	143,810
<b>AGR 2018-2037</b>	0.4%	0.0%	2.2%	0.3%	0.0%	0.4%

Source:      ISP airport data, with Landrum & Brown analysis

## 4.6 Peak Period Forecast

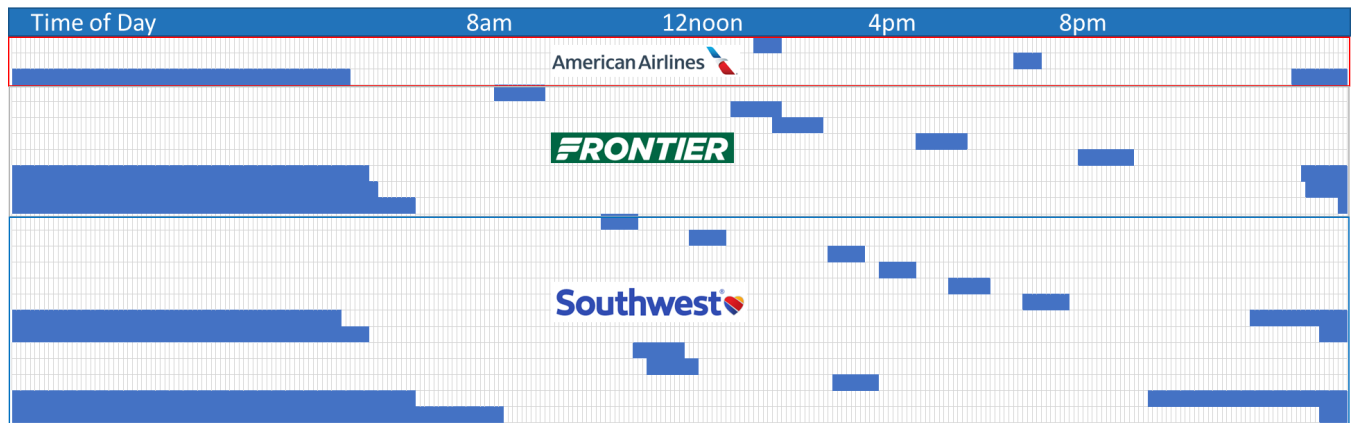
Traffic demand patterns imposed upon an airport are subject to seasonal, monthly, daily, and hourly variations. These variations result in peak periods when the greatest amount of demand is placed upon facilities required to accommodate passenger and aircraft movements. Peaking characteristics are critical in the assessment of existing facilities to determine their ability to accommodate forecast increases in passenger and operational activity throughout the study period. The objective of developing peak period forecasts is to provide a design level that sizes facilities so they are neither underutilized nor overcrowded too often. The focus of this study was on passenger functions and therefore non-passenger peak period demand was not analyzed or forecast in this report.

In order to evaluate the peaking patterns at an airport, annual enplanements and commercial passenger operations forecasts are converted to monthly, daily, and hourly equivalents. At ISP, the design day approximates activity levels that occur on a typical day in the peak month.

Scheduled seat activity data was used with review of previous analysis in the previous master plan. A small increase in projected Design Day and Peak Hour passenger levels is anticipated after 2020 in line with the increase in the overall passenger forecast. Part of the small increase in peak hour demand is due to some use of larger aircraft and higher load factors during market maturation.

A review of a typical day in the peak months at ISP provided insight into the passenger operations profile for development of the design day and peak hour forecast. The peak month at ISP is generally in December for seasonal leisure travel, with the design day being an average weekday. **Exhibit 4-14, ISP Example of Typical Flight Schedule (2018/2019)** shows the common daily distribution of flights at ISP by the three operating carriers (Southwest, Frontier and American). The profile shows the limited demand during the mid-day with the peak demand for gates and holdrooms occurring during the morning departure rush and for overnight parking.

**EXHIBIT 4-14      ISP EXAMPLE OF TYPICAL FLIGHT SCHEDULE (2018/2019)**



Source: Diio mi scheduled data, with Landrum & Brown analysis

**Table 4-6, ISP Peak Period Enplaned Passenger Forecast** presents peak passenger demand levels and the peak month, design day, and peak hour ratios used to develop the peak period enplanement forecasts for ISP. Peak period forecasts are shown in five-year horizons during the forecast period through 2037 beginning with 2022 as the first horizon year.

**TABLE 4-6 ISP PEAK PERIOD ENPLANED PASSENGERS FORECAST**

Total Enplanements	2018	2019	2022	2027	2032	2037
Annual	830,076	774,400	882,900	902,700	921,800	946,000
Peak Month Percent of Annual	9.6%	10.2%	10.2%	10.2%	10.2%	10.2%
Peak Month	80,004	78,989	90,056	92,075	94,024	96,492
Design Day Percent of Peak Month	3.4%	3.4%	3.5%	3.5%	3.5%	3.5%
Design Day	2,723	2,689	3,152	3,223	3,291	3,377
Peak Hour Percent of Design Day	21.4%	16.5%	23.5%	23.5%	23.4%	23.2%
Peak Hour	582	442	741	757	770	784

Source: ISP airport data, with Landrum & Brown analysis

**Table 4-7, *ISP Peak Period Commercial Passenger Operations Forecast*** presents the peak month, design day, and peak hour ratios used to develop the peak period passenger operations forecasts at ISP.

**TABLE 4-7 ISP PEAK PERIOD PASSENGER OPERATIONS FORECAST**

Commercial Passenger Operations	2018	2019	2022	2027	2032	2037
Annual	13,311	12,472	14,050	14,170	14,280	14,430
Peak Month Percent of Annual	10.0%	10.2%	10.1%	10.1%	10.1%	10.1%
Peak Month	1,330	1,272	1,419	1,431	1,442	1,457
Design Day Percent of Peak Month	3.2%	3.4%	3.5%	3.5%	3.5%	3.5%
Design Day	43	43	50	50	51	51
Peak Hour Percent of Design Day	11.6%	12.7%	13.0%	13.0%	13.0%	13.0%
Peak Hour	5	5	6	7	7	7

Source: ISP airport data, with Landrum & Brown analysis

Peak hour enplaned passengers at ISP are forecast to increase from 582 in 2018 to 784 peak hour enplaned passengers in 2037 for a raw increase of 34.7% during the forecast. Comparable is the 40.0% raw increase in Peak hour commercial passenger operations at ISP, which are forecast to increase from five in 2018 to seven peak hour passenger operations in 2037.

## 4.7 Base Forecast Summary

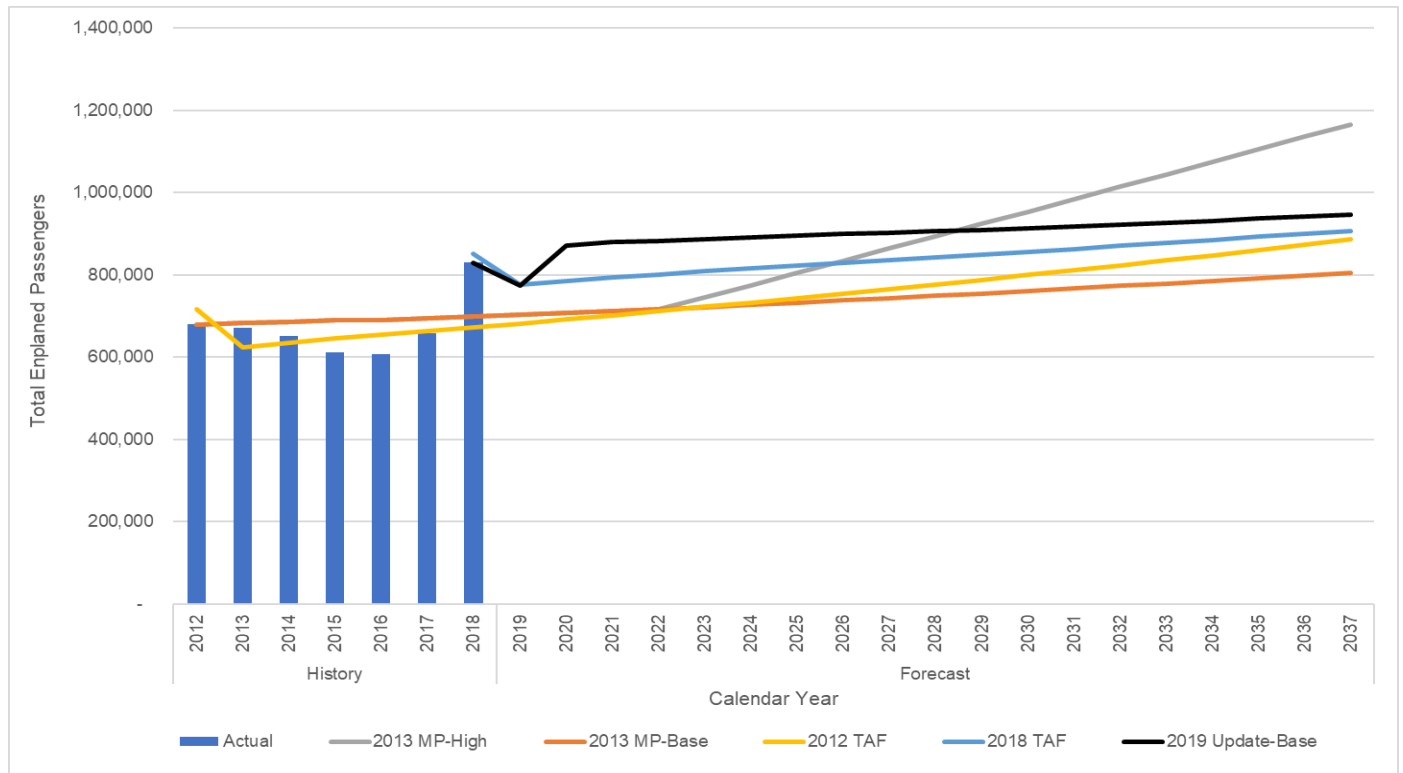
The base case enplaned passenger forecast update for ISP prepared for this study as an update to the 2013 MP forecast projects long-term enplaned passenger growth of 0.7% AGR for ISP from 2018 to 2037, reaching nearly 946,000 total enplaned passengers in 2037. The overall airline mix is projected to remain similar with 86% air carrier/narrowbody jet operations and 14% commuter/regional jet operations<sup>2</sup>. Commercial passenger operations are forecast to reach 14,430 in 2037 representing a 0.4% AGR with total operations (passenger, cargo, air taxi, GA, and military) growing at approximately the same rate of 0.4% AGR and reaching 143,810 operations.

Peak period demand projections for commercial passenger activity are expected to increase more noticeably than overall growth in passenger enplanements and commercial passenger operations. Peak hour enplaned passengers are estimated to increase in demand from 582 to 784 enplaned passengers with peak hour passenger operations increasing from five to seven operations by 2037 during the forecast period. **Exhibit 4-15, ISP Base Enplaned Passenger Forecasts Comparison Chart** shows a comparison of the 2019 forecast update and the previous 2013 MP forecasts and the 2012 FAA TAF and 2018 FAA TAF. The base enplaned passenger forecast of 946,000 in 2037 is approximately 4.3% higher than the 2018 FAA TAF, 6.8% higher than the 2012 FAA TAF and 17.6% higher than the 2013 MP forecast for 2037.

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<sup>2</sup> In June 2022 it was announced that American Airlines would be withdrawing operations at ISP. This is anticipated to be a temporary condition related to system shortages. The forecast was completed in 2019 based on existing conditions. The impact of American Airlines scheduling decision related to the fleet mix at ISP is noted and a future forecast update for a future project effort can incorporate this and other current developments. Continuing revisions to previous forecast models based on information past the submittal dates are not reasonable.

**EXHIBIT 4-15 ISP BASE ENPLANED PASSENGER FORECASTS COMPARISON CHART**



Sources: ISP airport data; FAA TAF with Landrum & Brown analysis

### 4.8 Alternative Forecasts

In addition to the base case enplaned passengers forecast which was prepared as an update to the 2013 MP forecast, the forecast development process also determined that there are some possible opportunities for additional growth that may be reasonable to consider. These efforts were undertaken to provide a range of optimistic growth rates for long range planning possibilities. Although the base case projects very modest growth at ISP, the aggressive marketing efforts by the Airport to attract additional service coupled with the many opportunities for a rebalancing of New York metro traffic shares are compelling circumstances that are reflected in the following alternative forecasts. It is prudent to note that after completion of this study Breeze Airways officially announced (Dec 6, 2021) new service from ISP would commence in February 2022, the first for Breeze Airways in New York.

One factor is the leakage rate of Long Island residents that choose one of the three primary New York airports instead of ISP. With capacity constraints only tightening at JFK and LGA in particular, opportunity to decrease existing leakage rates may be a reasonable factor to consider, especially given marketing efforts by the Airport to enhance air service. For this effort various ranges of leakage recapture rates were explored to see the impact on demand at ISP were certain conditions met such as stricter

capacity impediments at JFK and LGA (such as no increases in available slots or runway capacity) and successful marketing and incentivization by the Airport. Improved connectivity and reduce travel times may be a factor in increasing customer demand as well.

New airline entrants to the ISP market is also a reasonable factor to consider that could improve air traffic demand at the Airport. Frontier was a new entrant to ISP in 2017. The primary considerations include; how likely are the existing airlines expand and is there another new entrant to consider during the forecast. Frontier and Southwest both serve ISP for mainly leisure market demand and there may exist increased opportunity for expanding service to more leisure and other traditional point to point direct service markets. For purposes of this alternative forecast, focus on opportunities for Frontier service expansion with a greater focus on leisure markets and its true low-cost operating business model.

Two high case alternative forecast scenarios were eventually considered for future demand comparisons and the impact they would have on facility capacity.

**High Scenario #1** considers two alternative growth factors (LGA leakage recapture and Aggressive Frontier Airlines growth). This alternative high scenario was projected to show traffic increase at ISP to nearly 1.7 million annual enplaned passengers. Approximately 460,000 additional annual recapture enplanements and 310,000 Frontier enplanements were estimated in this scenario by 2037.

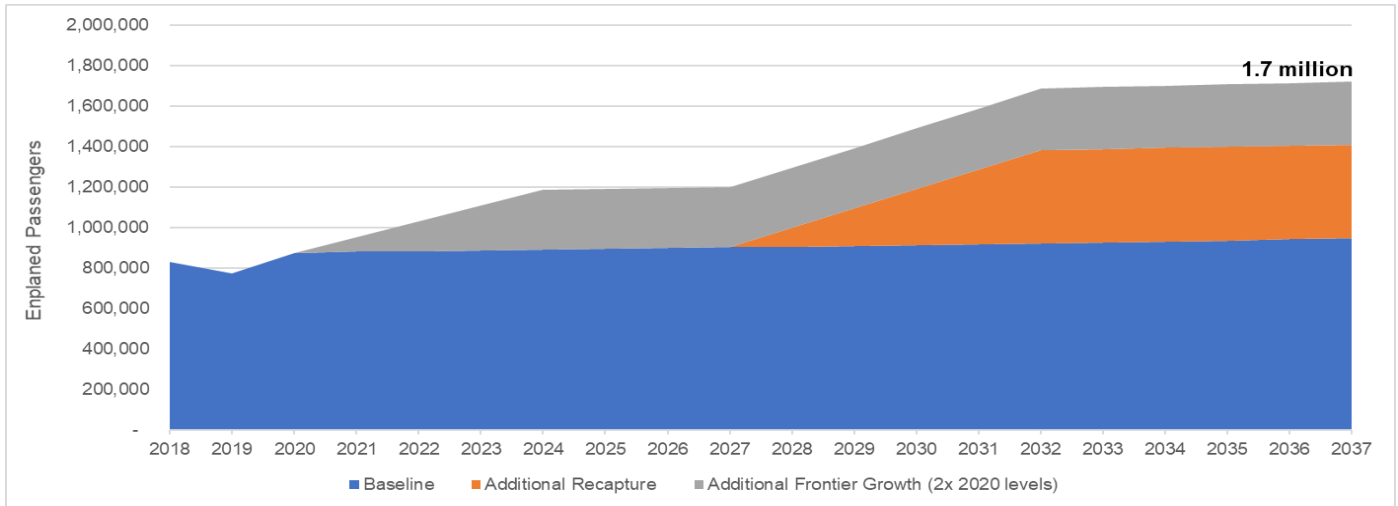
This scenario assumes that ISP could potentially recapture approximately 33% (one third) of the enplaned passenger leakage to LGA. It was assumed that this could begin to occur by 2027 assuming strict capacity limitations at LGA and reach the max 1/3 recapture in five years by 2032. The recapture benefit was assumed to then grow with the natural base growth from there on. Additionally, this scenario assumes that through 2024 Frontier traffic levels could double at ISP to be more comparable to some Tier 2 markets with higher levels of Frontier activity. Comparable airports considered were PHX, AUS, RDU and CLE, with competition between Frontier and Southwest airlines, traffic levels nearly twice that or more than twice that of ISP, and not a Florida leisure destination.

**High Scenario #2** considers the growth opportunity of High Scenario #1 and also includes the entry of Breeze Airways, which would provide additional regional market connections and serve as an east coast base with more significant traffic levels. This truly high case scenario was projected to increase traffic at ISP to nearly 4.3 million annual enplaned passengers by 2037.

This scenario assumes the occurrence of the same recapture from LGA and Frontier expansion as shown in High Scenario #1 with the addition of a new low-cost carrier entering the market at ISP and establish a regional service base. For the purposes of exploration, daily operations of the new low-cost carrier were assumed to be on next generation large regional jets or their future replacements with seat capacities in the range of 90 to 120 seats and daily operations starting at six departures per day and increasing to around 20 departures daily with an average load factor of 83%. Approximately 2.5 million additional enplanements were estimated in this scenario for a new regional LCC at ISP.

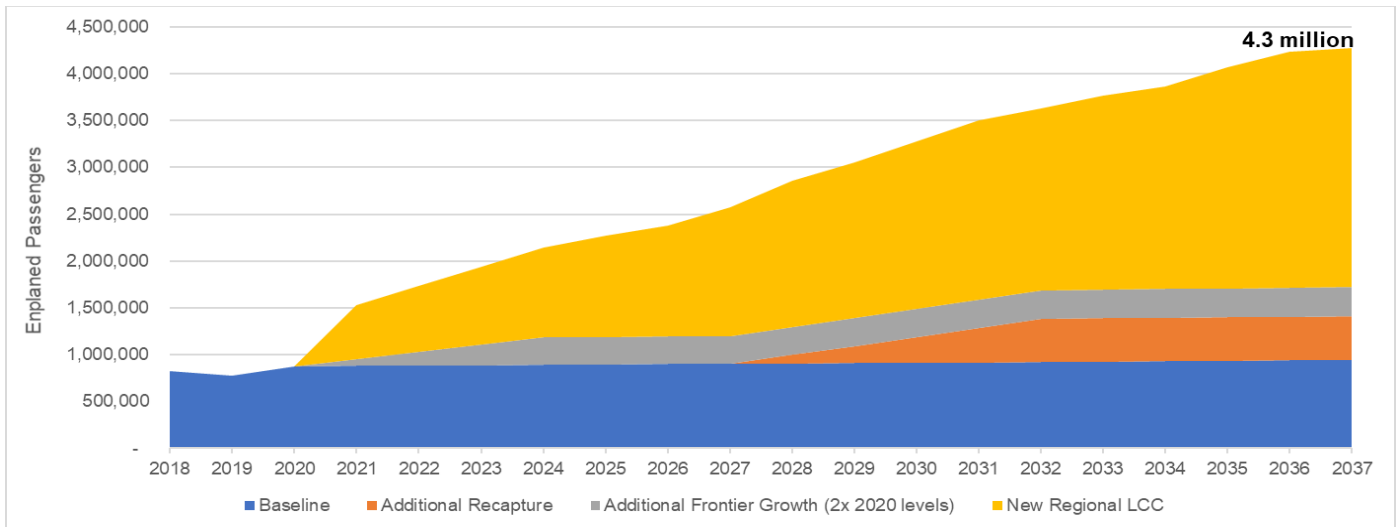
**Exhibit 4-16, ISP Alternative High Scenario #1** and **Exhibit 4-17, ISP Alternative High Scenario #2** show graphical enplaned passenger forecast scenarios in very optimistic conditions as theoretical opportunities at ISP.

**EXHIBIT 4-16      ISP ALTERNATIVE HIGH SCENARIO #1**



Sources: ISP airport data; Landrum & Brown analysis

**EXHIBIT 4-17      ISP ALTERNATIVE HIGH SCENARIO #1**



Sources: ISP airport data; Landrum & Brown analysis

## 4.9 TAF Comparison

The FAA publishes its own forecast annually for each U.S. airport, including ISP. The Terminal Area Forecast (TAF) is “prepared to assist the FAA in meeting its planning, budgeting, and staffing requirements. In addition, state aviation authorities and other aviation planners use the TAF as a basis for planning airport improvements.”<sup>3</sup>

For all classes of airports, forecasts for total passenger enplanements, based aircraft, and total aircraft operations are considered consistent with the TAF if they meet the following criterion:<sup>4</sup>

- Forecasts differ by less than 10% in the five-year forecast period
- Forecasts differ by less than 15% in the ten-year forecast period

The TAF is prepared on a U.S. Government Fiscal Year (FY) basis (October through September) rather than calendar year. The forecast presented herein was developed on a calendar year basis. When an airport’s traffic is growing rapidly, a timing difference between the FY base year and the calendar base year can be significant but, in this case, the base forecast is not exhibiting significant growth and the forecasts are therefore compared ‘as is’ in relative years. 2018 was used as the base year and 2018 traffic levels are shown the same as FAA TAF figures for a comparable starting point.

The FAA provides templates in order to compare forecasts prepared by airport sponsors to the TAF. These templates are provided in Appendix B and C from the FAA Office of Aviation Policy and Plans (APO) document, *Forecasting Aviation Activity by Airport*. For the purposes of this study where focus was not intended nor place on all traffic segments, the forecast comparisons were only prepared in the Appendix C format. The forecast comparison to the FAA TAF is being presented against the 2021 TAF. The 2021 FAA TAF includes the impact of COVID-19, which was not foreknown at the time the 2019 forecast update was prepared and shows more current data and trends for the long-term comparison.

**Table 4-8, TAF Forecast Comparison Table – Appendix C (2021 FAA TAF)** presents a comparison of the enplanements, commercial operations and total operations prepared in the 2019 forecast update for ISP to the 2021 FAA TAF. The enplanement forecast variance to the 2021 FAA TAF is slightly higher for +5 years at 11.0% which is a reflection of the recovery from the pandemic, and with the allowable variance for +10 and +15 years. The commercial and total operations variances are within the guidelines of less than 10% and 15% differences for each comparison year except for +5 years for total operations.

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<sup>3</sup> Federal Aviation Administration, Terminal Area Forecast Summary

<sup>4</sup> Federal Aviation Administration, Review and Approval of Aviation Forecasts, June 2008.

**TABLE 4-9 TAF FORECAST COMPARISON TABLE – APPENDIX C (2021 FAA TAF)**

Segment	Forecast Year	Sponsor Forecast	2021 FAA TAF	% Sponsor vs 2021 TAF	Variance
<b>Passenger Enplanements</b>					
Base year	2018	849,167	849,167	0.0%	
Base year + 5 years	2023	887,180	799,329	11.0%	
Base year + 10 years	2028	905,864	956,550	5.3%	
Base year + 15 years	2033	923,637	1,014,486	8.7%	
<b>Commercial Operations*</b>					
Base year	2018	19,180	19,180	0.0%	
Base year + 5 years	2023	19,932	19,466	2.4%	
Base year + 10 years	2028	20,704	21,344	3.0%	
Base year + 15 years	2033	21,583	22,192	2.7%	
<b>Total Operations</b>					
Base year	2018	132,178	132,178	0.0%	
Base year + 5 years	2023	136,496	153,891	11.3%	
Base year + 10 years	2028	138,961	156,300	11.1%	
Base year + 15 years	2033	141,587	158,342	10.6%	

Sources: ISP airport data; 2021 FAA TAF with Landrum & Brown analysis

Note: \* Commercial operations indicated as passenger operations, cargo, and air taxi operations

## 5 Facility Requirements

Terminal facility requirements were developed using a Terminal Space Program (TSP) model developed by Landrum & Brown. *Two separate programs were developed, the first is based on a 3-gate concourse extension with a new FIS / GAF facility and the second is a new North Terminal program to replace the existing terminal.*

The 3-gate TSP was limited to 3 gates because the existing South Terminal site constraints limit the airport to a 3-gate replacement to Concourse B. The intent would be to demolish and replace Concourse B because the current facility is beyond its useful life, as described in the Existing Conditions section of this report. There are no feasible options to improve Concourse B because the facility was built from trailers that were only intended for temporary use.

The TSP is based upon the planning guidelines published in the IATA Airport Development Reference Manual (ADRM) 10th Edition as well as guidelines provided by the Airport Cooperative Research Program (ACRP).

The TSP is supplemented with information about facilities provided at comparable airports and a knowledge of industry-wide trends in construction of passenger terminals. The TSP also accounts for planning and operational input provided by ISP and airport stakeholders.

The requirements were based on the volume of activity (e.g., passengers or baggage) to be accommodated during peak periods and/or industry-accepted standards and allowances. Requirements based on activity were derived by mathematically relating the projected peak volume of activity to a number of other variables, including:

- Passenger dwell times and flow rates
- Baggage volumes and flow rates
- Maximum allowable queue sizes or times
- Space required per unit of queue
- Space required per unit volume

Assumptions for processing rates, queue length, and spatial requirements were based on IATA LOS “optimum” standards. LOS is a measure of the quality of service provided inside the terminal in terms of ease of flow and propensity for delays. Optimum LOS corresponds to an overall good level of service, where flows are stable, delay levels are acceptable, and a good level of comfort is provided. Professional judgment was employed throughout the TSP to reflect conditions local to ISP.

## 5.1 Three Gate Extension TSP

The gross floor areas presented in **Table 5-1** through **Table 5-3** represent the principal target values and planning requirements provided to meet the projected demand for three narrowbody gate positions and a CBP facility capable of handling 400 international arriving passengers in the peak hour. The 400 arriving passengers in the peak hour was used because it was the minimum defined by CBP in their program guidelines. 400 passengers also represents two simultaneous arriving narrowbody aircraft at ISP, which was considered a plausible scenario by ISP.

The follow items are not included in the program totals:

- Any required renovation areas of the existing building
- New security checkpoint (if required, concept dependent)
- New airport offices (if required, concept dependent)
- Baggage systems (if required) including inline baggage systems

The requirements are pure programmatic results, based on projected peak hour volumes at defined stages during the planning period. These parameters constitute guidance to define facility needs, but the ability to accommodate site-specific information provides for the best assessment of future needs.

It is important to note that the particular configuration of the facility can have considerable impact on future space needs beyond that which can be determined by analyzing the volumes of activity. A team of airport terminal specialists (planners and architects) must properly assess and recognize the organizational and functional flows, the physical distribution of spaces and passenger processing areas, as well as the support facilities within the passenger terminal building and the implications and interactions of each area to effectively use the programmatic results in a useful manner.

**TABLE 5-1 THREE GATE EXTENSION PROGRAM – PART 1**

Space Designation	Units	SF
<b>Airline Spaces</b>		
Contact Gate Holdrooms	3	8,460
First Class Lounges	-	-
Baggage Make-up Renovations		10,000
New CBIS/CBRA (Inline Baggage System)		6,000
<b>Public Spaces</b>		
Passenger Security Screening		
Number of Screening Units	4	5,500
Queue		3,200
Support Space		900
Restrooms		
Concourse		1,500
Concourse Departure Corridor		9,310
Concourse Sterile corridor (including sterile vertical circ.)		5,780
<b>Airline Spaces</b>		<b>50,650</b>

Source: Landrum & Brown, 2021

Note: The "units" column only applied to line items listing equipment; the "units" cell is often blank for line items that are described in terms of square feet.

**TABLE 5-2 THREE GATE EXTENSION PROGRAM – PART 2**

Space Designation	Units	SF
<b>Concession Space</b>		
Retail airside		1,180
F&B Airside		320
Concession Support		380
Subtotal Concessions Spaces		1,880
Circulation		94
<b>Concessions Spaces</b>		<b>1,974</b>

Source: Landrum & Brown, 2021

Note: The "units" column only applied to line items listing equipment; the "units" cell is often blank for line items that are described in terms of square feet.

**TABLE 5-3 THREE GATE EXTENSION PROGRAM – PART 3**

Space Designation		
	Units	SF
<b>CBP FIS and GAF</b>		
Primary Processing and Inspection		5,934
Unified Secondary Processing and Inspection		2,516
Detention Suite		1,800
Agricultural Inspections and Lab Spaces	1	380
Canine Enforcement Spaces and Kennels		1,509
Operational Support Spaces		7,148
Staff Support		184
International Baggage Claim		
Number of ADG III (CAT C) units (>130lf<230lf)	1	6,680
Restrooms		1,400
FIS Circulation		1,261
	<b>CBP</b>	<b>28,812</b>
<b>Terminal Support Spaces</b>		
Airline Operations		7,500
Airport Operations		2,000
Maintenance		1,200
Mechanical / Electrical		9,000
Vertical Penetration		2,100
	<b>Terminal Support Spaces</b>	<b>21,800</b>
	<b>Total Building Area</b>	<b>103,236</b>

Source: Landrum & Brown, 2021

Note: The "units" column only applied to line items listing equipment; the "units" cell is often blank for line items that are described in terms of square feet.

## 5.2 New North Terminal TSP

A separate North Terminal program was created with the purpose to develop a new North Terminal program as a full replacement of the existing terminal facilities, including a new FIS and GAF facility. This option was developed due to the existing deficiencies in the existing terminal complex. It was recognized that ISP cannot operate two separate commercial terminal facilities by maintaining existing Concourse A and a potential new North Terminal.

The North Terminal TSP will support a demand range of 1.8 – 2.0 Million Annual Passengers (MAP) with 8 total contact gate positions. The gross floor areas presented in **Table 5-4** through **Table 5-7** represent the principal target values and planning requirements provided to meet the projected demand. However, for planning and programming purposes, L&B assumed an 8-gate 1.8 – 2.0 MAP initial build. Terminal area requirements were not developed for demand beyond 2.0 MAP because this level of activity was

beyond the forecast horizon, however, this study did explore expansion beyond 8 gates in order to assess flexibility to support future growth.

The North Terminal TSP provided additional ISP airport administration and office space, which will be located on the upper level of the North Terminal. L&B based the programmatic requirement on existing conditions, shown in **Table 5-4, Existing Airport Offices**. The intention of the program is to meet and exceed the amount of airport office space, including conference areas.

**TABLE 5-4 EXISTING AIRPORT OFFICES**

Existing Room Type	Square Feet
ISP20 Reception / Waiting	400
ISP21 Conference	300
ISP23 Storage	300
ISP26 Special Events	150
ISP27 Accounting Office	300
ISP28 Admin Super	250
ISP29 Accounting Office 150 SF	150
ISP30 Construction Office 511 SF	550
ISP31 Secretary 174 SF	200
ISP32 Small Conf Rm. 177 SF	200
ISP33 Airport Commissioner 452 SF	450
ISP34 Deputy Commissioner 413 SF	450
ISP35 Conference Room 789 SF	800
ISP36 Law Enforcement 297 SF	300
ISP37 Police Chief 277 SF	300
ISP39 Kitchenette / break Room 408 SF	450
ISP43 Departures Bridge 365 SF	400
<b>Total</b>	<b>5950</b>

Source: Landrum & Brown, 2022, ISP Airport

**TABLE 5-5 NORTH TERMINAL PROGRAM – PART 1**

Space Designation	2020 Existing		1.8 – 2.0 MAP	
	Units	SF	Units	SF
<b>Airline Spaces</b>				
Check-in (areas from counter face to back wall)		2,900		1,800
Curb Check Positions	4	200	5	700
Full - Service Check-in and Bag Drop	48		22	
Ticketing Counter Queue		5,300		2,900
Self - Service Kiosks	-	-	19	1,000
Airline Ticketing Offices (ATO)		6,530		4,180
Outbound Baggage (sorting area w/ carousels)		10,300		4,000
Early Baggage Storage				
Hold Baggage Screening				
Level 1 EDS Units		-	3	9,000
Level 2 Workstations		-	2	200
Level 3 ETD Units		-	11	4,000
Physical Search		-		100
Domestic Baggage Claim				
Number of CAT ADG III (CAT C) units	4		2	
<b>Bag Claim Frontage Total (Linear Feet)</b>	<b>580</b>		<b>415</b>	
Claim Hall area		22,400		12,200
Inbound Baggage Drop-off		4,200		3,300
Baggage Service Offices		320		1,200
Contact Gate Holdrooms	11	25,200	8	22,540
First Class Lounges			0	-
Airline Operations		11,200		16,500
<i>Subtotal Airline Spaces</i>		<i>88,550</i>		<i>103,620</i>
<i>Circulation</i>		<i>15,700</i>		<i>15,600</i>
<b>Airline Spaces</b>		<b>104,250</b>		<b>119,220</b>

Source: Landrum & Brown, 2019

Note: The "units" column only applied to line items listing equipment; the "units" cell is often blank for line items that are described in terms of square feet.

**TABLE 5-6 NORTH TERMINAL PROGRAM – PART 2**

Space Designation	2020 Existing		1.8 – 2.0 MAP	
	Units	SF	Units	SF
<b>Public Spaces</b>				
Check-in Lobby (circulation)		4,800		4,200
Arrivals Greeters Hall		7,200		8,200
Concourse Departure Corridor		2,500		2,430
Concourse Sterile corridor				6,980
Restrooms				
Check-in Lobby (Passenger & ATO)		1,100		2,100
Concourse		4,175		3,800
Sterile Corridor				-
Baggage Claim				
International		-		1,400
Domestic		1,300		2,000
Passenger Security Screening				
Number of Screening Units	5	4,100	5	9,800
Security Screening Queue & Lobby		3,400		4,200
Security Screening Support Areas		1,900		2,100
<i>Subtotal Public Spaces</i>		<i>60,475</i>		<i>77,210</i>
<i>Circulation</i>		<i>22,900</i>		<i>11,600</i>
<b><i>Public Spaces</i></b>		<b><i>83,375</i></b>		<b><i>88,810</i></b>
<b>Concession Space</b>				
Pre-Security - Departures		710		1,589
Post-Security				13,508
Arrivals Lobby		1,320		795
Concessions Support		5,000		3,973
<i>Subtotal Concessions Spaces</i>		<i>20,430</i>		<i>19,865</i>
<i>Circulation</i>		-		<i>3,000</i>
<b><i>Concessions Spaces</i></b>		<b><i>20,430</i></b>		<b><i>22,865</i></b>

Source: Landrum & Brown, 2019

Note: The "units" column only applied to line items listing equipment; the "units" cell is often blank for line items that are described in terms of square feet.

**TABLE 5-7 NORTH TERMINAL PROGRAM – PART 3**

Space Designation	2020 Existing		1.8 – 2.0 MAP	
	Units	SF	Units	SF
<b>CBP FIS and GAF</b>				
Primary Inspection				
Primary Processing Booths			6	
Global Entry kiosks			0	
APC Kiosks			0	
Primary Processing and Inspection		2,000		5,934
Unified Secondary Processing and Inspection		-		2,600
Detention Suite		-		1,800
Agricultural Inspections and Lab Spaces		-		400
Canine Enforcement Spaces and Kennels		-		1,600
Operational Support Spaces		-		7,200
Staff Support		-		200
International Baggage Claim				
Number of ADG VI (CAT F) units (>330lf<460lf)			0	
Number of ADG V (CAT E) units (>230lf<300lf)			0	
Number of ADG III (CAT C) units (>130lf<230lf)		-	1	
<b>Bag Claim Frontage Total (Feet)</b>		-	<b>183</b>	
Claim Hall area		-		6,680
FIS Circulation		-		600
<b>Customs &amp; Border Protection (CBP)</b>		<b>2,000</b>		<b>27,014</b>
<b>Terminal Support Spaces</b>				
Airport Administration, Offices, etc.		5,950		7,500
Airport Operations		11,890		5,500
Maintenance		3,440		5,200
Building Systems		51,900		25,800
Vertical Circulation		5,000		5,200
Misc. (SARA, Chapel, Play Areas, Business Center, etc.)		11,630		1,800
<b>Terminal Support Spaces</b>		<b>89,810</b>		<b>51,000</b>
<b>Total Building Area</b>		<b>299,865</b>		<b>308,909</b>

Source: Landrum & Brown, 2019

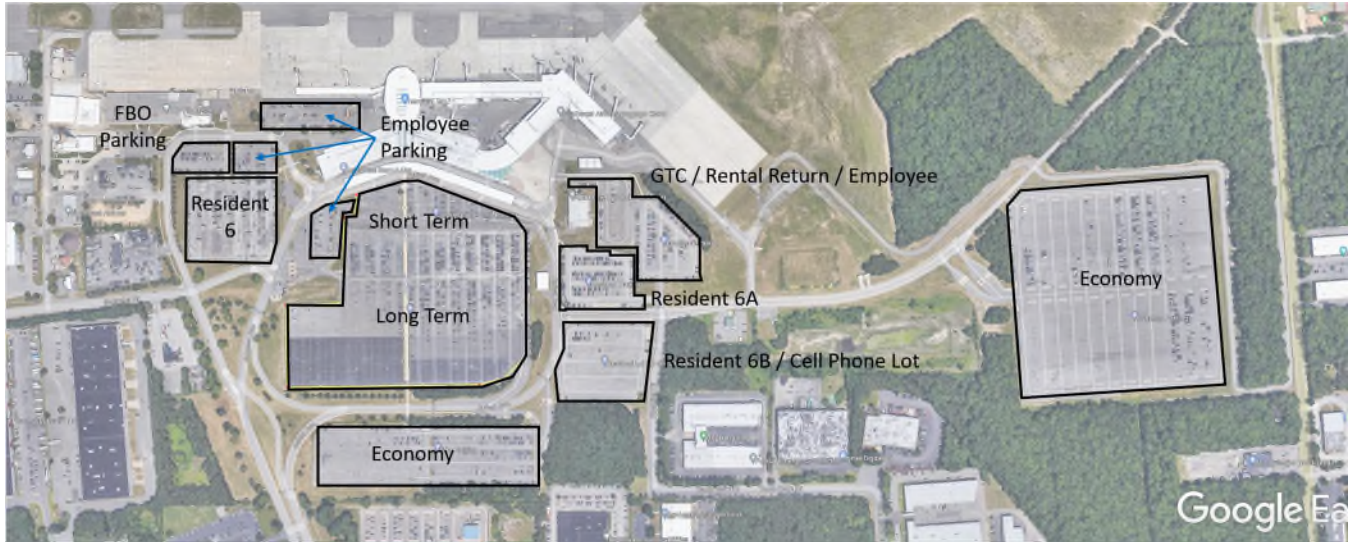
Note: The "units" column only applied to line items listing equipment; the "units" cell is often blank for line items that are described in terms of square feet.

### 5.2.1 Landside Parking Requirements

The approach that was taken for the development of landside parking requirements for the North Terminal was to provide, at a minimum, the same total number of parking stalls that exist today, shown in **Exhibit**

**5-1, Existing Parking Areas** with the total parking stall by type listed in **Table 5-8, North Terminal Parking Requirements**. These requirements assume that the existing parking is designed to support a 1.8 MAP demand level and will be utilized for Phase 1.

**EXHIBIT 5-1 EXISTING PARKING AREAS**



Source: Landrum & Brown, 2022, ISP Airport

**TABLE 5-8 NORTH TERMINAL PARKING REQUIREMENTS**

Parking Type	Existing & Future Phase 1 (1.8 MAP)
Public (Short)	250
Public (Long)	1,600
Public (Economy)	2,150
Resident Parking	600
Employee	400
Rental Ready Return	400
<b>Total</b>	<b>5,400</b>

Source: Landrum & Brown, 2022, ISP Airport

## 6 Alternatives Development and Evaluation

The development of alternatives occurred in two phases; the initial alternatives analysis focused primarily on the gate replacement at Concourse B but also included an extension to Concourse A and one placeholder option for the North Terminal. The final round of alternatives development and evaluation maintained the best Concourse B replacement alternative along with five variations of a North Terminal concept. The purpose of maintaining a Concourse B concept was to clearly eliminate it as part of the evaluation process and to solidify the recommendation of a North Terminal as the preferred development option.

The alternatives develop and evaluation section is presented in quasi-chronological order, which reflects how the alternatives process was executed. As such, this section documents the effort to develop Concourse B replacement options first, although it was determined that replacing gates at Concourse B was not the preferred option. The reason that the replacement of Concourse B was not selected as a viable option was because the existing Concourse A and Concourse B areas have numerous site constraints that limit long-term expansion and because the existing terminal is obsolete and in need of replacement. The effort to replace and improve the existing facilities was determined not to be worthwhile, and that a new terminal located to the north of the airport would be the preferred approach.

Another important factor that was considered is that these options are intended to not only add gates but also improve LOS with the following additions or improvements:

- Add convenient multi-modal connection to the LIRR
- Concessions or restaurants
- Retail shops
- Children's play area
- Computer and recharge stations
- Business center or lounge
- Service Animal Relief Area (SARA)
- Information Centers
- Wheelchair Storage
- Upgraded or consistent finishes with the remainder of the terminal

## 6.1 Summary of Initial Alternatives Analysis

The focus of the initial alternatives analysis was to develop a preferred direction for near-term gate replacement at Concourse B. There are four alternatives for gate replacement at the existing terminal, including a Concourse B replacement and Concourse A extension, and one North Terminal alternative, for a total of five alternatives. The initial alternatives analysis included a placeholder for a North Terminal concept, even though the programmatic requirements and site evaluation for a North Terminal was not yet complete. Alternative 2 was selected as the preferred approach because it provides for the best passenger experience, removed the obsolete rotunda building, and provides near-term gate expansion.

- Alternative 1 (Eliminated) – Concourse B replacement, maintains the existing rotunda, but may require Concourse A gates during construction phasing.
  - Eliminated due to existing constraints, costs, and passenger flow issues associated with the central terminal
    - Pros
      - Opportunity to renovate central terminal for offices or concession space
    - Cons
      - Central terminal infrastructure upgrade and renovation costs
      - Requires additional vertical transition
      - Phasing requires use of east concourse gates
- Alternative 2 (Preferred South) – Concourse B and rotunda are replaced. This alternative connects to the existing Southwest concourse but may require Concourse A gates during construction phasing.
  - Selected as the preferred south option to replace Concourse B
    - Pros
      - No upgrade costs for central terminal
      - No vertical change on concourse
      - New security checkpoint
      - Add more gates without impact to FBO
    - Cons
      - Phasing requires use of east concourse gates
- Alternative 3 (Eliminated) – Concourse B replacement behind the existing concourse and maintains the existing rotunda. Maintains operation of the existing concourse during construction.
  - Includes Alternative 3A and Alternative 3B
    - Alternative 3A would construct a replacement of Concourse B and maintain the rotunda but requires two level changes.

- Alternative 3B would eliminate the level change between Concourse A and Concourse B by building a corridor outside the rotunda.
- Eliminated due to existing constraints, costs, and passenger flow issues associated with the central terminal
  - Pros
    - Enables operations during construction
    - Opportunity to renovate central terminal for offices or concession space
  - Cons
    - Central terminal infrastructure upgrade and renovation costs
    - Requires additional vertical transition
    - Expansion encroaches upon inbound bag area
- Alternative 4 (Eliminated) – Extend Concourse A to provide additional gate capacity with no impact to the rotunda and existing Concourse B on-going operations during construction. The intent of this option is to replace the gates at Concourse B by extending Concourse A.
  - There are three variations, including Alternative 4A, 4B, and 4C
    - Alternative 4A extends south to avoid conflict with runway expansion
    - Alternative 4B continues the building extension to the southeast but risks airspace conflicts due to Part 77 penetrations by aircraft tails
    - Alternative 4C shifts the concourse extension further south to potentially avoid airspace conflicts due to Part 77 penetrations by aircraft tails
  - Eliminated due to concourse extension and aircraft parking position impacts to runway and airspace
    - Pros
      - Enables operations during construction
      - Balanced walking distance from existing security checkpoint
    - Cons
      - Impact to airspace due to Part 77 penetrations by aircraft tails at the runway end
      - Impact to proposed new GTC
      - International passengers do not exit near existing arrivals & long walk for domestic arrivals to bag claim
      - Southwest lease issues

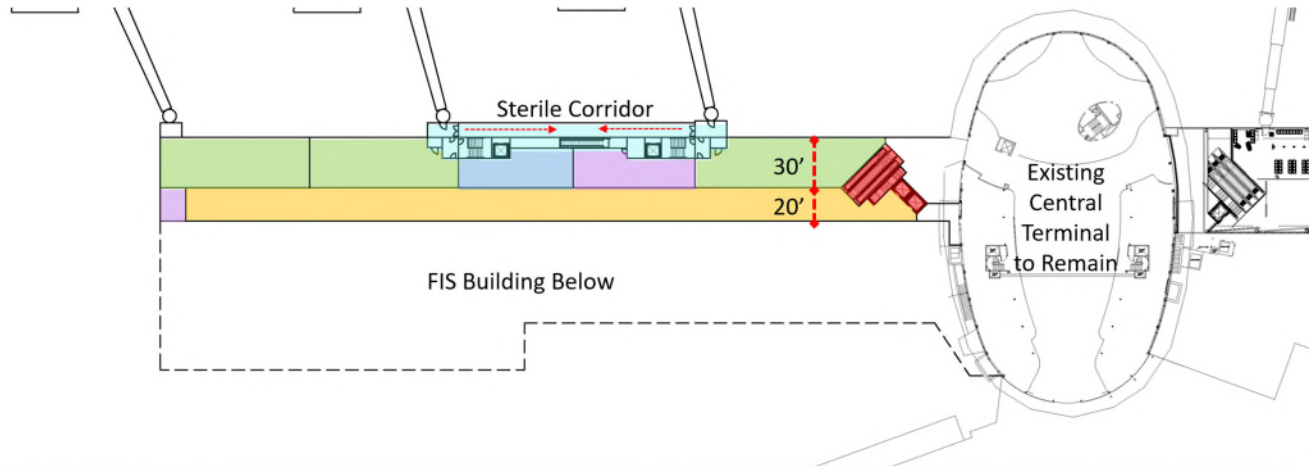
- Alternative 5 (Preferred North) – Develop a North Terminal
  - Selected as the preferred north option
    - Pros
      - New innovative technology
      - GAF/FIS
      - Inline baggage
      - Improve customer service
      - Close to LIRR – Walkable distance
      - Creates a true TOD connection
      - Greenfield site enables long-term gate expansion
      - Energy improvements including LEED standards
      - Reduce carbon footprint
    - Cons
      - High relative cost to build a new terminal
      - No connectivity and could potentially split operations to main terminal
      - Timeframe for construction

### 6.1.1 Alternative 1

Alternative 1 includes the replacement of existing Concourse B directly over the existing structure. This alternative would demolish the existing structure but maintains the rotunda in order to reduce construction costs. This concept would require the existing vertical movements noted in the existing configuration (as a deficiency), although additional elevators could be added to provide redundancy. An additional elevator would provide a means to transport passengers in the event that the other elevator fails. The phased approach for this alternative may require Concourse A gates during construction phasing. **Exhibit 6-1** through **Exhibit 6-3** shows the gate and apron level floorplans and a building cross section to show how the passenger flows would work.

**EXHIBIT 6-1**

**ALTERNATIVE 1 GATE LEVEL**



**New Building Area**

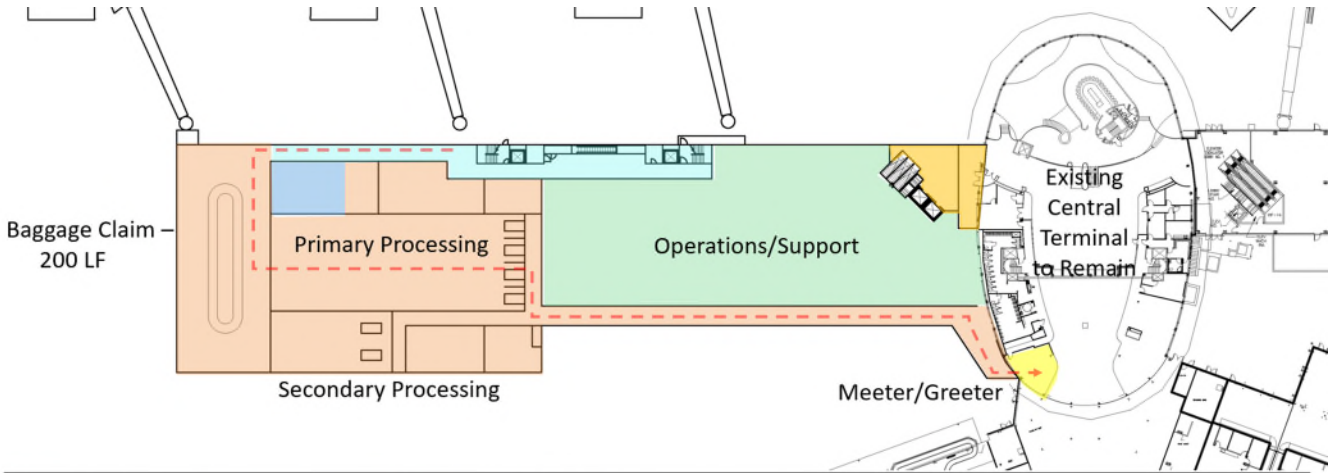
Secure Circulation	8,500 SF	Vertical Circulation	1,000 SF
Holdroom	7,900 SF		
Restroom	1,400 SF		
Concessions	1,800 SF		
Sterile Corridor	3,300 SF		

- Additional Vertical Transition Required
- Phasing required Frontier use of Gates A2-A4 during construction
- Central Terminal to remain as existing

Source: Landrum & Brown, 2019

**EXHIBIT 6-2**

**ALTERNATIVE 1 APRON LEVEL**



**New Building Area**

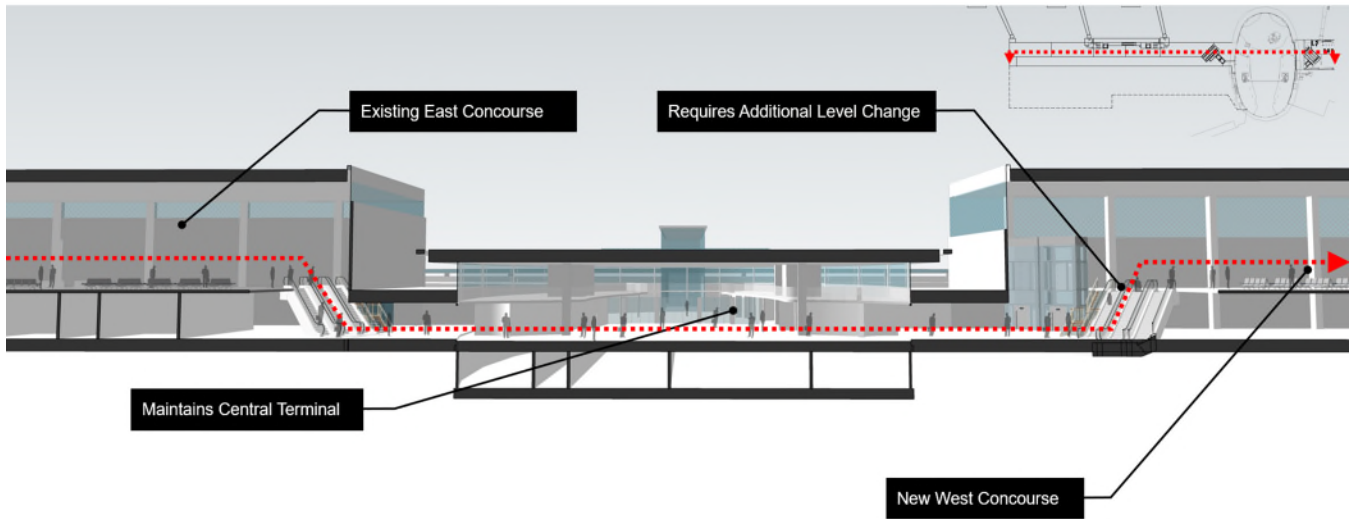
CBP Area	30,000 SF
Operations Space	20,000 SF
Restroom	1,400 SF
Sterile Corridor	4,300 SF
Secure Circulation	1,700 SF

**Renovation Area**

Meeter/Greeter	2,000 SF
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Source: Landrum & Brown, 2019

**EXHIBIT 6-3**      **ALTERNATIVE 1 SECTION**

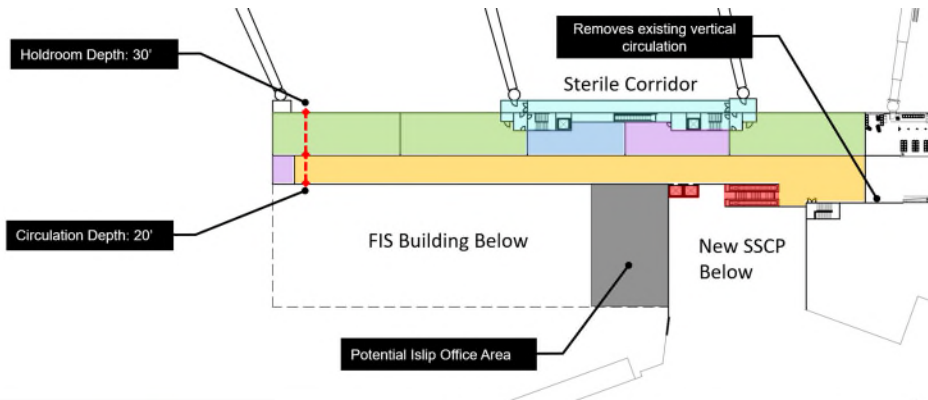


Source: Landrum & Brown, 2019

6.1.2 Alternative 2

Alternative 2 explores a replacement option for both existing Concourse B and the rotunda. This alternative is a direct extension to existing Concourse A and eliminates the vertical transition between the two concourses. This alternative may require Concourse A gates during construction phasing. This concept allows for a seamless transition from Concourse A to B with no vertical changes. **Exhibit 6-4** through **Exhibit 6-6** shows the gate and apron level floorplans and a building cross section to show how the passenger flows would work.

**EXHIBIT 6-4 ALTERNATIVE 2 GATE LEVEL**



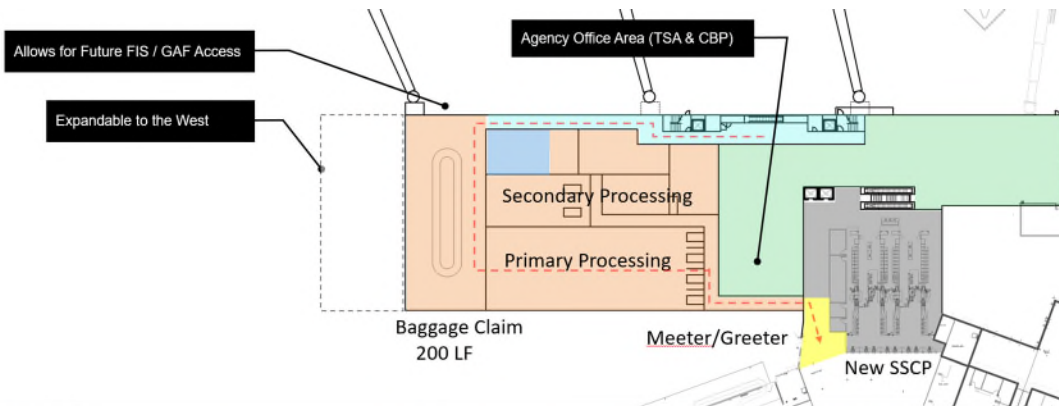
**New Building Area**

Secure Circulation	8,800 SF	Vertical Circulation	1,000 SF
Holdroom	8,300 SF		
Restroom	1,400 SF		
Concessions	1,800 SF		
Sterile Corridor	3,300 SF		

- Demolition of the Central Terminal building
- No Vertical Transition Required
- Phasing required Frontier use of Gates A2-A4 during construction
- Less length allows for future expansion to west

Source: Landrum & Brown, 2019

**EXHIBIT 6-5 ALTERNATIVE 2 APRON LEVEL**



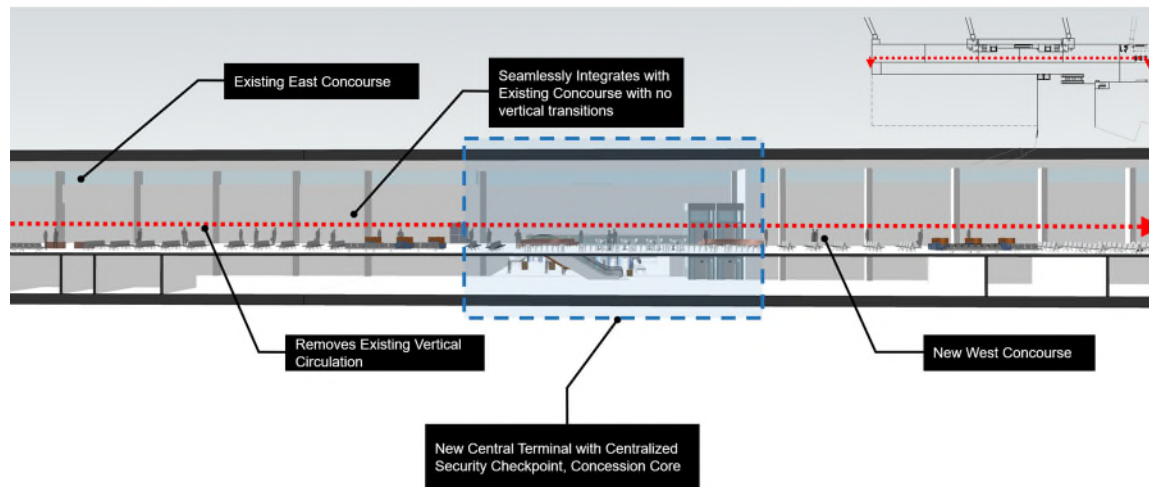
**New Building Area**

CBP Area	26,000 SF	Checkpoint/Exit	9,000 SF
Operations Space	16,000 SF	Meeter/Greeter	1,000 SF
Restroom	1,400 SF		
Sterile Corridor	4,300 SF		

- No Vertical Transition Required
- Phasing required Frontier use of Gates A2-A4 during construction

Source: Landrum & Brown, 2019

**EXHIBIT 6-6 ALTERNATIVE 2 SECTION**



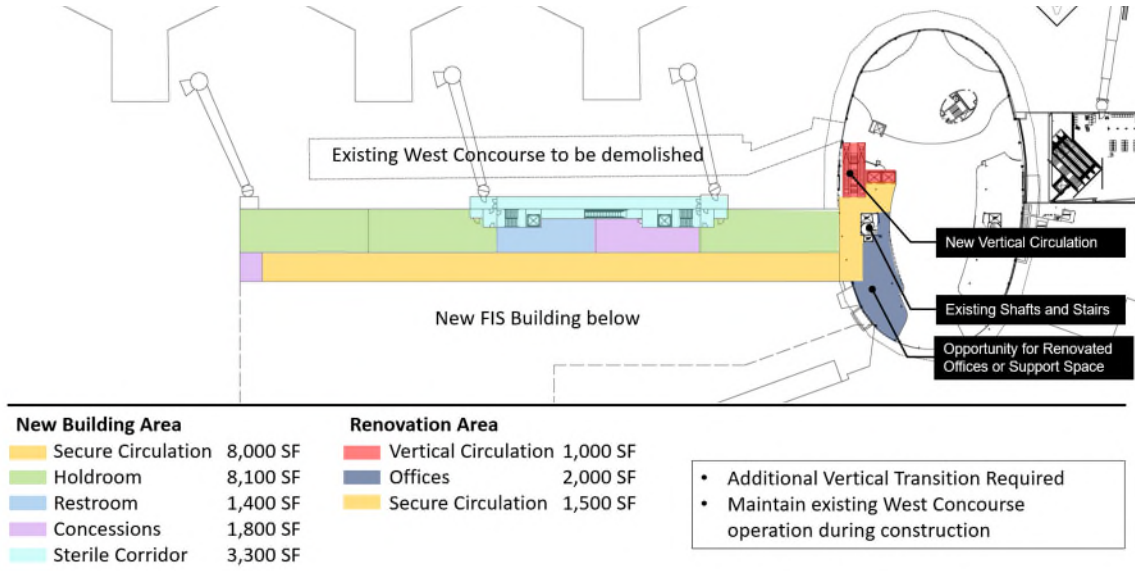
Source: Landrum & Brown, 2019

**6.1.3 Alternative 3**

Alternative 3 explores how the existing Concourse B could remain operational during the construction of the new Concourse B by building the new facility directly south of the existing Concourse B building. Upon completion, the existing building would be demolished, and additional apron pavement would be required. This alternative also maintains the rotunda in order to reduce construction costs. **Exhibit 6-7** through **Exhibit 6-9** shows the gate and apron level floorplans and a building cross section to show how the passenger flows would work.

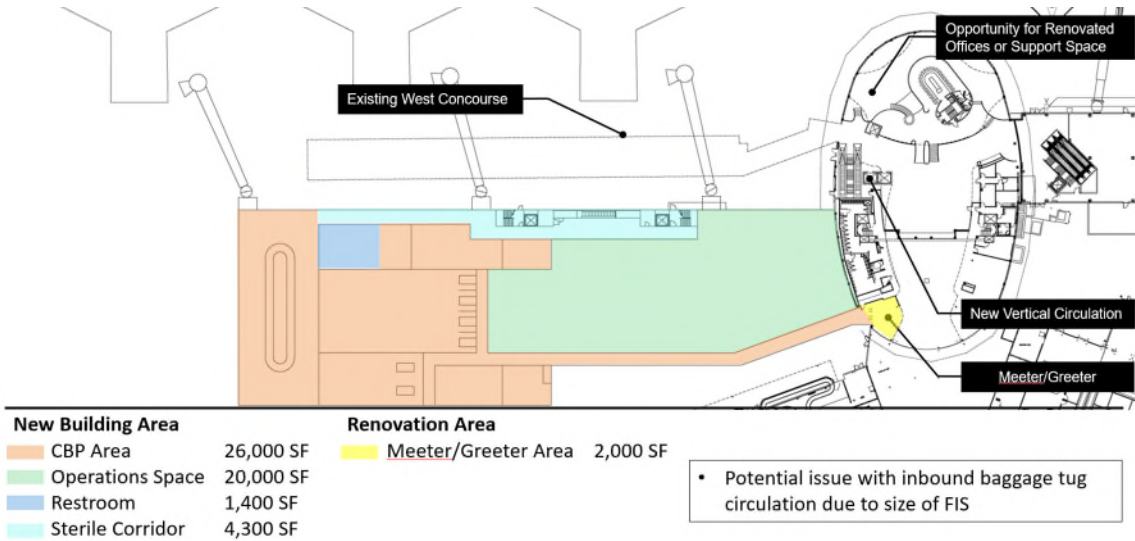
**Exhibit 6-10, Alternative 3B Gate Level** shows a plan alteration that would provide an upper level corridor within the rotunda that would eliminate the level change from Concourse A.

**EXHIBIT 6-7 ALTERNATIVE 3A GATE LEVEL**



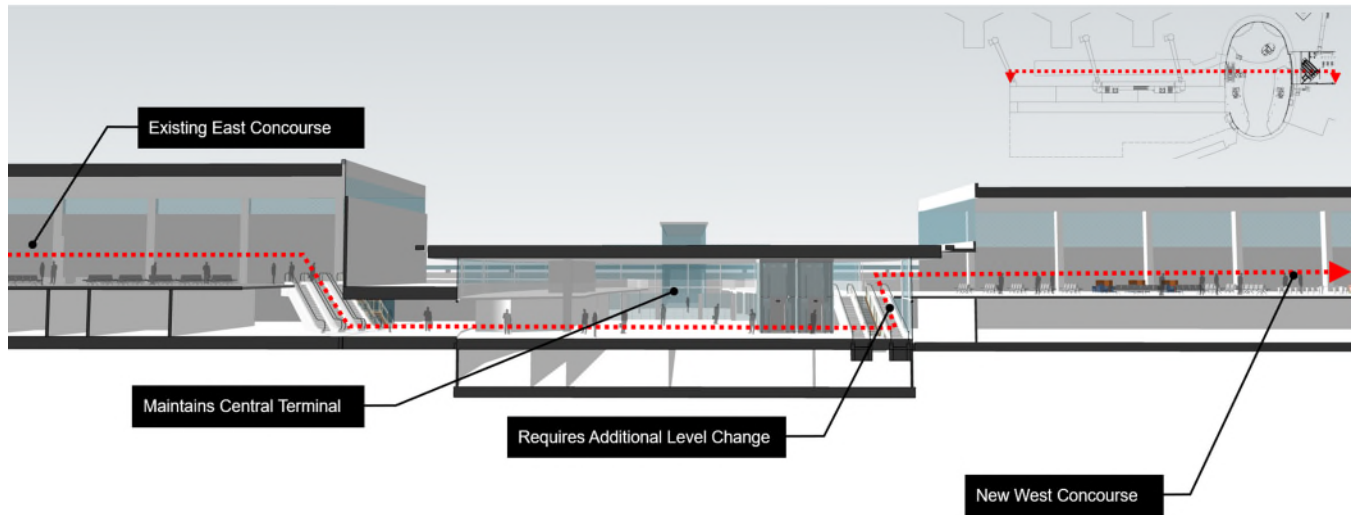
Source: Landrum & Brown, 2019

**EXHIBIT 6-8 ALTERNATIVE 3 APRON LEVEL**



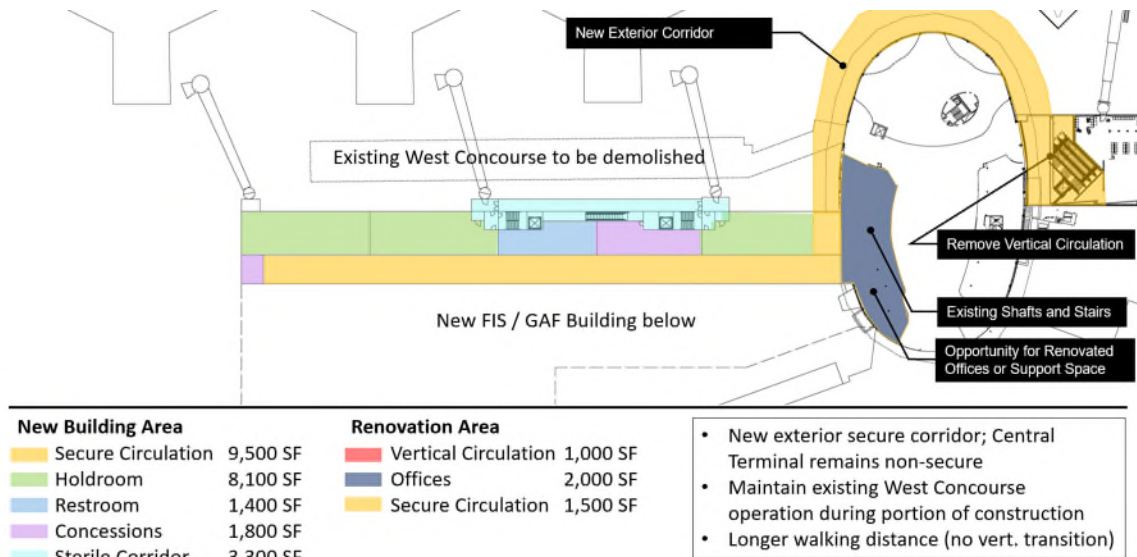
Source: Landrum & Brown, 2019

**EXHIBIT 6-9 ALTERNATIVE 3A SECTION**



Source: Landrum & Brown, 2019

**EXHIBIT 6-10 ALTERNATIVE 3B GATE LEVEL**

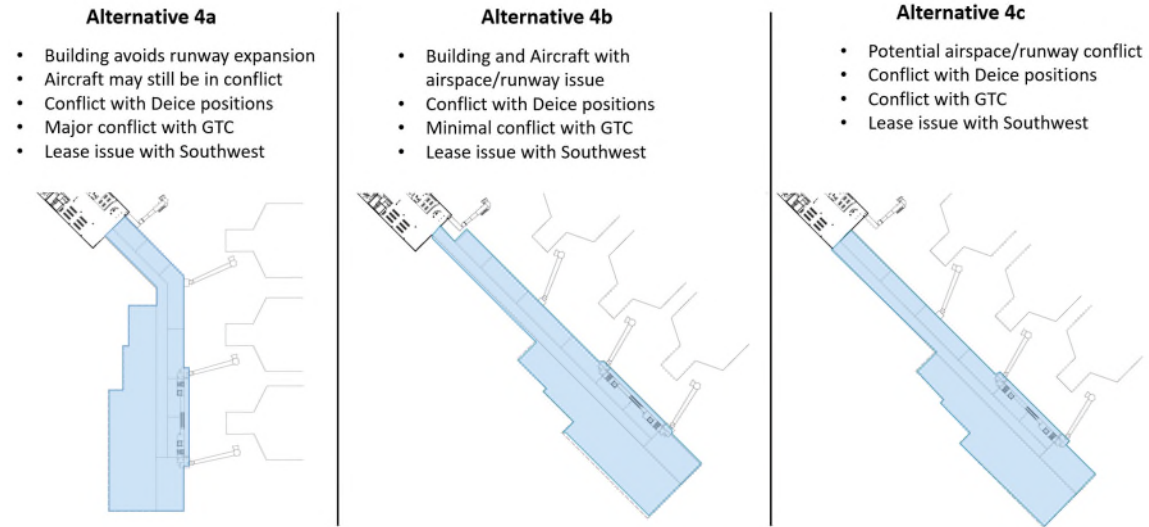


Source: Landrum & Brown, 2019

**6.1.4 Alternative 4**

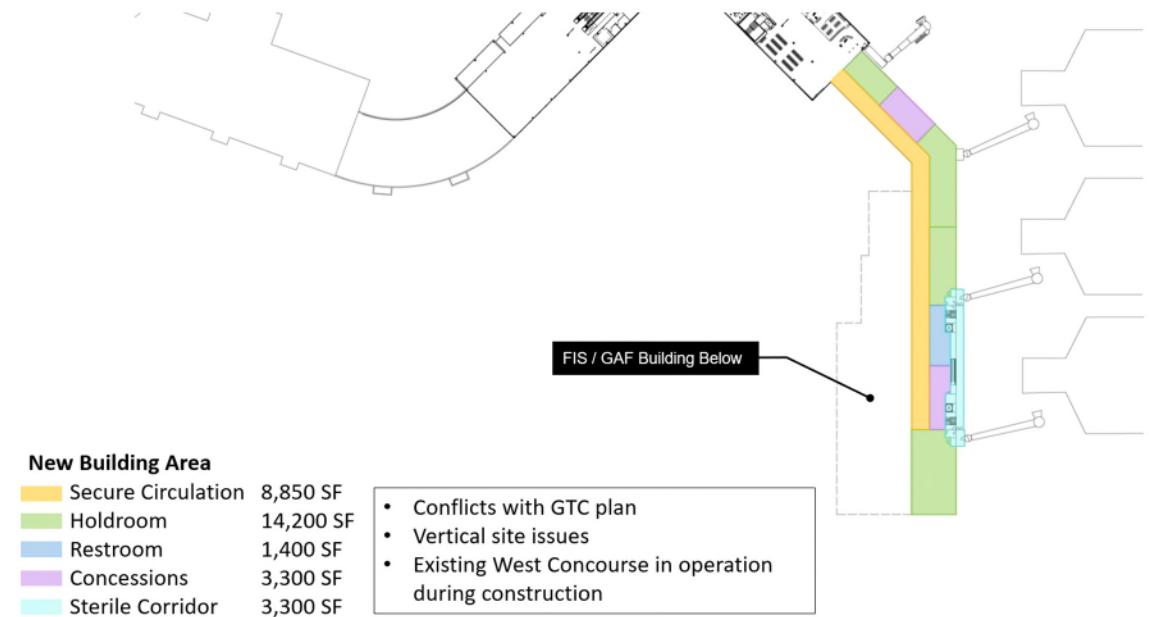
Alternative 3 explores how gate capacity could be added without impacting Concourse B or the rotunda. This alternative extends Concourse A to the east for additional gate capacity. **Exhibit 6-11** through **Exhibit 6-18** shows the gate and apron level floorplans and a building cross section to show how the passenger flows would work. The benefit of this concept is proximity to existing concessions and the security checkpoint. However, due to airspace constraints noted in the earlier section, this concept would be difficult to implement.

**EXHIBIT 6-11 ALTERNATIVE 4 OVERVIEW**



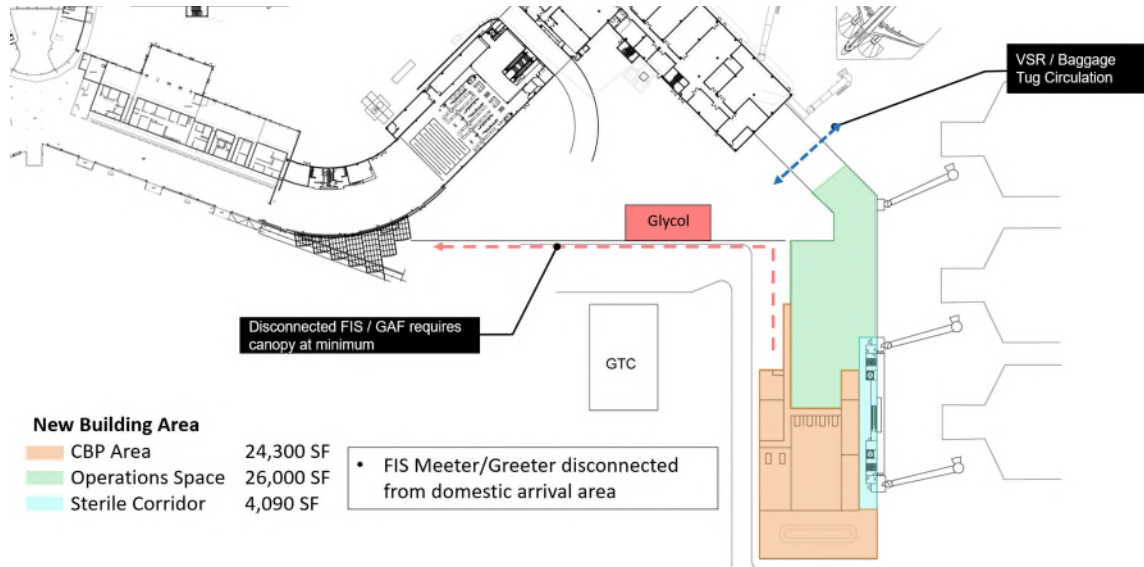
Source: Landrum & Brown, 2019

**EXHIBIT 6-12 ALTERNATIVE 4A GATE LEVEL**



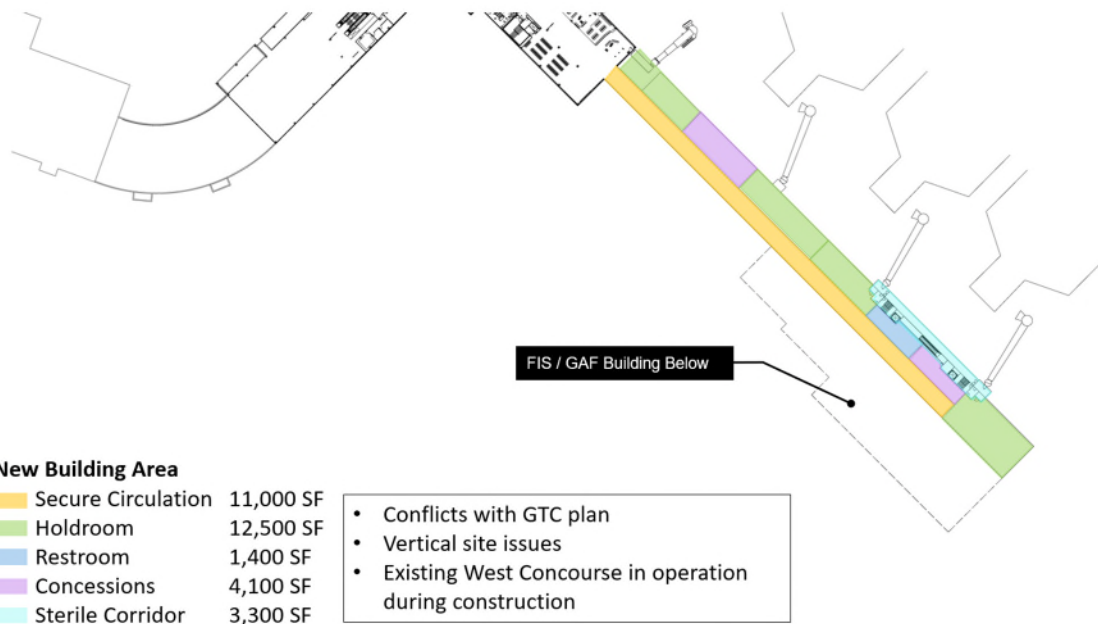
Source: Landrum & Brown, 2019

**EXHIBIT 6-13 ALTERNATIVE 4A APRON LEVEL**



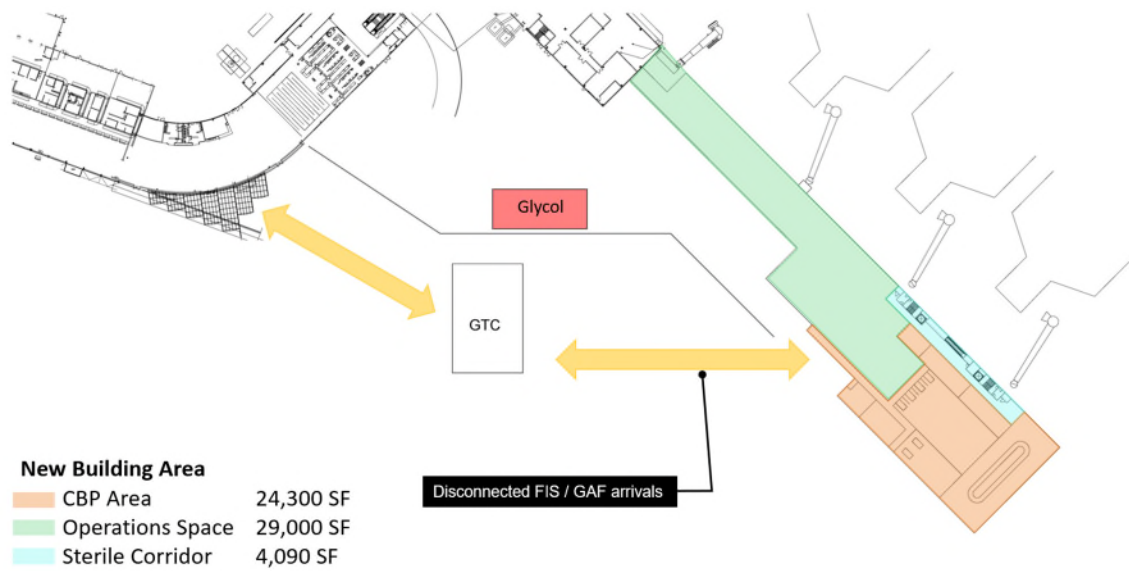
Source: Landrum & Brown, 2019

**EXHIBIT 6-14 ALTERNATIVE 4B GATE LEVEL**



Source: Landrum & Brown, 2019

**EXHIBIT 6-15 ALTERNATIVE 4B APRON LEVEL**



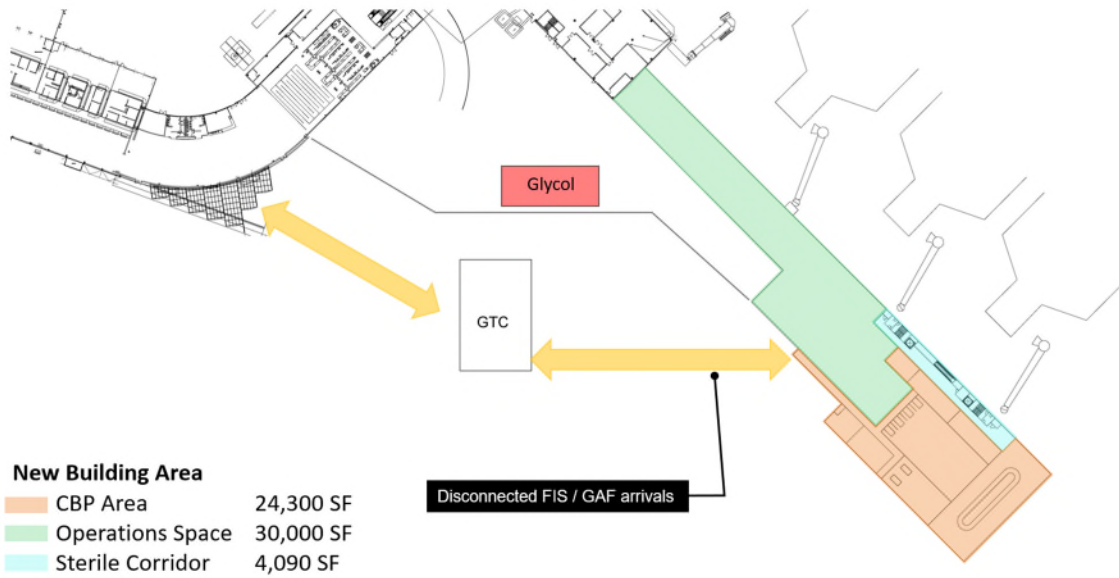
Source: Landrum & Brown, 2019

**EXHIBIT 6-16 ALTERNATIVE 4C GATE LEVEL**



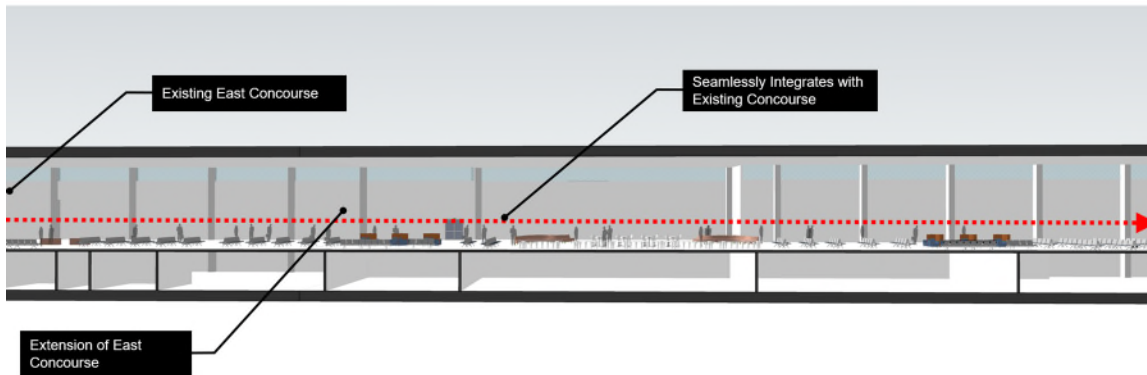
Source: Landrum & Brown, 2019

**EXHIBIT 6-17 ALTERNATIVE 4C APRON LEVEL**



Source: Landrum & Brown, 2019

**EXHIBIT 6-18 ALTERNATIVE 4 SECTION**



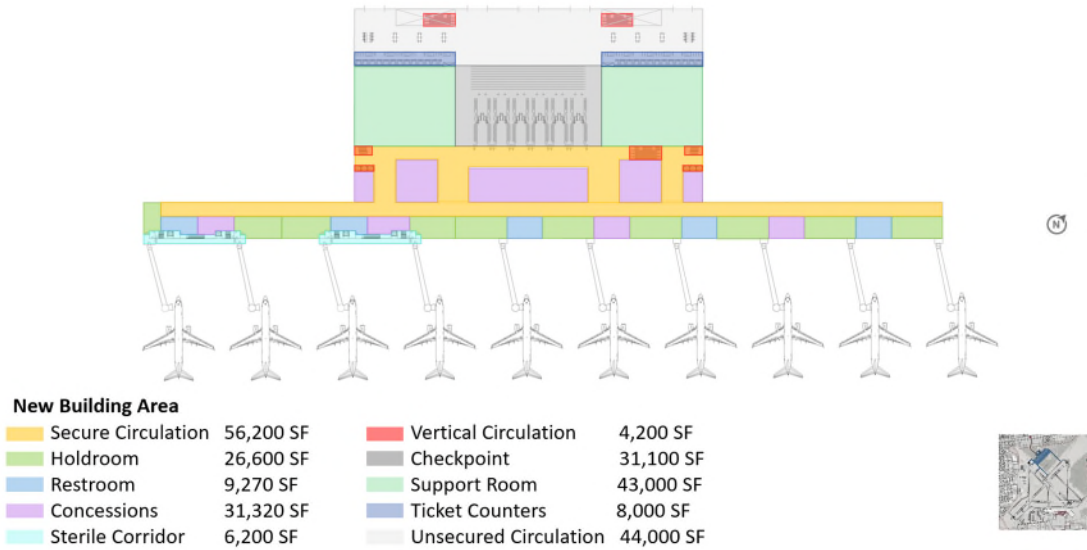
Source: Landrum & Brown, 2019

### 6.1.5 Alternative 5

Alternative 5 is a placeholder concept for the North Terminal. The North Terminal would replace the existing terminal facilities to the south and provide a new FIS facility. **Exhibit 6-19, Alternative 5** shows a placeholder terminal configuration that was roughly based on the 2017 Master Plan North Terminal concept, shown in **Exhibit 6-20, 2017 Master Plan North Terminal Layout**. This plan was originally developed as part of the 2017 Master Plan and was used for reference. This is a placeholder because a final space program had not yet been developed at the time of this analysis. The North Terminal is explored further in the Final Alternatives section.

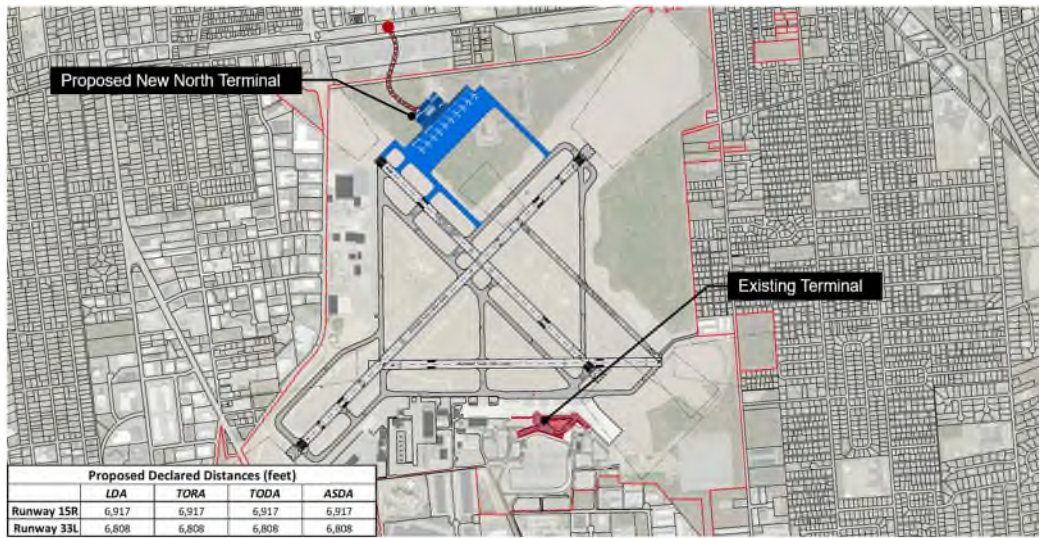
A specific benefit to the North Terminal is a convenient and direct link between the LIRR and the terminal. A review of five airports (SFO, OAK, ATL, MDW and ORD) with public train connectivity to the airport terminals was conducted and found a ridership participation rate of 9-18%. Existing (2019) ridership at ISP, with a difficult and non-direct connection between the train station and the airport, was estimated at 2.3%. Assuming a North terminal convenient access, the 2.3% was doubled and 4.6% and was used as a future low rate, with a 9.0% high rate from the benchmark comparison (lowest) and a middle rate of 6.8% (average of low and high rates) at the 2030 demand level. Applying this range of participation rates for LIRR ridership to ISP suggests a range of daily enplaned passengers from the LIRR at 118-230 per day in the base forecast, and 189-371 per day or 404-790 per day in the two alternative high forecast scenarios from Section 4.8.

**EXHIBIT 6-19 ALTERNATIVE 5**



Source: Landrum & Brown, 2019

**EXHIBIT 6-20 2017 MASTER PLAN NORTH TERMINAL LAYOUT**


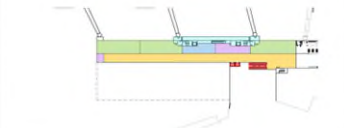
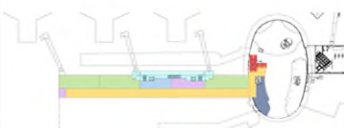




Source: Landrum & Brown, 2019

### 6.1.6 Initial Alternatives Evaluation

A pros and cons evaluation was conducted in coordination with ISP and other airport stakeholders, shown in **Exhibit 6-21, Pros and Cons Analysis**. The team determined that Alternative 2 should be carried forward as the only South Terminal option and that there should be further exploration of Alternative 5, the North Terminal in the next stage of alternative development.

**EXHIBIT 6-21 PROS AND CONS ANALYSIS**

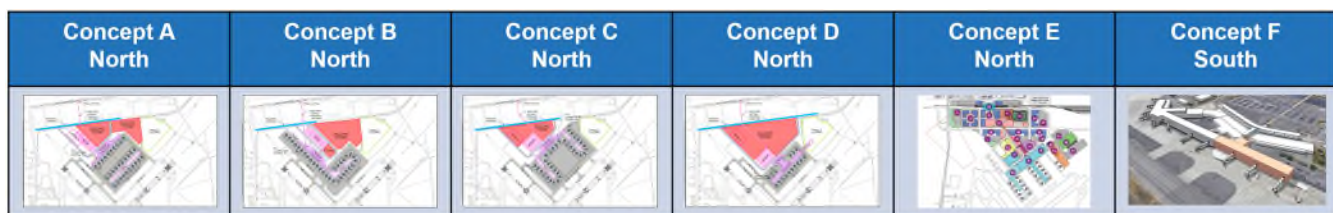
Description	Concept Layout	Pros	Cons
<p><b>Alternative 1 (Eliminated)</b> West expansion, keep Central Terminal</p>		<ul style="list-style-type: none"> <li>• Opportunity to renovate central terminal for offices or concession space</li> </ul>	<ul style="list-style-type: none"> <li>• Central terminal infrastructure upgrade and renovation cost</li> <li>• Requires additional vertical transition</li> <li>• Phasing requires use of east concourse gates</li> </ul>
<p><b>Alternative 2 (Preferred South)</b> West expansion, replace Central Terminal</p>		<ul style="list-style-type: none"> <li>• No upgrade costs for central terminal</li> <li>• No vertical change on concourse</li> <li>• New security checkpoint</li> <li>• Add more gates without impact to FBO</li> </ul>	<ul style="list-style-type: none"> <li>• Phasing requires use of east concourse gates</li> </ul>
<p><b>Alternative 3 (Eliminated)</b> West expansion build behind existing concourse</p>		<ul style="list-style-type: none"> <li>• Enables operations during construction</li> <li>• Opportunity to renovate central terminal for offices or concession space</li> </ul>	<ul style="list-style-type: none"> <li>• Central terminal infrastructure upgrade and renovation cost</li> <li>• Requires additional vertical transition</li> <li>• Expansion encroaches upon inbound bag area</li> </ul>
<p><b>Alternative 4 (Eliminated)</b> East expansion</p>		<ul style="list-style-type: none"> <li>• Enables operations during construction</li> <li>• Balanced walking distance from existing security checkpoint</li> </ul>	<ul style="list-style-type: none"> <li>• Impact to airspace at the runway end</li> <li>• Impact to proposed new GTC</li> <li>• Intl passengers do not exit near existing arrivals &amp; long walk for domestic arrivals to bag claim</li> <li>• Southwest lease issues</li> </ul>
<p><b>Alternative 5 (Preferred North)</b> North relocation</p>		<ul style="list-style-type: none"> <li>• Close to LIRR</li> <li>• Greenfield site enables long-term gate expansion</li> </ul>	<ul style="list-style-type: none"> <li>• High relative cost to build a new terminal</li> <li>• No connectivity and split operations to main terminal</li> <li>• Timeframe for construction</li> </ul>

Source: Landrum & Brown, 2019

## 6.2 Summary of Final Alternatives Analysis

The final round of alternatives development and evaluation includes six terminal concepts; they are shown in **Exhibit 6-22, Concept Overview**. This round of alternatives development expands on the preferred North Terminal concept from the initial alternatives analysis (Alternative 5) by identifying five different North Terminal alternatives. This final round of alternatives development also maintains Alternative 2 (the preferred south option) from the initial alternatives analysis (renamed to Concept F below) as the South Terminal expansion option. The preferred south option (Concept 2/Concept F) was preserved in case it is determined that a North Terminal option is not feasible.

**EXHIBIT 6-22**      **CONCEPT OVERVIEW**

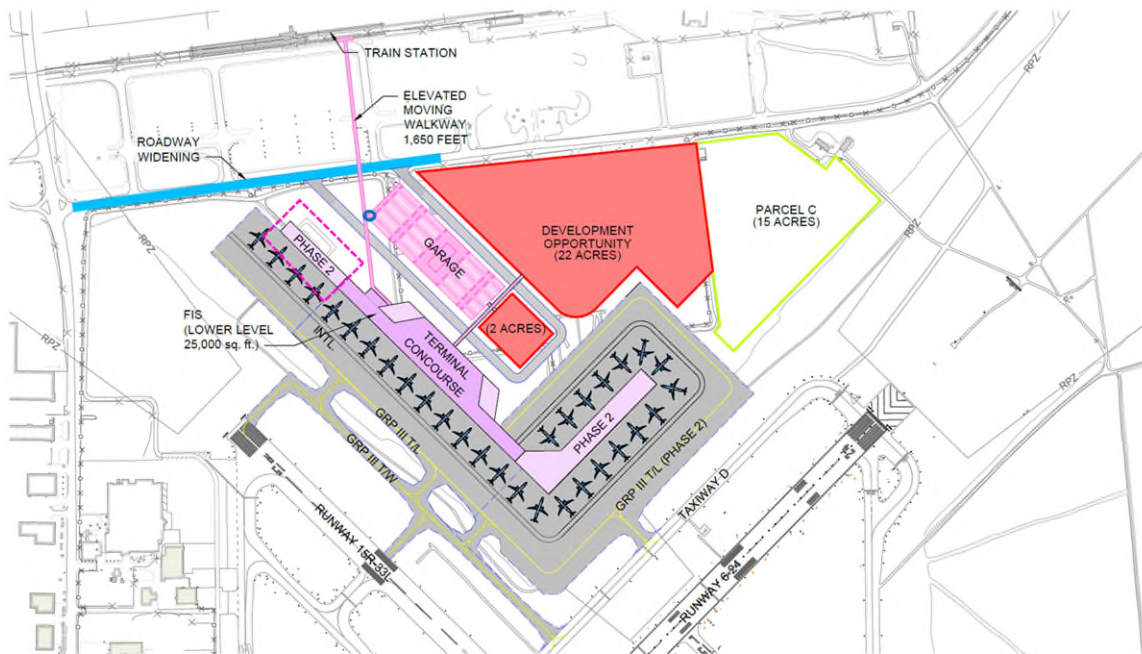


Source: Landrum & Brown, 2019

The North Terminal relocation concepts are the focus of the final alternatives analysis due to the numerous benefits of relocating the terminal. The existing Concourse A and Concourse B area has various site constraints that limit expansion. There are also numerous high cost items that will be required to continue operating the existing terminal, including numerous maintenance upgrades, replacement of Concourse B and future replacement and/or upgrades to Concourse A. The existing terminal processor is obsolete and requires replacement and also needs an in-line BHS. The North Terminal area provides a solution to all of these issues while providing a direct connection to the LIRR and new transit-oriented development.

Based on preliminary analyses and stakeholder input, North Terminal Concept B, shown in **Exhibit 6-23, Concept B**, and North Terminal Concept E, shown in **Exhibit 6-24, Concept E**, were selected for further evaluation and refinement, while South Terminal Concept F (from the initial alternatives analysis) was maintained and unchanged to ensure there is a development option available for the existing terminal area in case it is determined that a North Terminal option is not feasible. Concepts B and E provide opportunities to minimize the walking distances from the LIRR station as well as maximize the acreage of development area.

**EXHIBIT 6-23**      **CONCEPT B**



Source: Landrum & Brown, 2019

**EXHIBIT 6-24**      **CONCEPT E**



Source: Town of Islip, 2019

North terminal Concept B and Concept E were selected because they provide the best customer experience, aircraft operations, and long-term flexibility to expand and support transit-oriented design. This was assessed through a stakeholder review and questionnaire process, as well as input from L&B and ISP airport.

Concept B includes a linear terminal and concourse facility aligned with Runway 15L-33R. This concept has expansion opportunities to the north and to the east. This concept only impacts a portion of the existing compost site area if additional development opportunities are deferred. Concept B has the following advantages:

- Major terminal and airfield safety and efficiency improvements
- Shortest walk to/from LIRR improve the passenger experience by allowing a faster connection to the terminal facilities
- Best parking garage flexibility for the Airport
- Simplified and flexible phasing will ease the implementation of the project
- Does not impact Parcel C, which may possibility allow for earlier implementation because the relocation of the compost site will not be immediately required
- Great development connectivity

Concept E is a double-loaded pier layout that would begin with a single pier and could add up to two additional piers. This concept has a longer walking distance to the LIRR due to the terminal location and placement of additional development opportunities. Concept E has the following advantages:

- Major terminal and airfield safety and efficiency improvements
- Transit oriented design with extensive supporting land uses, including mixed office and retail and numerous other potential uses that enhance this area as a future transit hub
- Acceptable LIRR walk distance provides a reasonable level of service to passengers
- Phasing flexibility will ease the implement of the project
- Sustainable development long-term
- Strong customer experience
- Leverages infrastructure investment to increase aviation activity and convenience
- Development connectivity and investment across entire project




### 6.2.1 Final Alternatives Evaluation

The evaluation process shown in **Exhibit 6-25, Final Evaluation** indicates that the North Terminal options scored higher than the south option to replace Concourse B. The west concourse extension, Concept F, had a lower score in every category except for cost. This was due to the various deficiencies associated with existing terminal processing facilities, location of the existing terminal, and comparing a concourse replacement concept to a new terminal concept.

Scoring was determined and evaluated based on the following factors that were identified as the key comparison criteria at the beginning of the study with the Airport and stakeholders:

- Connectivity and walking distances to the LIRR
- Size (acreage) of development opportunity
- Long-term flexibility and gate capacity
- Phasing feasibility
- Customer experience
- Ability to implement new technology
- Cost

**EXHIBIT 6-25 FINAL EVALUATION**

	Concept B North	Concept E North	Concept F South
			
Connectivity to LIRR	1	1	-1
Development Opportunity	1	1	-1
Long-Term Flexibility	1	1	-1
Phasing	1	1	-1
Customer Experience	1	1	0
Technology	1	1	0
Cost	-1	-1	0
Score	5	5	-4

Source: Landrum & Brown, 2019

## 7 Preferred Concept G

Based on further refinement of Concepts B and E, a new hybrid layout of the North Terminal was identified; named Concept G. This hybrid solution includes the following benefits and provides the best attributes of all the North Terminal concepts that were evaluated:

- Hybrid includes the benefits of both preferred stakeholder alternatives (Concepts B & E)
- Linear concourse provides optimal operational/functional layout (airline preferred)
- Walking distance to the LIRR via an elevated 1,800 LF pedestrian spine (equates to 5-8 minutes)
- Easily phased approach

The configuration of Concept G provides a reasonable walking distance to the LIRR, maximizes the available site area for non-aeronautical commercial development (not associated with this study), and allows for incremental expansion of gate capacity with minimal disruption to ongoing operations.

Concept G provides the best of both concepts with minimal sacrifice. In order to maintain area for commercial development and landside access to the terminal, the walking distance from the LIRR is longer than the 1,650 feet in Concept B, but less than the 1,900 feet in Concept E.

### 7.1 Preferred Concept G – Site Plan

Concept G was selected as the preferred approach, combining Concepts B and E, shown in **Exhibit 7-1** through **Exhibit 7-4**. These exhibits show the following aspects of the preferred North Terminal concept:

- Overview of the airside components
- Connection to the LIRR
- Overview of the landside components
- Commercial development (non-aeronautical revenue) opportunities

#### 7.1.1 Preferred Alternative - Airside

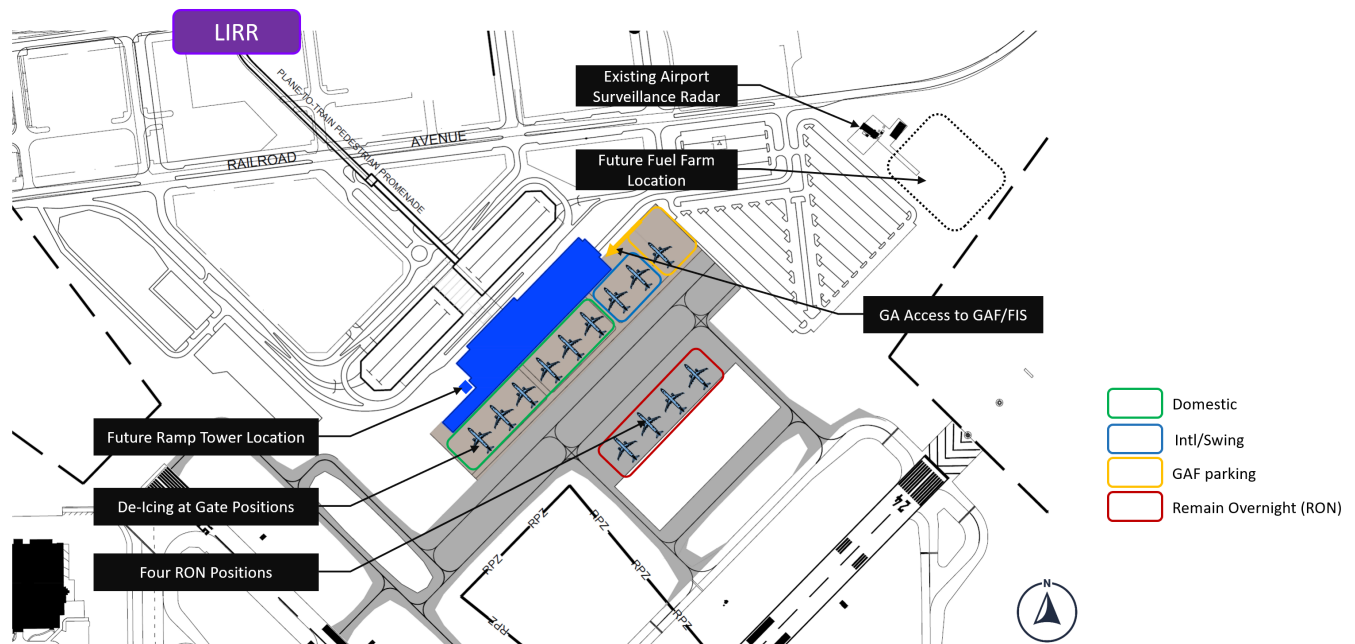
**Exhibit 7-1, Concept G Airside Overview** shows the airside site elements, which include maintaining the existing Airport Surveillance Radar (ASR) in its current location; an airspace case will be submitted to FAA prior to design to confirm that the ASR will be able to remain in place. New infrastructure will be required to support the new terminal including airside utilities, lighting, and pavement. The majority of existing airside support facilities will need to be relocated to the north, including a new fuel farm. A new ramp tower may also be required to support aircraft operations at the new terminal in future phases (beyond Phases 1 and 2) as demand and aircraft increases.

The airport plans to de-ice at each gate position, rather than a dedicated de-icing pad. This configuration is more efficient and cost effective for ISP. There is additional apron area dedicated for Remain Overnight (RON) gate positions providing operational flexibility. In total there will be eight new contact gate positions, six domestic, and two international swing gate positions.

The swing gate positions may operate as international or domestic, providing flexibility for 8 simultaneous domestic operations if there are no international flights. If the airport anticipates more international operations in the future, the terminal could be designed with additional swing gates to support more international arriving flights.

The terminal will include a direct access point to the GAF/FIS for GA aircraft. There is dedicated apron area for GA aircraft with a pathway and direct access point into the GAF/FIS for international arrivals processing of GA passengers. This will continue to allow GA international arrivals processing, but within a new FIS facility that will have capacity to process commercial aviation passengers. While the North Terminal will provide parking positions for any arriving international GA aircraft (where access to CBP can be provided), all other GA operations will remain in their existing location; resulting in no impact to the new North Terminal.

**EXHIBIT 7-1 CONCEPT G AIRSIDE OVERVIEW**



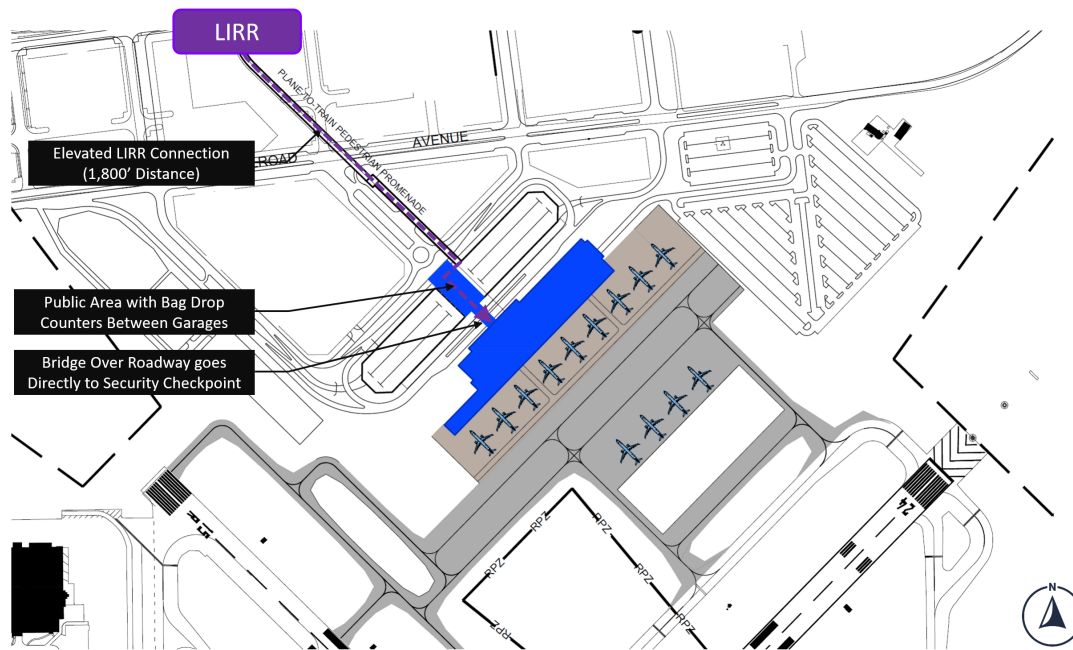
Source: Landrum & Brown, 2021

### 7.1.2 Preferred Alternative – LIRR Connectivity

**Exhibit 7-2, Concept G LIRR Connection** shows the LIRR train access plan. An elevated, enclosed, and air conditioned walkway with moving sidewalks will provide a direct and unimpeded path from the LIRR to the new terminal. The intent of the walkway is to also provide access to possible non-aeronautical commercial development in the future between the LIRR Ronkonkoma Station and the new terminal.

The total distance will be 1,800 feet with a total walk time of 5-8 minutes, most of which will be assisted by moving sidewalks. This connection will enable a higher proportion of passengers to access the LIRR train service more easily, presents new opportunities to attract New York City and Nassau County travelers, and provides access to travel and employment opportunities to disadvantaged communities like Brentwood and Wyandanch. LIRR connectivity reduces carbon emissions and number of automobiles using the roads and highways.

**EXHIBIT 7-2 CONCEPT G LIRR CONNECTION**



Source: Landrum & Brown, 2021

### 7.1.3 Preferred Alternative - Landside

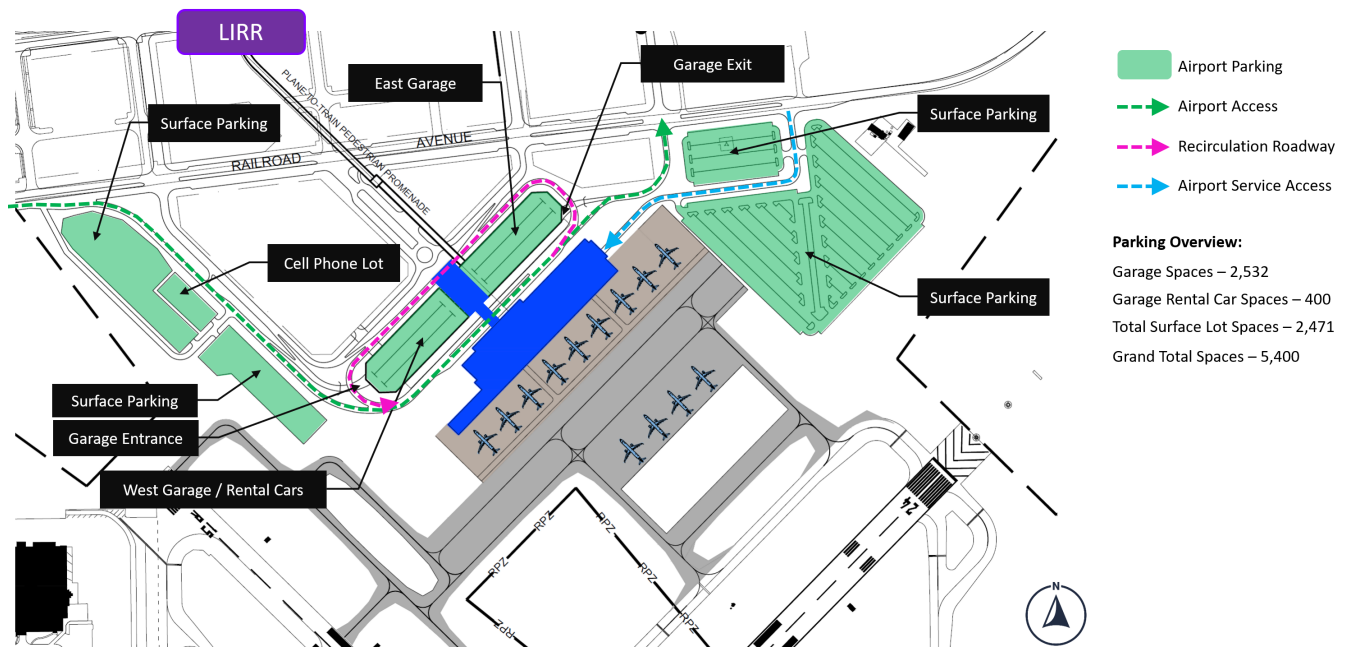
**Exhibit 7-3, Concept G Landside Overview** shows the vehicular traffic flows through the new terminal site and surrounding proposed commercial development area and defines the total number of proposed parking stalls. The north area landside plan includes new parking garage(s) located directly across from the terminal for short-term passenger parking and rental car ready stalls. Connection to LIRR encourages more travelers to use mass transit instead of automobiles. Locating rental car operations within the garage will eliminate the need for busing and provide a better experience for passengers. The rental car Quick Turn Around (QTA) area will remain in the existing South Terminal area. The entry for the garage (rental cars and passenger vehicles) is anticipated to be on the west side of the garage and the exit would be to the east (past the new terminal curbside).

Multiple long-term parking lots are identified for long-term parking, which will have a lower daily parking rate than short-term parking. In addition, it is anticipated that the existing economy, resident, and employee parking lots will remain in the existing South Terminal area locations and will require a bus shuttle system.

To ensure optimal airport access and convenience, there is a dedicated airport access roadway as well as a recirculation loop. The recirculation loop will allow drivers to drop off passengers or recirculate. The loop will also support commercial vehicle recirculation. Additionally, there is a separate entrance for commercial traffic dedicated to servicing the airport, including deliveries.

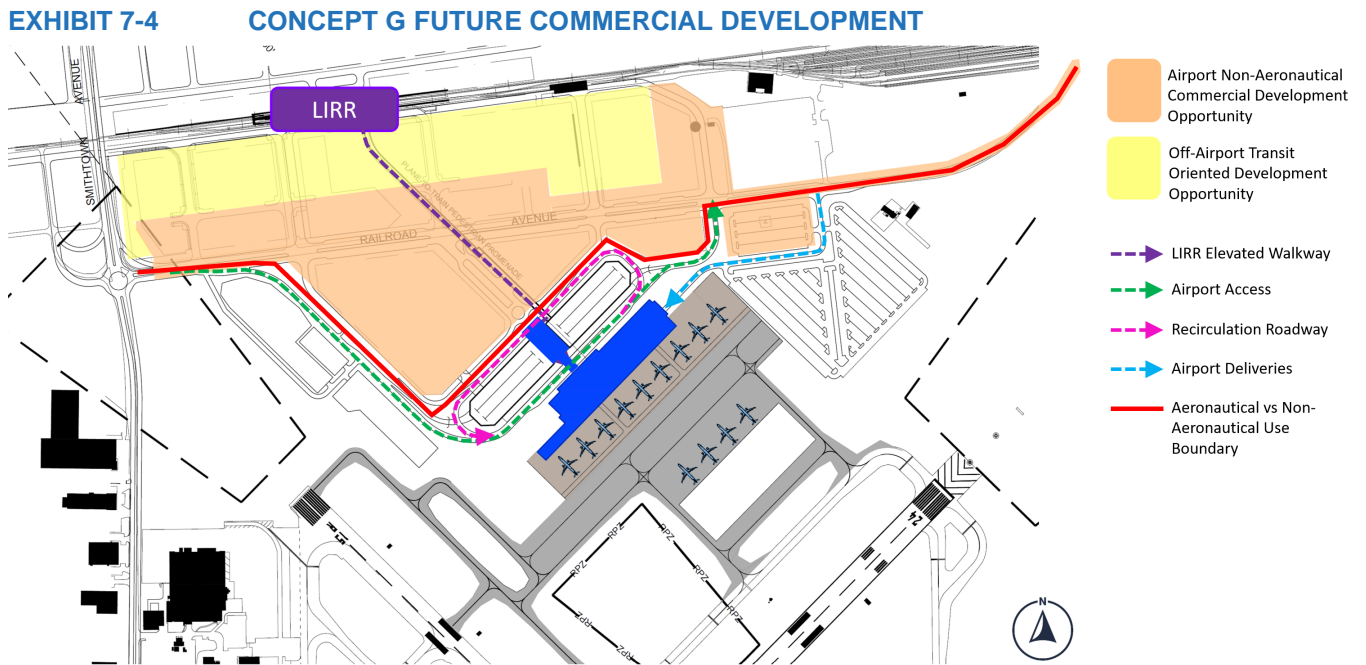
A cell phone lot is identified on the airport entrance road with easy access to the terminal curbside.

**EXHIBIT 7-3 CONCEPT G LANDSIDE OVERVIEW**



Source: Landrum & Brown, 2021

**Exhibit 7-4, Concept G Future Commercial Development** illustrates the planned areas for on-airport future non-aeronautical commercial development (orange) and off-airport transit-oriented development (yellow). An important factor in providing transit-oriented development was to ensure the airport has adequate space for future development. The red line shown in this exhibit defines the boundary of aeronautical vs. non-aeronautical land uses, the area south of the red line can only be used for aviation related functions. The landside vehicular circulation for future commercial development should be separate from the airport roadways to eliminate any traffic concerns and eliminate any vehicular confusion.



Source: Landrum & Brown, 2021

## 7.2 Preferred Concept G – Floor Plans

The new terminal is a three-level building, consisting of the following levels. The floorplans for each level are shown in **Exhibit 7-5** through **Exhibit 7-7**.

- Level 1 – Ground / Apron Level
- Level 2 – Concourse / LIRR Connection Level
- Level 3 – Upper Level

### 7.2.1 Ground/Apron Level

**Exhibit 7-5, *Ground / Apron Level*** is Level 1 of the terminal and is located at the same elevation as the apron and gate area. Level 1 includes many of the building support systems as well as passenger areas. Level 1 includes the following areas:

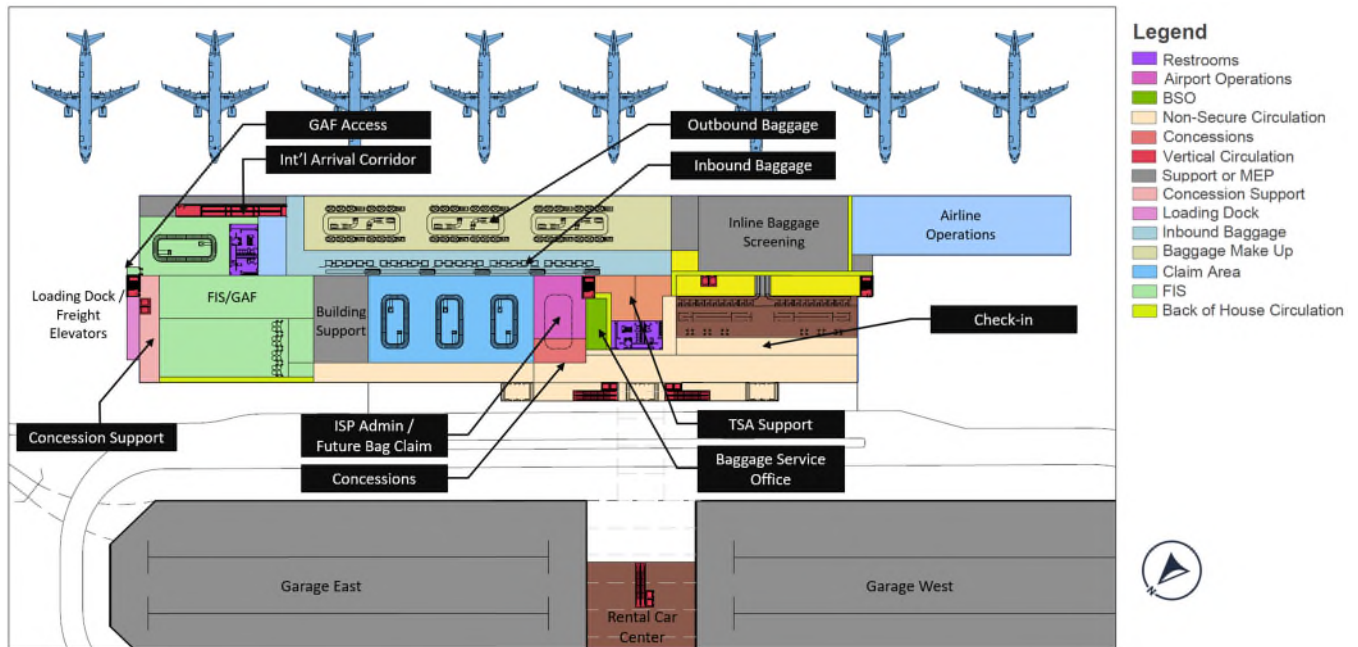
- **FIS/GAF Facility** – This state-of-the-art facility shall process international commercial passengers from the aircraft, through the sterile corridor and down the vertical ramp to the FIS facility. It is anticipated that this facility shall be a “Baggage First” facility, including all parameters according to the most current CBP Airport Technical Design Standards. Internal GA passengers should access the facility directly from the airside apron area with access into the facility.
- **Check-in/Ticketing** – The check-in/ticketing area is flexible to adapt to changes in the airline industry including biometrics, self-baggage drop, amongst others. The open lobby should be clear of any structural columns to allow for maximum flexibility in check-in design.
- **Domestic Baggage Claim/Inbound Baggage** – The preferred plan includes 3 sloped plate baggage claim units that are fed from the inbound baggage conveyors overhead or underneath (to be determined in design). An additional unit can be incorporated in the future as demand increases without further building area. A flexible zone has been identified for a fourth claim unit but can be utilized as concession, ISP Admin support or other uses.
- **Inline Bag Screening (TSA)** – The Central Baggage Inspection Services (CBIS) and Central Baggage Resolution Area (CBRA) are located conveniently behind the ticketing area to minimize baggage conveyor routing. An additional baggage conveyor can be routed from the LIRR spine transit center (between the garages) for passenger convenience for additional baggage drop locations. All bags are screened and cleared and then moved to the Outbound Baggage units.
- **Outbound Baggage** – Once cleared, the bags are routed to one of three units with ample baggage tug cart positions for three cart trains. Tug circulation is clear around both sides of the baggage makeup units with safe and efficient one-way flow.
- **Airline Operations** – Includes Airline Ticket Office (ATO) space directly behind the ticketing area via a non-secure back of house corridor. Airline operations space should be located along the airside apron and spaced as evenly as possible for easy assembly of ramp support agents within eyesight of the aircraft.

- Loading Dock / Receiving – The loading dock is located on the east side of the facility with a dedicated landside vehicular service road. The dock details of compactor, trash and recycling container quantities should be assessed in the design phase. The loading dock area should be lowered 4 feet below the dock platform (which is at the overall building elevation) to allow for truck unloading. Airport and concession support areas are located directly behind the loading dock and have space for an employee and goods screening checkpoint area. Upon clearance to the secure side, a freight elevator is included for access directly up to the service corridor behind the concourse concession spaces for easy transport of goods and removal of trash behind the scenes and away from passenger view.

Level 1 terminal support areas include:

- Building Systems (Mechanical Electrical Plumbing - MEP), restrooms, TSA support, Baggage Service Offices (BSO), back of house circulation, concession support areas, vertical circulation, and non-secure circulation space.

**EXHIBIT 7-5 GROUND / APRON LEVEL**



Source: Landrum & Brown, 2022

## 7.2.2 Concourse / LIRR Connection Level

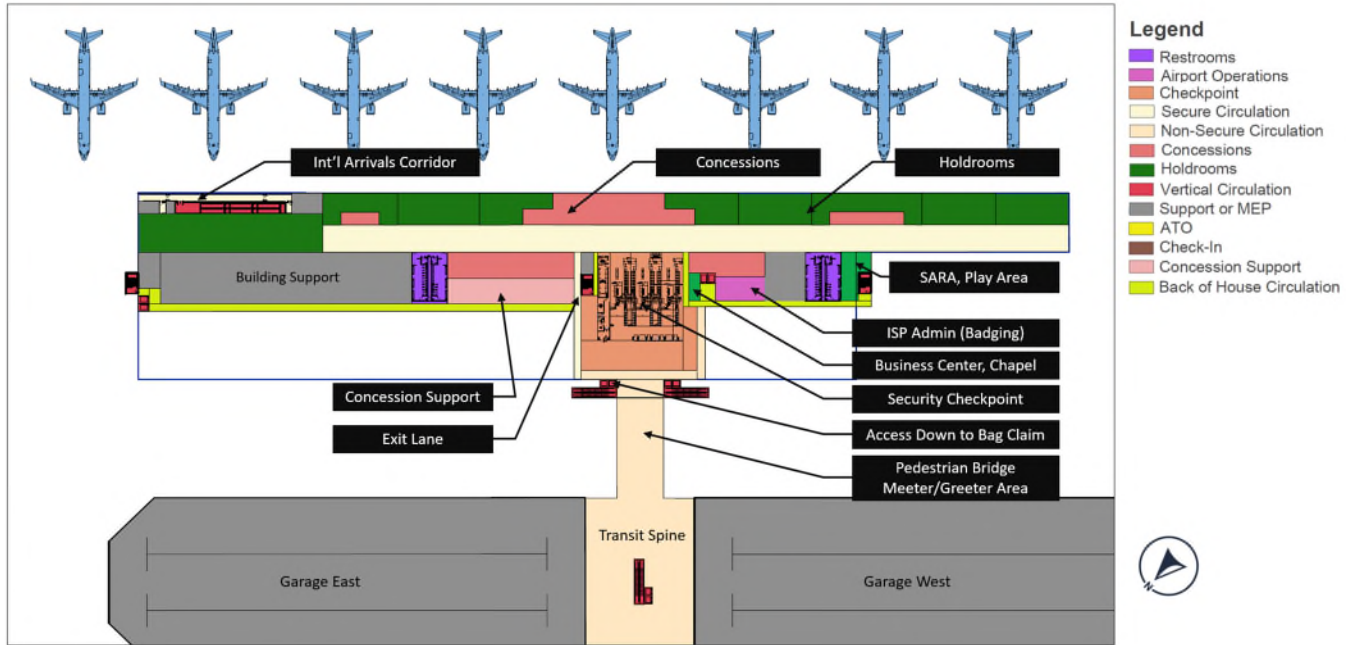
**Exhibit 7-6, Concourse / LIRR Connection Level** is Level 2 of the terminal and is located directly above Level 1. Level 2 has an enclosed and conditioned pedestrian bridge connection across the terminal curbside and into the parking garage and transit spine. The TOD transit spine is the area between the parking garage that will connect the walkway from the LIRR to the pedestrian bridge into the terminal. The bridge and transit spine are the primary path for passengers traversing to and from the LIRR elevated walkway. Level 2 including the following areas:

- **Security Checkpoint** – The central security checkpoint is sized for flexible future phasing as demand increases. The checkpoint has the capability of 5 lanes with expansion to 7 in the future. TSA offices and support are immediately adjacent to the checkpoint and have easy access to a stairwell that provides access to the baggage makeup room and other support space below. The security checkpoint queue is located prior to the lanes with circulation on both sides for the concourse exit lane area (east) and ISP Admin area (west).
- **Holdrooms** – The holdrooms are planned to be open and blended with concessions to increase the customer experience. The blended lines between the holdrooms, concessions and circulation provide an open flexible concourse that can adapt to changes in the aviation industry, aircraft fleet mix changes and intuitive wayfinding.
- **Concessions** – The majority of concessions (revenue generating spaces) are located post-security to take advantage of passenger dwell times. A central concession area is located immediately adjacent to the security checkpoint and concourse exit areas to allow for maximum “foot fall” and revenue generation. The concourse concessions outlets can be supported from a back-of-house corridor with access to the lower level receiving and loading dock. Additional kiosk, bar/restaurant outlets are anticipated along the concourse exterior curtain wall with views of the airfield and mixed within the holdroom spaces.
- **Pedestrian Bridge/Transit Spine** – A pedestrian bridge connects the terminal with the LIRR transit spine, parking garages and rental car center. A true TOD with easy access to the terminals through various modes of transportation. By traversing over the terminal curbside lanes, this provides a safer option for pedestrian access and easy, intuitive wayfinding. Travelers from the LIRR or parking garage can go straight to the security checkpoint and concourse without making any vertical transitions.
- **Meeter/Greeter Area** – Located within the pedestrian bridge is the “meeter/greeter” area. This area provides a comfortable, hospitality-style area for people to wait for those arriving. A non-secure concession (coffee shop or vending) should be located immediately adjacent to this area.

Level 2 includes the following terminal support areas:

- MEP spaces, restrooms, TSA support, back of house circulation, concession support areas, vertical circulation, and airport administration spaces. There are also passenger amenities such as Service Animal Relief Areas (SARA), business center, children’s play area and a chapel on Level 2.

**EXHIBIT 7-6 CONCOURSE / LIRR CONNECTION LEVEL**



Source: Landrum & Brown, 2022

### 7.2.3 Upper Level

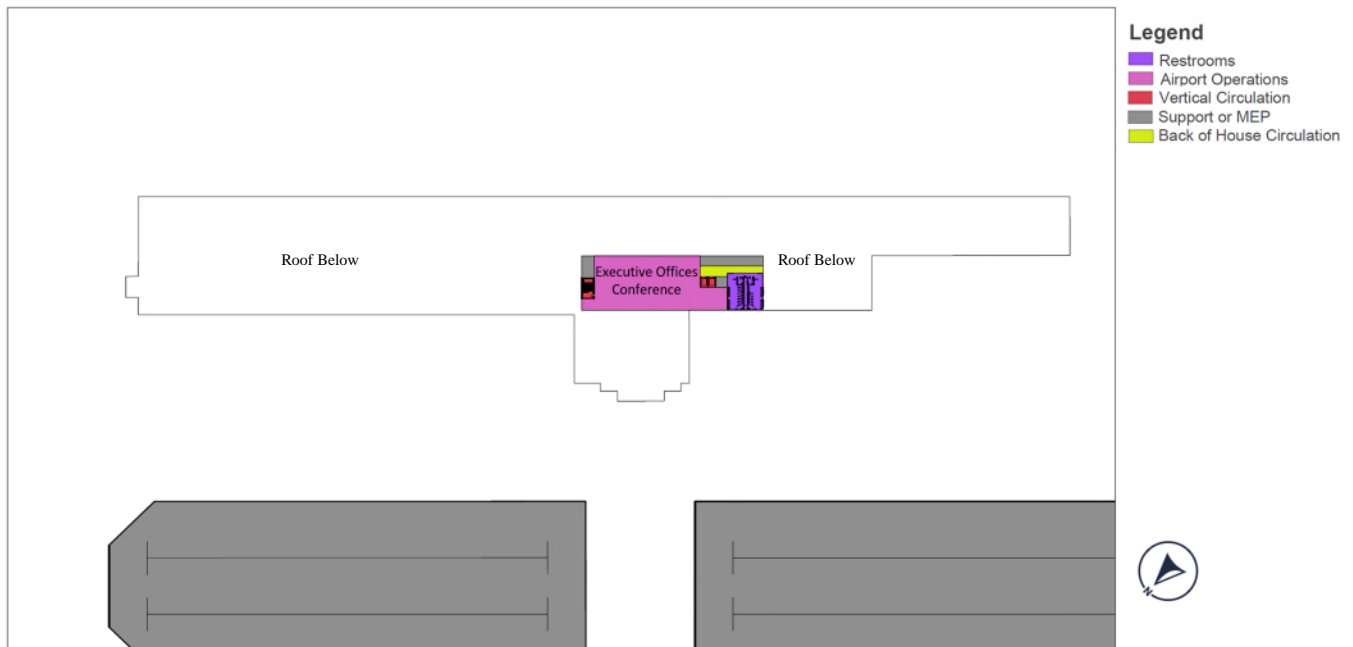
**Exhibit 7-7, Upper Level** is Level 3 of the terminal and is located above the Level 2 security checkpoint. Level 3 is dedicated to airport operations and includes the following spaces:

- Airport Executive Offices – This includes the replacement of the existing Town of Islip Aviation administration area. This is located on the third floor to take advantages of exterior views outward toward the airfield and internally down into the landside security checkpoint and meeter/greeter area. This is accessed by dedicated elevators and include public restrooms.
- Conference Center – A large conference room that can be divisible into 2 separate rooms should be located directly off the public circulation area. This allows for Town of Islip use or for the general public to rent out providing a revenue generating space. This area is intended for use by airport executives and provide a dedicated spaces for the airport to host meetings, conferences, and other events.

Level 3 includes terminal support areas:

- MEP spaces, restrooms and back of house circulation.

#### EXHIBIT 7-7 UPPER LEVEL



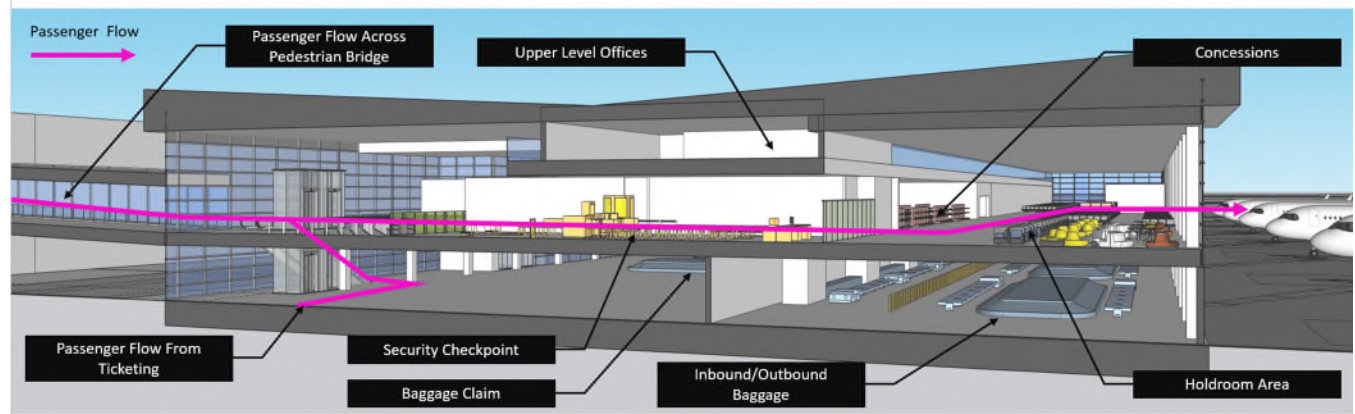
Source: Landrum & Brown, 2022

Note: The area in white is the roof of the second level of the terminal, meaning that the upper level is not fully built out.

### 7.3 Preferred Concept G – Building Section

**Exhibit 7-8, *Building Section*** depicts a vertical slice through the proposed terminal building along the pedestrian bridge and the security checkpoint on Level 2. The passenger flow arrow shows the flow of passenger across the pedestrian bridge and up from ticketing, through the checkpoint and into the gate and holdroom areas. Level 1 areas can be seen, including the baggage claim devices and inbound and outbound bag areas. The Upper Level offices are located above the security checkpoint with views outward.

**EXHIBIT 7-8 BUILDING SECTION**



Source: Landrum & Brown, 2022

## 7.4 Preferred Concept G – Passenger Flows

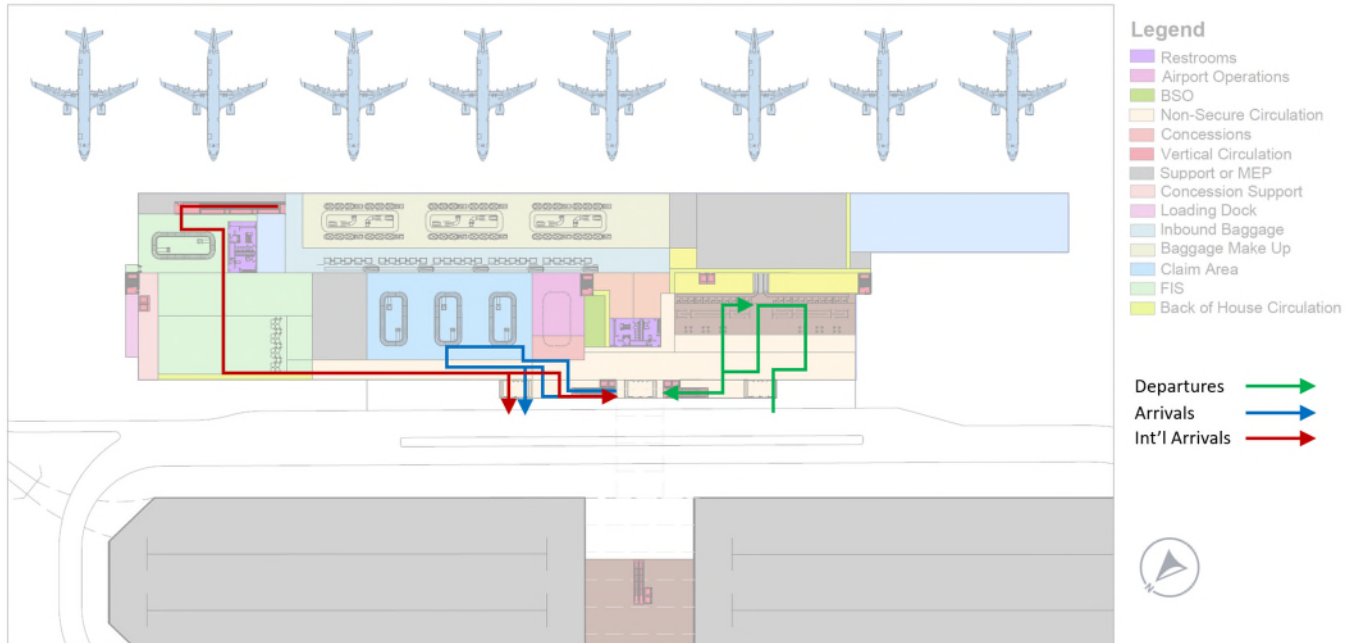
Section 7.4 highlights the flow of passengers through each level of the preferred terminal concept.

### 7.4.1 Ground / Apron Level Passenger Flow

**Exhibit 7-9, *Ground / Apron Level Passenger Flow*** shows departing, arriving and international passengers flowing through the terminal.

- Departing passengers enter the ground level of the terminal from the curb or the concourse level pedestrian bridge, complete check-in, or bag drop, then flow upstairs to the security checkpoint.
- Arriving passengers flow down from the concourse level into baggage claim to collect their checked baggage, then out to the ground level curb or back upstairs to the pedestrian bridge to access the parking garage or transit spine.
- International arriving passengers flow down from the concourse level sterile ramp and into the FIS baggage claim, then to immigration and customs processing, then exit to the curb or upstairs to the pedestrian bridge to access the parking garage or transit spine.

#### EXHIBIT 7-9 GROUND / APRON LEVEL PASSENGER FLOW



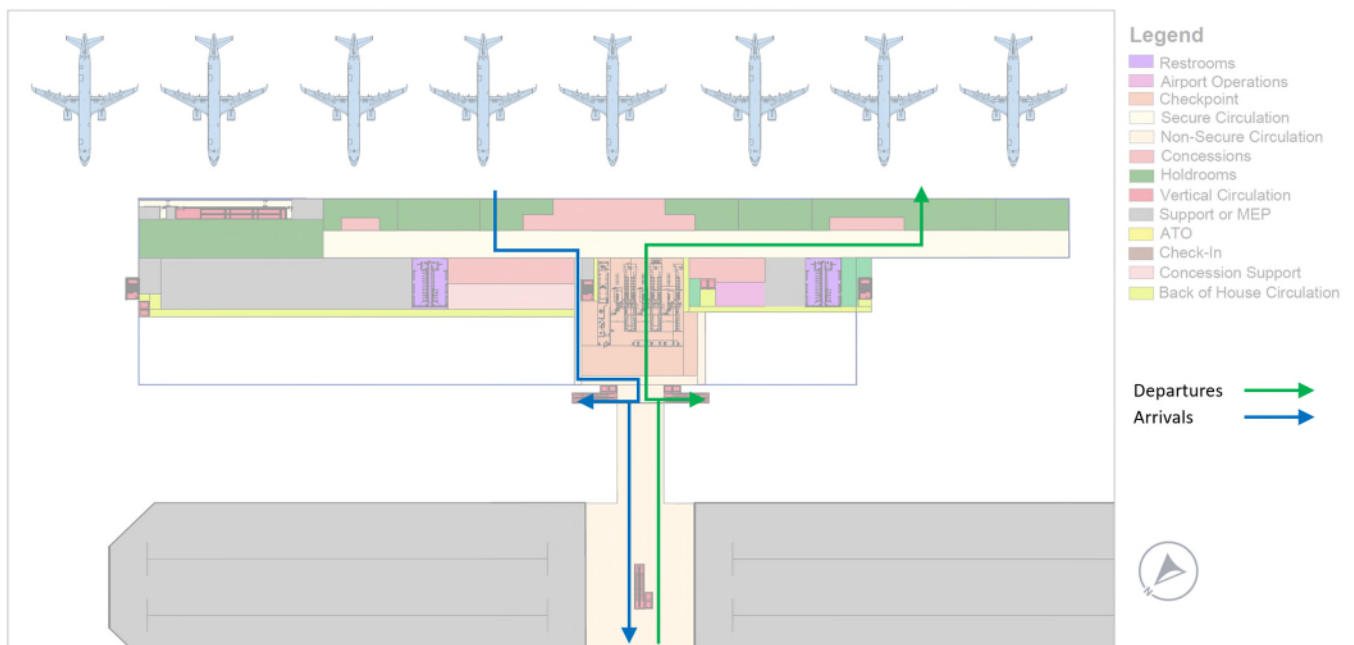
Source: Landrum & Brown, 2022

### 7.4.2 Concourse / LIRR Connection Level Passenger Flow

**Exhibit 7-10, Concourse / LIRR Connection Level Passenger Flow** shows departing and arriving passenger flows on the concourse level.

- Departing passengers enter the security checkpoint from the pedestrian bridge or up from the ground level ticketing area, after security passengers enter the secure concourse area and to holdrooms, concessions and other passenger amenities.
- Arriving domestic passengers enter the secure concourse area after deplaning their aircraft and flow to the exit, located adjacent to the security checkpoint and then proceed to the parking garage or transit spine, or down to the ground level curb or baggage claim.

#### EXHIBIT 7-10 CONCOURSE / LIRR CONNECTION LEVEL PASSENGER FLOW

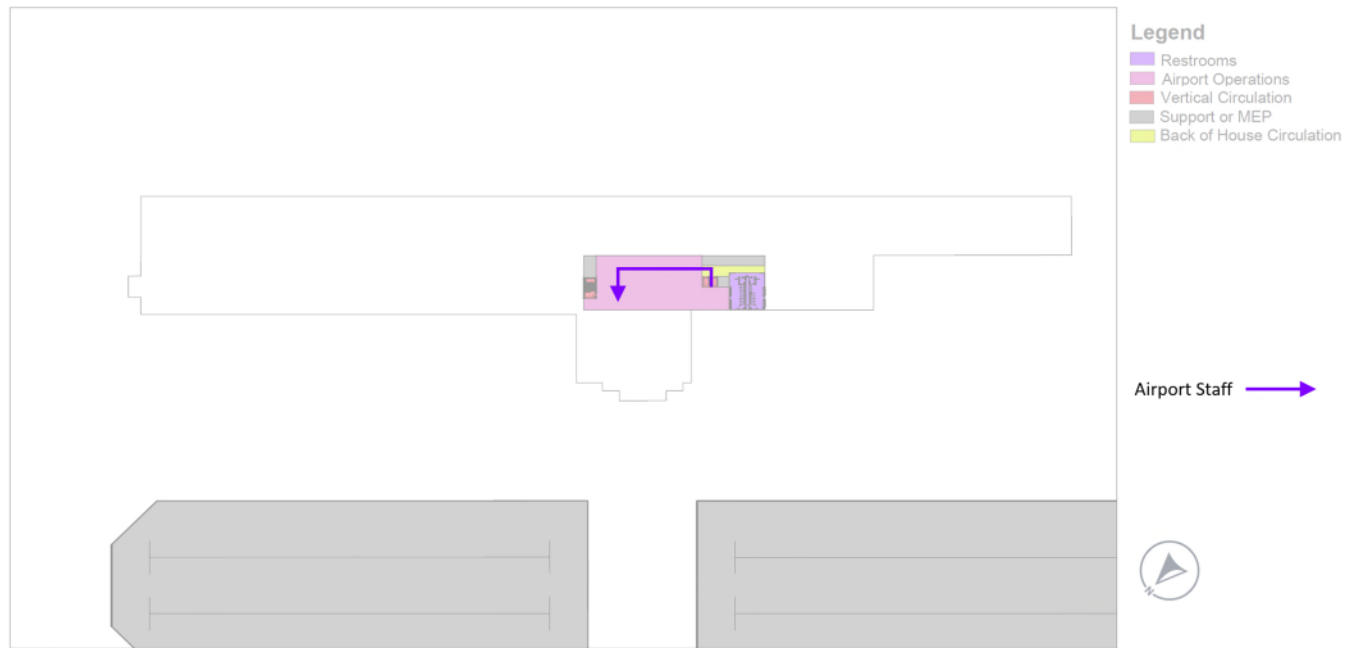


Source: Landrum & Brown, 2022

### 7.4.3 Upper Level Passenger Flow

**Exhibit 7-11, *Upper Level Flow*** show the path of airport staff utilizing elevators to access the upper level of the terminal. This is a non-passenger area but could be accessible to the public for certain airport related events.

#### EXHIBIT 7-11 UPPER LEVEL FLOW



Source: Landrum & Brown, 2022

Note: The area in white is the roof of the second level of the terminal, meaning that the upper level is not fully built out.

## 8 Implementation Plan – Preferred Alternative

This section describes the proposed phasing approach to construct the new North Terminal, shown in **Exhibit 8-1** through **Exhibit 8-4**. The implementation approach is to allow for small incremental concourse growth as demand warrants or new airline carriers fly to ISP in a cost-effective manner. This approach assumes the existing compost facility will be relocated. The following phases have been defined to implement a North Terminal:

- Phase 0 – Enabling phase
- Phase 1 – North Terminal operational with 8 contact gates
- Phase 2 – Add 4 gates for a total of 12 contact gates
- Phase 3 – Add 4 gates for a total of 16 contact gates

### 8.1 Phasing

**Exhibit 8-1, Phase 0** includes the enabling projects that will allow the North Terminal to be constructed. The purpose of this phase is to build all utilities, landside and airside components needed to operate a new terminal building, including the following:

- Closing the existing compost facility
- Site demolition and clearing
- Integration of all required site utilities to support the terminal
- Construction of landside roadways
- Airside infrastructure

**Exhibit 8-2** through **Exhibit 8-4** show Phases 1 through Phase 3 of the North Terminal.

Phase 1 includes the completed 8 contact gate terminal facility with a parking garage, surface lot parking and airside ramp area and taxiways. Phase 1 represents a full operational and complete North Terminal, including 4 Remain Overnight (RON) positions and associated airside taxiways, taxilanes and aircraft parking ramp. Phase 1 should accommodate passenger levels up to 2.0 MAP.

Phase 2 incorporates four new gates with the construction of a south concourse extension, for a total of 12 gates. Phase 2 should accommodate up 2.5 MAP.

Phase 3 includes an additional four gates with the construction of a north concourse extension for a total of 16 gates. Phase 3 should allow for passenger capacity up to 3.5 MAP.

The airport will retain space for additional long-term gate expansion at the North Terminal (beyond the 16 gates in Phase 3) with additional concourse expansion to support new gates and aircraft operations beyond the forecast horizon is possible.

**EXHIBIT 8-1 PHASE 0**



Gate Overview

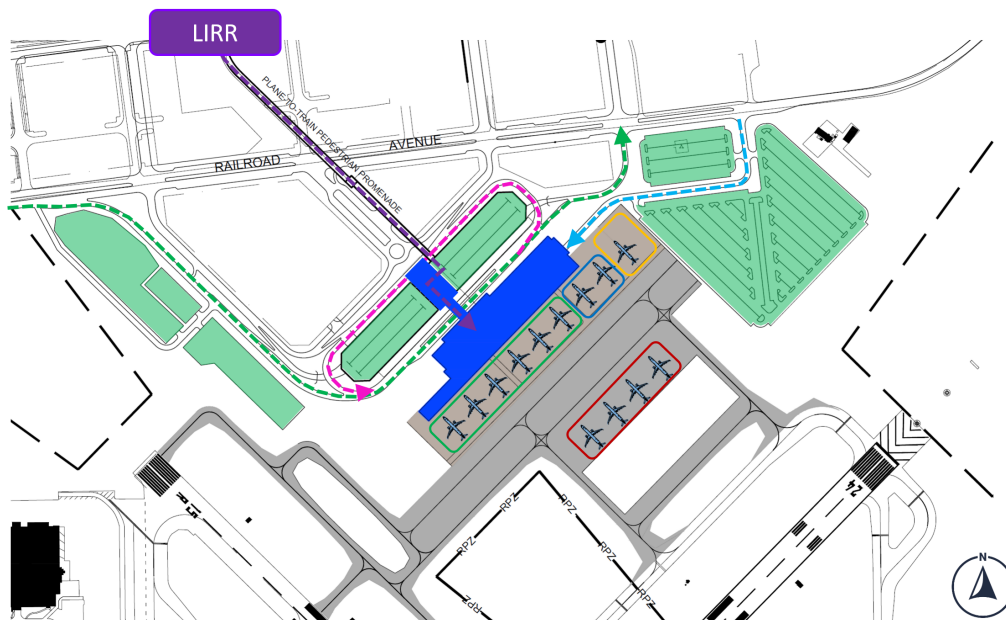
New	Total
0	0

Enabling Phase

- Closing Compost
- Utilities
- Roadways
- Airside Infrastructure

Source: Landrum & Brown, 2022

**EXHIBIT 8-2 PHASE 1**



Gate Overview

New	Total	RON
8	8	4

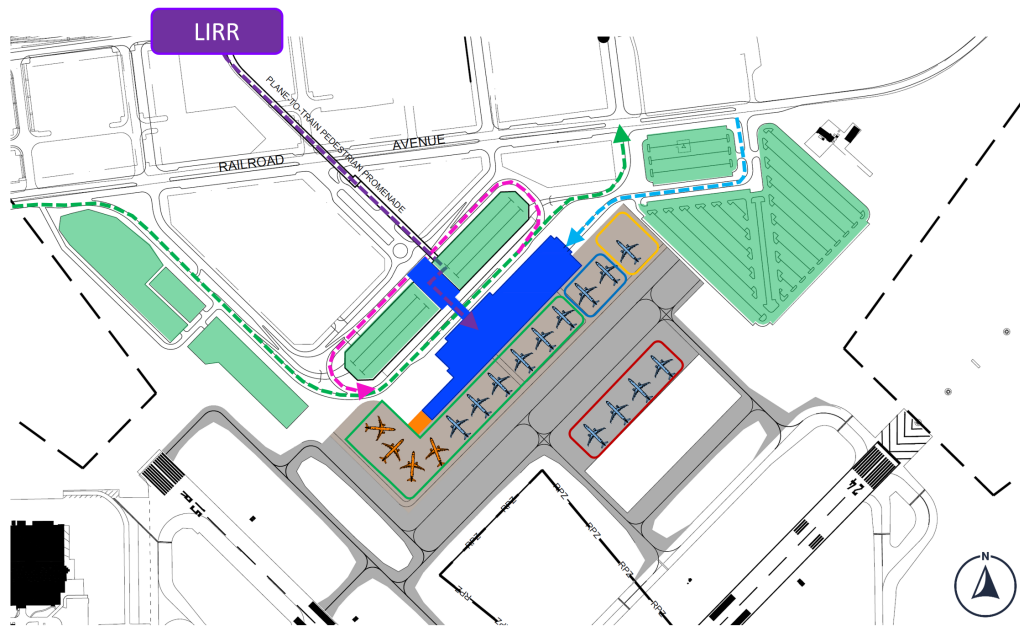
1.8 – 2.0 MAP

Legend:

- Phase 1
- Airport Vehicle Parking
- LIRR Elevated Walkway
- Airport Access
- Recirculation Roadway
- Airport Service Access
- Domestic
- Intl/Swing
- GAF parking
- Remain Overnight (RON)

Source: Landrum & Brown, 2022

**EXHIBIT 8-3 PHASE 2**



**Gate Overview**

New	Total	RON
4	12	4

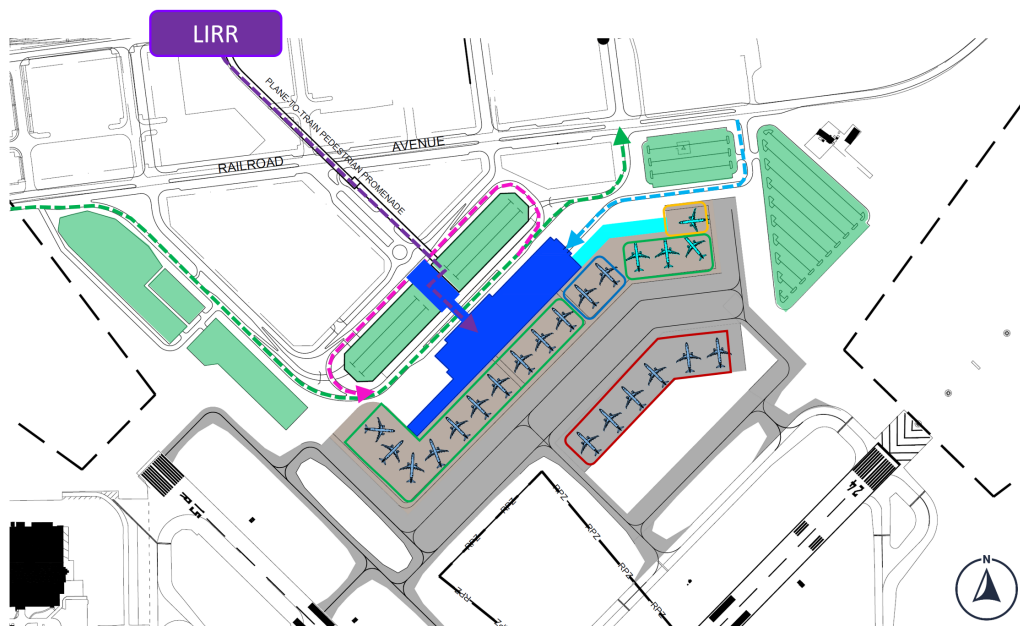
**2.5 MAP**

**Legend:**

- Completed
- Phase 2
- Airport Parking
- - - LIRR Elevated Walkway
- - - Airport Access
- - - Recirculation Roadway
- - - Airport Service Access
- Domestic
- Intl/Swing
- GAF parking
- Remain Overnight (RON)

Source: Landrum & Brown, 2022

**EXHIBIT 8-4 PHASE 3**



**Gate Overview**

New	Total	RON
4	16	6

**3.5 MAP**

**Legend:**

- Completed
- Phase 3
- Airport Parking
- - - LIRR Elevated Walkway
- - - Airport Access
- - - Recirculation Roadway
- - - Airport Service Access
- Domestic
- Intl/Swing
- GAF parking
- Remain Overnight (RON)

Source: Landrum & Brown, 2022

## 8.2 Schedule – Preferred Alternative

The anticipated program schedule is dependent on many factors and decisions in collaboration with the Town of Islip, FAA, and overall stakeholders. The below schedule represents the approximate timeframes and milestones anticipated for full completion of the Phase 1 North Terminal project.

### **Environmental Review** - Approx. 1.5 years

- This is dependent on the level of environmental review determined but the FAA. Refer to Section 10 for further detail.

### **Design** – Approx. 1.5 years

- Separated into multiple packages, including but not limited utilities, landside roadways, parking, airside infrastructure and the new terminal building.

### **Construction** – Approx. 2.5 to 3 years

- This will be constructed according to the final breakdown of design packages and is dependent on the chosen delivery method for the overall program.

### **Proposed Non-Aeronautical Commercial Development** – Time duration unknown

- The Town of Islip is working with a developer to implement the proposed non-aeronautical land uses between the LIRR Ronkonkoma station and the new terminal, including a portion of the LIRR Transit Spine. It is anticipated that this area may have a mix of office, retail and hospitality functions that create a Transit Oriented Development (TOD).

## 9 Financial Analysis – Preferred Alternative

### 9.1 Introduction

#### 9.1.1 Goals of Financial Analysis

The central goal of the financial analysis is to determine the financial viability of proposed capital projects included in the capital program presented by Landrum & Brown on December 9, 2021. The capital program encapsulates several projects related to construction of a new terminal on the north side of the Airport along with the necessary supporting infrastructure. The program includes terminal and airside development, updates to the landside configuration, new parking facilities, and utility connection and improved customer experience with TOD connection.

Financial viability of a program can be defined in a number of different ways, depending on the program, sponsor's goals, objectives, constraints, and risk profile. Establishing the correct parameters is key to performing any meaningful assessment of viability. For the North Terminal development at ISP, we have assessed the impact to the following key parameters after delivery of the North Terminal: (1) total revenue per enplanement and (2) debt service coverage ratio (DSCR). As the program details are further developed, subsequent versions of the financial analysis will incorporate a detailed evaluation of the various risks to the Airport. Given the number of open variables, in particular related to program scoping and funding sources, any attempts to quantify risk at this juncture would not be meaningful.

**It should be noted that the financial analysis completed to date is based on the information currently available.** This information is expected to change as the program is further developed and as the viability and quantum of funding sources are assessed. **As a result, the ultimate financial plan could look different from what is presented in this analysis.**

#### 9.1.2 Method of Financial Analysis

To assess the financial feasibility of the North Terminal, Frasca & Associates ("FRASCA") has created a fully integrated pro forma financial model. The financial model allows the user to run multiple scenarios related to assumptions pertaining to project costs, funding sources and amounts, revenues, operating expenses (opex), along with several other variables. In order to evaluate the long-term impact of the program, the financial model projects out to 2034, which is a full six years past the final phase of construction.

The trajectory of the pro forma projections is determined by the model assumptions. The model assumptions are derived from several sources ranging from supplied data, historical trends, the current aviation and economic environment, and general subject matter expertise. Understanding that even with the most thoroughly vetted assumptions, it is impossible to prognosticate with perfect accuracy, the analysis contemplates multiple scenario ranges wherein certain assumptions are flexed up and down in order to assess the impact on the financial outputs. At this juncture in the analysis, the most impactful variation in assumption values lies in the value of total project costs and the quantum of funding sources.

As noted earlier, it is important to understand that the model results and subsequent conclusions are heavily contingent upon the model assumptions, and these assumptions are likely to change as the due diligence process continues. When these changes occur, FRASCA will update the model accordingly and revisit the model outputs.

## 9.2 Construction Costs – Preferred Alternative

### 9.2.1 Original Cost Estimates (Not Used in Model)

**Table 9-1, Original Project Cost** shows the original project costs as provided by Landrum and Brown in December of 2021. The current set of cost estimates is not escalated due to expected cost savings and reduction in soft costs in the subsequent round of cost estimates.

**TABLE 9-1 ORIGINAL PROJECT COST**

Capex by Phase (\$)	
<b>Concept G - Phase 1</b>	<b>Total Costs</b>
Terminal (Phase 1 - 8 Gates) Total	177,556,000
LIRR Connectivity	54,774,000
Parking	110,117,000
Airport Roads	19,368,000
Airfield Costs (Phase 1)	99,587,000
Utility Connections - Airport Required	11,818,000
<b>Total Costs - Concept G - Phase 1 (Airport Only)</b>	<b>\$ 473,220,000</b>
Utility Connections - Non-Airport	10,000,000
Non-Airport Roads	2,557,000
<b>Total Costs - Concept G - Phase 1 (Non-Airport Only)</b>	<b>\$ 12,557,000</b>
<b>Total Costs - Concept G - Phase 1</b>	<b>\$ 485,777,000</b>
Composting Facility Relocation	40,000,000
<b>Total Costs - Concept G - Phase 1 + Compost</b>	<b>\$ 525,777,000</b>
<b>Phase 1 Soft Costs</b>	<b>257,210,108</b>
<b>Total Costs - Concept G - Phase 1 (Hard and Soft)</b>	<b>\$ 782,987,108</b>
<b>Concept G - Phase 2</b>	<b>Total Costs</b>
Terminal (Phase 2 - 4 Gates) Total	\$ 6,240,000
Airfield Costs (Phase 2)	\$ 11,451,000
<b>Total Costs - Concept G - Phase 2</b>	<b>\$ 17,691,000</b>
Phase 2 Soft Costs	8,654,437
<b>Total Costs - Concept G - Phase 2 (Hard and Soft)</b>	<b>\$ 26,345,437</b>
<b>Grand Total - Phase 1 and 2</b>	<b>Total Costs</b>
<b>Total Costs - Concept G - Phase 1 &amp; 2 (Hard and Soft)</b>	<b>\$ 809,332,546</b>

Source: Landrum & Brown, prepared 12/9/21, with Airport edits

### 9.2.2 Updates to Cost Estimates

At the direction of the Airport, Frasca updated the original cost estimates by paring back the scope of the LIRR connectivity projects and Airport parking facility along with entirely eliminating projects that fell outside the responsibility of the Airport, such as non-Airport utilities and roads and the composting facility relocation. While original, full cost estimates for these items are useful for understanding the scope of the broader capital program, they are not directly relevant to evaluating the financial feasibility of the Airport's proposed balance sheet.

The adjustments consisted of the following:

- Reduced scope of LIRR connectivity by \$37M
- Replaced parking structure with surface lot, removing \$90M in estimated costs
- Removed non-airport utility connections and non-airport roads, carving out \$13M
- Eliminated composting facility relocation, amounting to \$40M in savings
- **Total reductions amount to \$180M in hard costs and another \$87M in soft costs**

There remains the potential to make further reductions to the envisioned capital program. Such reductions would only further enhance the program's financial viability. Conversely, construction cost escalation or augmenting of scope are also possible and such changes could strain the financial viability of the program.

### 9.2.3 Updated Cost Estimates (Used in Model)

**Table 9-2, Updated Cost Estimates** represents the envisioned Airport capital program with the adjustments described in the above section. These cost numbers form the basis for the current model projections. As stated, the current set of cost estimates is not escalated due to expected cost savings and reduction in soft costs in the subsequent round of cost estimates.

**TABLE 9-2 UPDATED COST ESTIMATES**

<b>Capex by Phase (\$)</b>	
<b>Concept G - Phase 1</b>	
	<b>Total Costs</b>
Terminal (Phase 1 - 8 Gates) Total	177,556,000
LIRR Connectivity	18,075,420
Parking	20,117,000
Airport Roads	19,368,000
Airfield Costs (Phase 1)	99,587,000
Utility Connections - Airport Required	11,818,000
<b>Total Costs - Concept G - Phase 1 (Airport Only)</b>	<b>\$ 346,521,420</b>
Utility Connections - Non-Airport	-
Non-Airport Roads	-
<b>Total Costs - Concept G - Phase 1 (Non-Airport Only)</b>	<b>\$ -</b>
<b>Total Costs - Concept G - Phase 1</b>	<b>\$ 346,521,420</b>
Composting Facility Relocation	-
<b>Total Costs - Concept G - Phase 1 + Compost</b>	<b>\$ 346,521,420</b>
<b>Phase 1 Soft Costs</b>	<b>169,518,279</b>
<b>Total Costs - Concept G - Phase 1 (Hard and Soft)</b>	<b>\$ 516,039,699</b>
<b>Concept G - Phase 2</b>	
	<b>Total Costs</b>
Terminal (Phase 2 - 4 Gates) Total	\$ 6,240,000
Airfield Costs (Phase 2)	\$ 11,451,000
<b>Total Costs - Concept G - Phase 2</b>	<b>\$ 17,691,000</b>
<b>Phase 2 Soft Costs</b>	<b>8,654,437</b>
<b>Total Costs - Concept G - Phase 2 (Hard and Soft)</b>	<b>\$ 26,345,437</b>
<b>Grand Total - Phase 1 and 2</b>	
	<b>Total Costs</b>
<b>Total Costs - Concept G - Phase 1 &amp; 2 (Hard and Soft)</b>	<b>\$ 542,385,136</b>

Source: Landrum & Brown, prepared 12/9/21, with Airport edits

## 9.3 New Terminal Capital Improvement Program (CIP) – Preferred Alternative

### 9.3.1 Projects and Timing of Cash Flows

In addition to total project costs, an additional key assumption is the timing of the project cash flows. The current financial model assumes that roughly 65% of the Phase 1 project cash flows occur in FY 2026 and the remaining 35% occur in FY 2027, ultimately allowing for a date of beneficial occupancy in FY 2028. Phase 2 project cash flows are assumed to all take place in FY 2028 and are intended to expand upon the developments in Phase 1. The cash flow timing assumptions are general estimates and have been validated by the Airport. The exact timing of these cash flows will be further refined over the coming months.

Adjustments to the timing of the cash flows will not have a drastic impact on the financial feasibility so long as such changes are coordinated in advance of any related bond issuance. The primary risk lies in an event wherein planned construction work were significantly delayed after bonds had been issued. This would result in a mismatch between new debt service obligations and the additional revenues associated with the North Terminal intended to service the debt.

A detailed breakout of project cash flows by cost center and year are shown in **Exhibit 9-8, Project Cash Flow by Cost Center** in Section 9.5 (Summary of Findings and Conclusions).

### 9.3.2 Funding Sources

**Table 9-3, Fairly Certain Funding Sources** and **Table 9-4, Possible Funding Sources** highlight the envisioned funding sources categorized by certainty of acquisition. The amounts shown here represent the entirety of all available funding sources based on current investigative efforts by the Airport. In the “Pro Forma Projections” section of this report, a “Reduced Grant” scenario is depicted. Out of all the funding sources, none are viewed as “all or nothing”; should any of the fundings sources fail to materialize for the full amount shown below, there is still the potential to receive a reduced amount. As the capital plan is further refined and the availability of each funding source becomes more apparent, it will be important to confirm that the funding sources do not exceed the eligible project costs.

**TABLE 9-3 FAIRLY CERTAIN FUNDING SOURCES**

Project	Funding Source	Amount
Customs Facility	NY State	\$20M
Customs Facility	ESD, County and Town	\$5M
In Line Baggage	TSA	\$20M
New Terminal	NY State	\$40M
New Terminal	Federal AIP Program (Total)	\$35M
New Terminal	Airport PFC Program	\$15M
<b>TOTAL</b>		<b>\$135M</b>

Source: Airport assumptions and FRASCA analysis

**TABLE 9-4 POSSIBLE FUNDING SOURCES**

Project	Funding Source	Amount
New Terminal	BIL ATP FAA (\$15M X 4 years)	\$60M
General	Community Program	\$20M
General	Empire State Development	\$20M
General	Raise for Infrastructure	\$25M
<b>TOTAL</b>		<b>\$125M</b>

**Remaining funding needs: \$282M**

Source: Airport Assumptions and FRASCA Analysis

After accounting for all the “fairly certain” and “potential” funding sources, there is a remaining balance of \$282M. This balance could be covered by several alternative funding sources, which are listed below in **Table 9-5, *Alternative Funding Sources***. Each alternative funding source has different attributes related to the funding structure to the Airport, ease of acquiring, incremental revenue generation required, and time investment from the Airport. It should be noted that out of all the alternative funding sources highlighted below, only debt would require additional incremental revenue generation. It is also possible for several of these funding sources to be structured together. For example, town-backed debt could be issued to provide an upfront funding source and then serviced on a reoccurring basis, from a public-private-partnership (P3) and/or ground lease payments.

**TABLE 9-5 ALTERNATIVE FUNDING SOURCES**

Funding Source	Funding Structure to Airport	Ease of Acquiring	Incremental Revenue Generation Needed	Airport Time Investment
Tax-exempt debt	<i>Upfront</i>	<i>High</i>	<i>Highest</i>	<i>Low</i>
Federal earmark	<i>Upfront</i>	<i>Moderate</i>	<i>None</i>	<i>Low</i>
Alternative revenue generating transaction/P3	<i>Upfront and/or Annual</i>	<i>Moderate</i>	<i>None</i>	<i>High (upfront)</i>
Leasing airport facility/land	<i>Annual</i>	<i>High</i>	<i>None</i>	<i>Moderate</i>

Source: FRASCA Analysis

## 9.4 Pro Forma Projections – Preferred Alternative

### 9.4.1 Approach

A typical pro forma projection of airport financials would involve coming up with independent growth assumptions for aeronautical and non-aeronautical revenues and projecting those revenues over the forecast period. For this particular analysis, the central task is to assess the minimum revenue per enplanement needed to service any debt and opex associated with a full buildout of the North Terminal. The sum of debt service and opex represent the total cost requirements that must be covered by all revenue sources. Currently, the Town-backed debt does not have an additional coverage requirement; therefore, the debt service requirement used in the model calculations is set at 100% of debt service.

The remaining balance represents the revenue that must be covered from aeronautical and non-aeronautical sources. This balance is then divided by the forecast enplanements to arrive at total revenue requirement per enplanement.

As stated in the Introduction section, this assessment of financial viability is contingent upon evaluating the impact of the North Terminal on the following parameters: (1) total revenue per enplanement and (2) debt service coverage ratio (DSCR). The focus on total revenue requirements is due to the fact that the Airport has the ability to meet those requirements through any combination of aeronautical and non-aeronautical revenues. At this point in the process, we believe it is premature to prescribe any particular aeronautical revenue/CPE number. Rather, the focus is on meeting the Airport's goal of minimizing any future CPE increases beyond current levels. Back solving for the required revenues via this calculation also ensures that all of the projected debt service will be adequately serviced in the pro forma projections as the total debt service is built into the revenue requirements.

### 9.4.2 Projection of Funding Sources

**Table 9-6, *Projection of Funding Sources*** highlights each funding source and the underlying pro forma assumptions. These amounts are inclusive of all airport cash flows, including existing airport cash flows.

**TABLE 9-6 PROJECTION OF FUNDING SOURCES**

Item	Starting Assumption	Growth Assumption	Pro Forma FY2030 Value
PFC Revenues	Balance provided by Airport	Enplanements * PFC collection rate (87%) * PFC Charge (\$4.39)	\$2.6M
Cash Fund	Balance provided by Airport	Assume no future cash balance available aside from \$10M carveout assumption validated by the Airport	N.A.
Bond Debt Service	Bond issued beginning of FY in which construction is expected to begin. One bond issued per year for a total of 3 issuances. Also adds existing bond debt service.	Level debt service with a 30-year maturity and a 5.0% interest rate	\$20.5M

Source: Airport Data and FRASCA Analysis

### 9.4.3 Projection of traffic, operating expenses, and revenues

**Table 9-7, *Pro Forma Assumptions*** highlights the underlying pro forma assumptions for enplanement traffic, operating expenses, and revenues. These amounts are inclusive of all airport cash flows, including existing airport cash flows.

**TABLE 9-7 PRO FORMA ASSUMPTIONS**

Item	Starting Assumption	Growth Assumption	Pro Forma FY2030 Value
Enplanement Traffic	FY 2023 estimated enplanements provided by Airport	Forecast provided by Airport, through FY 2030 (avg. growth of 1.3% YoY). Assumed 1.0% YoY growth beyond FY 2030.	684,866
Operating Expenses	FY 2023 estimated enplanements provided by Airport	YoY CPI escalation plus one-time step up as new facilities come online. Growth rate assumptions closely mirror those provided by independent consultant.	\$19.0M
Minimum Required Revenues	Total yearly requirements (total debt service + total opex - developer payments)	Total yearly requirements (total debt service + total opex - developer payments)	\$41.2M

Source: Airport Data and FRASCA Analysis

## 9.5 Summary of Findings and Conclusion

### 9.5.1 Summary of findings and conclusion

In **Table 9-9, *Project Cash Flows by Funding Source and Key Financial Outputs***, highlights the outputs for the current grant scenario. The first section of the table corresponds to the project cash flows associated with the North Terminal by funding source. The second section of the table represents the total revenues required to meet all of the Airport's expenditures, pre- and post-North Terminal.

The financial viability of a capital program is multi-faceted and will depend on a number of elements such as the goals, objectives, constraints, and risk profile of the program sponsor. These elements take time to develop and often are not entirely defined until the scope of the capital program is fully established. Given where the Airport is in the evolution of their North Terminal capital program, the two feasibility parameters that can be confidently identified are the program's impact on total revenue per enplanement and the DSCR. Our analysis has assessed the program's impact on these parameters. We can conclude, thus far, that the financing and implementation of the North Terminal, as outlined in this report, allows these parameters to remain in line with the Airport's goals and objectives. Specifically, it would (1) allow for any increase in total revenue requirements per enplanement to be primarily covered through enhanced non-aeronautical revenues, thereby mitigating any significant increase in airline CPE over current levels and (2) ensure that the Airport is able to fully cover all current and future debt service obligations.

Subsequent versions of the financial analysis will also consider the various risks to the Airport associated with the North Terminal. At this point, any attempts to quantify risk would not be meaningful as there are still a number of open variables that must first be addressed.

Finally, it should be reiterated that the financial analysis completed to date is based on the information currently available and is meant to provide high-level direction related to the development of the capital program. This information is expected to change as the program is further defined and our analysis will be updated accordingly.

**TABLE 9-8 PROJECT CASH FLOW BY COST CENTER**

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Phase 1 (\$ 000's)</b>												
Terminal	\$ -	\$ -	\$ -	\$ -	\$ 177,159	\$ 87,257	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
LIRR	-	-	-	-	18,035	8,883	-	-	-	-	-	-
Parking	-	-	-	-	20,072	9,886	-	-	-	-	-	-
Roads	-	-	-	-	19,325	9,518	-	-	-	-	-	-
Airfield	-	-	-	-	99,364	48,941	-	-	-	-	-	-
Utilities Airside and Landside	-	-	-	-	11,792	5,808	-	-	-	-	-	-
Other Non-Airport	-	-	-	-	-	-	-	-	-	-	-	-
Other/Compost	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 345,747</b>	<b>\$ 170,293</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Phase 2 (\$ 000's)</b>												
Terminal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,293	\$ -	\$ -	\$ -	\$ -	\$ -
Airfield	-	-	-	-	-	-	17,053	-	-	-	-	-
<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 26,345</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>

Source: Airport Assumptions

**TABLE 9-9 PROJECT CASH FLOWS BY FUNDING SOURCE AND KEY FINANCIAL OUTPUTS**

TOTAL	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
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Terminal Planning Study Long Island MacArthur Airport  
November 2022

Project Cash Flows by Funding Source (\$ 000's)															
Total - Phase 1 & 2 (hard and soft)															
AIP Total	\$ 35,000	\$ -	\$ -	\$ -	\$ -	\$ 18,000	\$ 17,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ATP & NY Upstate Terminal Grant	75,000	-	-	-	-	50,000	25,000	-	-	-	-	-	-	-	-
TSA Baggage Grant	20,000	-	-	-	-	13,400	6,600	-	-	-	-	-	-	-	-
FIS Grant	25,000	-	-	-	-	16,750	8,250	-	-	-	-	-	-	-	-
State Grant	40,000	-	-	-	-	26,800	13,200	-	-	-	-	-	-	-	-
Infra Bill	25,000	-	-	-	-	25,000	-	-	-	-	-	-	-	-	-
Community Program and ESD	40,000	-	-	-	-	20,000	20,000	-	-	-	-	-	-	-	-
PFC Pay Go	13,254	-	-	-	-	13,254	-	-	-	-	-	-	-	-	-
PFC to DS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt Financing	258,969	-	-	-	-	161,074	71,549	26,345	-	-	-	-	-	-	-
Cash	10,162	-	-	-	-	6,955	3,207	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$542,385</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$345,747</b>	<b>\$170,293</b>	<b>\$ 26,345</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>

			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
<b>Scenario Output</b>															
Required airport-wide generation (\$ 000's)	revenue		\$ 18,573	\$ 19,344	\$ 18,381	\$ 18,624	\$ 18,862	\$ 19,106	\$ 38,648	\$ 40,902	\$ 41,175	\$ 40,062	\$ 40,451	\$ 40,846	\$ 41,155
Required airport-wide generation per enplanement	revenue		\$ 21.14	\$ 28.27	\$ 26.84	\$ 27.19	\$ 27.54	\$ 27.90	\$ 56.43	\$ 59.72	\$ 60.12	\$ 57.92	\$ 57.90	\$ 57.89	\$ 57.75

\*Note: Grant funding amounts are estimated and will require formal approval

Source: Airport Assumptions and FRASCA Analysis

## 10 Potential Environmental Requirements – Preferred Alternative

This section provides a preliminary review of the environmental considerations for the North Terminal Alternative at Long Island MacArthur Airport (ISP or the Airport). The purpose of considering environmental factors in airport master planning is to help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing.<sup>5</sup>

### 10.1 Regulatory Setting

#### 10.1.1 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) affects airport planning by requiring that environmental impacts of proposed airport development be considered early and throughout the planning process. Environmental feasibility is as important as economic or engineering feasibility in determining how an airport will be developed. This Environmental Requirements section identifies the potential environmental resource categories that may require further investigation. This information serves to support the decision-making process and to aid future NEPA reviews. For subsequent NEPA requirements, the analysis of environmental impacts would be prepared pursuant to Federal Aviation Administration (FAA) Order 1050.1F, *Environmental Impacts: Policies and Procedures*; and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*.

FAA Order 1050.1F states that, unless otherwise exempted, proposed actions and decisions by FAA officials are subject to NEPA review. Specific FAA actions subject to NEPA review can include, but are not limited to, grants, loans, contracts, leases, construction and installation actions, procedural actions, research activities, rulemaking and regulatory actions, certifications, licensing, permits, plans submitted to the FAA that require the FAA's approval, and legislation proposed by the FAA. As such, any airport development that requires an FAA action would be required to undergo an environmental review in accordance with NEPA prior to implementation.

Federal regulations outline three major levels of NEPA review relevant to airport development.

- Categorical Exclusion – applies to those actions that have been found (under normal circumstances) to have no potential for significant environmental impact.
- Environmental Assessment (EA) – applies to those actions that have been found by experience to sometimes have significant environmental impacts. The list of actions normally requiring an EA can be found in Chapter Four of FAA Order 1050.1F. The purpose of an EA is to determine whether the proposed project would have significant impacts. Upon review of the EA findings, the FAA either issues project approval in the form of a Finding of No Significant Impact (FONSI) or

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<sup>5</sup> U.S. Department of Transportation, Federal Aviation Administration; Advisory Circular 150/5070-6B, Change 2; January 27, 2015.

directs the preparation of an Environmental Impact Statement (EIS) to further investigate potential environmental impacts in detail before project approval can be granted.

- Environmental Impact Statement (EIS) – applies to those actions that have been found by experience to usually have significant environmental impacts. The FAA may issue a Record of Decision (ROD) after the Final EIS has been released.

### 10.1.2 FAA Reauthorization Act of 2018

Section 163(d) of the FAA Reauthorization Act of 2018 limits the authority of the FAA to approve ALP changes only when the change would affect one of three zones of interest. FAA retains ALP approval authority for portions of ALPs or ALP revisions that:

- i. Materially impact the safe and efficient operation of aircraft at, to, or from the airport;
- ii. Adversely affect the safety of people or property on the ground adjacent to the airport as a result of aircraft operations; or
- iii. Adversely affect the value of prior Federal investments to a significant extent.

If a project doesn't affect one of the three zones of interest, the FAA will accept rather than approve the ALP. In such cases in which ALP approval is not required, no federal action would occur that would be subject to NEPA.

### 10.1.3 Other Special Purpose Laws

Airport development may be subject to other state and federal environmental regulations. Where applicable, other regulations are discussed in the following sections as they may overlap with or be in addition to the requirements of NEPA.

## 10.2 Purpose and Need

Purpose and Need is a NEPA term that refers to a section of an environmental document, which describes the purpose of, and need for, the proposed Federal action. The problem to be addressed is identified (need), the requested Federal action is noted as a possible solution to the problem (purpose), and information that supports that a problem exists is presented (or referenced). The planning process should provide information sufficient to provide a basis for describing the Purpose and Need for proposed Federal actions. Airport planning provides the basis for a project's purpose and need in environmental evaluation and the alternatives that the FAA will carry into its NEPA analysis.<sup>6</sup>

## 10.3 Environmental Impact Categories

This preliminary review identifies potential environmental impacts associated with the development alternatives that are recommended in this Master Plan Update study. The FAA examines the NEPA

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<sup>6</sup> U.S. Department of Transportation, Federal Aviation Administration; Advisory Circular 150/5070-6B, Change 2; January 27, 2015.

environmental impact categories to determine applicability for its actions. As identified in FAA Order 1050.1F, the NEPA environmental impact categories are:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources (Coastal Barriers and Coastal Zones)
- Department of Transportation Act Section 4(f) Resources
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historical, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks
- Visual Effects (including Light Emissions)
- Water Resources
  - Floodplains
  - Groundwater
  - Surface Water
  - Wetlands
  - Wild and Scenic Rivers

### 10.3.1 Air Quality

The Airport is located within Suffolk County, New York, which is included in the New York-New Jersey-Long Island, NY-NJ-CT Air Quality Region. The U.S. Environmental Protection Agency (EPA) previously determined that the levels of the eight-hour concentration of ozone exceeded the federal standards defining healthful air quality and the area is classified as moderate non-attainment. Suffolk County was previously determined to be non-attainment for fine particulate matter (PM<sub>2.5</sub>); however, the County was redesignated as attainment in April 2014 and now operates under a maintenance plan for this pollutant. Suffolk County was determined to be in attainment for all other federally regulated air quality standards in effect at the time of the preparation of this document.<sup>7</sup>

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<sup>7</sup> U.S. Environmental Protection Agency, Nonattainment Status for Each County by Year for New York, Online at: [https://www3.epa.gov/airquality/greenbook/anayo\\_ny.html](https://www3.epa.gov/airquality/greenbook/anayo_ny.html), Accessed on March 10, 2022.

Two primary laws apply to air quality: NEPA and the CAA including the 1990 Amendments. Any assessment of air quality associated with a Federal action would need to be prepared in accordance with the guidelines provided in the FAA's *Air Quality Procedures for Civilian Airports & Air Force Bases*,<sup>8</sup> and pursuant to FAA Order 5050.4B and FAA Order 1050.1F. An air quality assessment prepared pursuant to these orders and guidelines would be compliant with all the relevant provisions of NEPA, the CAA, and the New York State Implementation Plan (SIP).

The air quality significance threshold from FAA Order 1050.1F is exceeded if the action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the EPA under the Clean Air Act (CAA), for any of the time periods analyzed, or if there is an increase in the frequency or severity of any such existing violations.

To determine the net emissions resulting from construction and operation of the North Terminal Alternative, an emissions inventory would need to be prepared for each alternative, including the no-build alternative. A General Conformity evaluation would be required to determine net emissions from construction and implementation. The emissions inventory would be compared to the relevant *de minimis* thresholds for the pollutants of concern. If emissions exceed applicable *de minimis* thresholds, dispersion analysis may be required.

### 10.3.2 Biological Resources

Biological resources include fish, wildlife, plants, and their respective habitats. A biotic community is an assemblage of living things residing together, including both plants and animals. The Endangered Species Act of 1973 (ESA),<sup>9</sup> as amended, provides for the protection of certain plants and animals, as well as the habitats in which they are found.

Information from the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) system was obtained to determine the species that are found within range of ISP. **Table 10-1, *List of Threatened, Endangered and Candidate Species*** lists those species that may be found within airport property based on the IPaC search. Information collected from the USFWS website indicated that no designated critical habitats for threatened or endangered species was known to exist within the Study Area. It should be noted that the bald eagle is no longer protected under the ESA; however, the species remains protected under the Bald and Golden Eagle Protection Act, which prohibits the disturbance of a bald or golden eagle or their nests. Certain bird species are also protected under the Migratory Bird Treaty Act.

**TABLE 10-1 LIST OF THREATENED, ENDANGERED AND CANDIDATE SPECIES**

TAXONOMIC GROUP	COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS
Mammal	Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened
Birds	Piping plover	<i>Charadrius melodus</i>	Threatened

<sup>8</sup> FAA and USAF, *Air Quality Procedures for Civilian Airports & Air Force Bases*, April 1997.

<sup>9</sup> 16 U.S.C. §1531 et seq. (1973).

Birds	Red knot	<i>Calidris canutus rufa</i>	Threatened
Insect	Monarch butterfly	<i>Danaus plexippus</i>	Candidate
Flowering Plant	Sandplain Gerardia	<i>Agalinis acuta</i>	Endangered
Flowering Plant	Seabeach Amaranth	<i>Amaranthus pumilus</i>	Threatened

Source: USFWS Information for Planning and Conservation (IPaC) website, <https://ipac.ecosphere.fws.gov/>, Accessed February 18, 2022.

Prior to construction of the North Terminal Alternative, survey of potential habitat and/or presence of protected species should be conducted. An updated list of species should be obtained in the event that species' status has changed. Depending upon the findings, consultation may be required between the FAA and USFWS to determine the potential for impacts to protected species in accordance with Section 7 of the ESA. The New York Natural Heritage Program should be consulted to identify any state protected species.

### 10.3.3 Coastal Resources

According to the FAA Order 1050.1F Desk Reference, the activities potentially affecting coastal barrier resources and coastal zones must be assessed in a NEPA review. The *Coastal Barrier Resources Act of 1982* requires that no new Federal expenditures or financial assistance may be made available for construction projects within the boundaries of the Coastal Barriers Resource System. The *Coastal Zone Management Act of 1972* established the Federal Coastal Zone Management Program to encourage and assist states in preparing and implementing management programs to "preserve, protect, develop, and, where possible, to restore or enhance the resources of the nation's coastal zone."

The Airport is not within the Coastal Barrier Resources System according to data accessed from the Fish and Wildlife Service office. The closest protected area in the Coastal Resource Barrier System is the Fire Island National Seashore (Designated NY-59P) located south of ISP.

Pursuant to the *Coastal Zone Management Act of 1972*, New York State adopted its Waterfront Revitalization and Coastal Resources Act (WRCRA, 1981), which created the New York State Coastal Management Program (CMP) under direction of the New York State Department of the State (NYSDOS). The program encourages coordination among all levels of government to promote sound waterfront planning and requires government to consider the goals of the program in making land use decisions.

Because of the location of the North Terminal Alternative, no significant adverse impacts to coastal barrier resources are expected with the construction and implementation of this alternative. If project elements would impact an area protected by the CMP or change the manner in which land, water or other coastal resources are used or change the environmental quality of coastal resources, coordination may be required with the New York Department of State (Division of Coastal Resources) to obtain a Coastal Zone Consistency Review.

### 10.3.4 Climate

Per FAA Order 1050.1F, the discussion of potential climate impacts should be documented in a separate section of the NEPA document, distinct from air quality. Where the proposed action or alternative(s) would result in an increase in GHG emissions, the emissions should be assessed either qualitatively or quantitatively.

Changes in GHG emissions may occur due to the proposed North Terminal Alternative due to emissions from construction vehicles and any changes in aircraft, automobile traffic, or ground support equipment that may occur. The net change in GHG emissions should be calculated and disclosed in the relevant NEPA document either qualitatively or quantitatively. There is currently no threshold of significance for GHG emissions per FAA requirements.

### 10.3.5 Department of Transportation Act Section 4(f) Resources

The Federal statute that governs impacts in this category is commonly known as the Department of Transportation (DOT) Act of 1966, Section 4(f) provisions. Section 4(f) of the DOT Act was recodified and renumbered as Section 303(c) of U.S. Code Title 49 (49 USC). FAA Orders 5050.4B and 1050.1F continue to refer to this statute as Section 4(f) to avoid confusion. Section 4(f) provides that the “Secretary of Transportation will not approve any program or project that requires the use of any publicly-owned land such as a public park, recreation area, or wildlife/waterfowl refuge of national, state, or local significance or land from an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such program, and the project includes all possible planning to minimize harm resulting from the use.”<sup>10</sup> A direct taking of land occurs when land from a 4(f) site is permanently incorporated into a transportation facility. A constructive taking occurs when proximity impacts of a project on a 4(f) property are so severe that the activities, features, or attributes that qualify the property or resources for protection under Section 4(f) are substantially impaired.

Section 6(f) of the Land and Water Conservation Act (LWCA) is also pertinent. Section 6(f) prohibits recreational facilities funded under the LWCA from being converted to non-recreational use unless approval is received from the director of the grantor agency.

Heckscher State Park, Bayard Cutting Arboretum State Park, Connetquot River State Park, and the Seatuck National Wildlife Refuge are all located southwest of ISP and are potential Section 4(f) and or Section 6(f) properties. In addition, two properties in the Town of Islip are listed on the National Register of Historic Places (Werehome at 5500 S. Bay Avenue and Winganhauppauge 77 St. Marks Lane). Both sites are approximately five miles southwest of ISP. A review of 4(f) and 6(f) resources should be conducted to determine if any such resources would be impacted by the North Terminal Alternative.

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<sup>10</sup> FAA Order 1050.1F Desk Reference, Section 5, February 2020.

### 10.3.6 Farmlands

The Farmland Protection Policy Act (FPPA) of 1981 was enacted to minimize the extent to which Federal actions and programs contribute to unnecessary and irreversible conversion of farmland to non-agricultural uses. The Council on Environmental Quality (CEQ) Memorandum on the Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA also urges the FAA to analyze the effects of a proposed action on any prime or unique farmland within the NEPA analysis. The Study area for the North Terminal Development has been partially disturbed by past development activity. Additionally, there are no areas on airport property or in the area of investigation currently being used for agriculture. Since ISP is within a highly urbanized area and no Airport property is currently being used as farmland, no impacts to prime or unique farmland are expected to occur with the implementation of the North Terminal Alternative. Coordination with the U.S. Department of Agriculture (USDA) National Resources Conservation Service (NRCS) may be required to confirm no farmland impacts would occur.

### 10.3.7 Hazardous Materials, Pollution Prevention, and Solid Waste

The two statutes of most importance to the FAA for actions to construct and operate airport facilities are Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for consultation with natural resources' trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment. The FAA has not established a significance threshold for hazardous materials, pollution prevention, and solid waste, however, the FAA Order 1050.1F Desk Reference does list factors to consider when determining if there is a significant impact to hazardous materials and solid waste. These factors are if the action would have the potential to:

- Violate applicable Federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;
- Involve a contaminated site (including but not limited to a site listed on the National Priorities List);
- Produce an appreciably different quantity or type of hazardous waste;
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or
- Adversely affect human health and the environment.

The potential impacts from hazardous materials should be evaluated as part of the environmental documentation process for the North Terminal Alternative. Additional analysis for the proposed development areas such as environmental due diligence audits or environmental site assessments may need to be performed due to the potential to disturb any possible soil contaminants from past activity. Coordination with the New York State Department of Environmental Conservation (NYSDEC), USEPA and other agencies may be necessary.

If any of the development projects associated with the North Terminal Alternative may also include demolition activities this may require coordination with the NYSDEC. Coordination would ensure proper

assessments are conducted and abatement practices are followed if necessary, prior to any demolition. Any impacts to solid waste management programs and processes should also be addressed.

### 10.3.8 Historical, Architectural, Archeological, and Cultural Resources

The *National Historic Preservation Act* of 1966 (NHPA)<sup>11</sup> and the *Archeological and Historic Preservation Act* of 1974<sup>12</sup> are primary Federal laws governing the preservation of historic and prehistoric resources, encompassing art, architecture, archaeological, and other cultural resources. Section 106 of the NHPA requires that, prior to approval of a Federal or Federally-assisted project, or before the issuance of a license, permit, or other similar approval, Federal agencies take into account the effect of the project on properties that are on or eligible for listing on the National Register of Historic Places (NRHP).

As described in 36 CFR 800.4(a)(1) and in 36 CFR 800.16(d) the Area of Potential Effect (APE) for historic resources should be defined for the North Terminal Alternative. An assessment should be conducted to determine if any historic or archaeological sites are located within the APE. A determination in accordance with 36 CFR 800.4 and 36 CFR 800.5 would need to be included in the environmental documentation. Consultation with the State Historic Preservation Office may be required.

### 10.3.9 Land Use

The FAA has not established a significance threshold for land use. The determination that significant land use impacts exist is normally dependent on the significance of other impact categories. Conflicts may also occur when the proposed action or alternative(s) creates development that is incompatible with existing and/or future planned uses in the study area. Therefore, an evaluation of the land use and zoning compatibility should be conducted for the proposed North Terminal Alternative. In addition, the Town of Islip as the owner and operator of ISP is required to provide written assurance to the FAA that appropriate action has been or will be taken to the extent reasonable to restrict the use of land adjacent to, or in the immediate vicinity of the Airport, to activities and purposes compatible with normal airport operations in accordance with 49 United States Code (U.S.C.) § 47107(a)(10), formerly Section 511(a)(5) of the Airport and Airway Improvement Act of 1982.<sup>13</sup>

### 10.3.10 Noise and Noise-Compatible Land Use

The FAA Order 1050.1F Desk Reference states the significance threshold for noise and noise compatible land use is if the action would increase noise by the Day Night Average Sound Level (DNL) 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. Additionally, the FAA gives special consideration to the evaluation of the significance of noise impacts on noise sensitive areas within Section

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<sup>11</sup> Public Law 89-665; 16 U.S.C. 470 et seq.

<sup>12</sup> Public Law 86-523, 16 U.S.C. 469-469c-2

<sup>13</sup> FAA Order 1050.1E Environmental Impacts: Policies and Procedures. Appendix A, *Analysis of Environmental Impact Categories*, Section 4.1b, March 20, 2006; as set forth in the Aviation Safety and Noise Abatement Act of 1979, as amended (49 U.S.C. 47501-47507).

4(f) properties where the land use compatibility guidelines in 14 CFR part 150 are not relevant to the value, significance, and enjoyment of the area in question.

As part of the NEPA process, a noise analysis would need to be conducted to determine the potential impacts due to any projects under consideration. If a noise increase was determined to be a significant impact, as defined in FAA Order 1050.1F, to any of the surrounding properties, mitigation would need to be provided. If the preliminary analysis shows that no changes to aircraft operating levels, fleet mix, runway use, flight paths, or other operational factors would change, a quantitative noise analysis may not be required.

### 10.3.11 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature, or a combination of the two. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s).

The FAA has not established a significance threshold for socioeconomic impacts, environmental justice, and children's environmental health and safety risks. However, factors to consider when reviewing a potential action include:

- The potential to induce substantial economic growth in the area, either directly or indirectly;
- Disruption or division of the physical arrangement of an established community;
- Extensive relocation when sufficient replacement housing is unavailable;
- Extensive relocation of community businesses that would cause severe economic hardship for affected communities;
- Disruption to local traffic patterns and substantial reduction in the levels of service of roads serving an airport and its surrounding communities;
- Produces a substantial change in the community tax base;
- Impacts to the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population; or
- Lead to a disproportionate health or safety risk to children.

### 10.3.12 Visual Effects

Although there are no Federal special purpose laws or requirements specific to light emissions or visual effects, there are special purpose laws and requirements that may be relevant. In addition to NEPA, laws protecting resources that may be affected by visual effects include sensitive wildlife species, Section 106 of the NHPA, Section 4(f) of the DOT Act, and Section 6(f) of the LWCF Act. The NEPA document should include information about the visual changes and any changes to light intensity that would occur as a result of the North Terminal Alternative.

### 10.3.13 Water Resources

#### 10.3.13.1 Wetlands

Section 404 of the Clean Water Act (CWA) governs the dredging and filling of navigable waters of the U.S. The term, “Waters of the U.S.” includes traditional navigable waters and tributaries, interstate waters, and wetlands connected or adjacent to navigable waters of the U.S.<sup>14</sup> Section 401 of the CWA requires that a Water Quality Certificate for a project to ensure it does not violate State water quality standards. Non-jurisdictional wetlands do not involve navigable waters and dredge and fill activities in these wetlands do not require U.S. Army Corps of Engineers (USACE or Corps) approvals, but these wetlands are natural resources FAA must assess under NEPA.

FAA Order 1050.1F states the significance threshold for wetlands is if the action would:

- Adversely affect a wetland’s function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;
- Substantially alter the hydrology needed to sustain the affected wetland system’s values and functions or those of a wetland to which it is connected;
- Substantially reduce the affected wetland’s ability to retain floodwaters or storm runoff, thereby threatening public health, safety, or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;
- Promote development of secondary activities or services that would cause the circumstances listed above to occur; or
- Be inconsistent with applicable state wetland strategies.

There are two existing ponds located within the Study Area at the existing composting facility. These ponds are likely artificially constructed features that would not be subject to permitting under current rules implementing the CWA. To confirm potential for wetland impacts and permitting requirements, prior to commencing any construction for the North Terminal Alternative, a wetland and stream delineation may need to be performed to specifically identify if any wetlands exist in the area of disturbance. If any wetlands and/or streams are found and are connected to jurisdictional waters, they would be regulated by the USACE. If not, they would likely constitute isolated wetlands and would fall under the regulation of the New York State Department of Environmental Conservation (NYSDEC). If water features are identified, coordination with the USACE and NYSDEC should be conducted and a Jurisdictional Determination (JD) and permitting may be required in accordance with the CWA. A JD is generally valid for five years from the date of approval. If permitting is required, USACE and NYSDEC review times may vary depending upon the amounts and types of wetlands to be permitted; however, the permitting process could take 180 days or more. Therefore, field surveying and coordination should be conducted at the appropriate timeframe to obtain any necessary permits to meet the project implementation schedule.

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<sup>14</sup> Revised Definition of “Waters of the United States” Proposed Rule, Federal Register, Vol 86, No. 232, December 7, 2021.

#### 10.3.13.2 *Floodplains*

Floodplains are defined by Executive Order 11988, Floodplain Management, as “the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one-percent or greater chance of flooding in any given year” (i.e., area inundated by a 100 year flood). U.S. Department of Transportation Order 5650.2 defines the beneficial values served by floodplains to include “natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry.” Federal Emergency Management Agency (FEMA) maps are the primary reference for determining the extent of the base floodplain.

ISP as depicted on the FEMA Flood Insurance Rate Map (FIRM) Panel #36103C069OH. ISP is not located within the 100-year floodplain.

#### 10.3.13.3 *Surface Water*

Potential future water quality impacts are associated with the creation of impervious surfaces due to the construction and use of new airport facilities and new pavement areas for aircraft and for automobile parking. Under the CWA Section 402, a National Pollutant Discharge Elimination System (NPDES) Permit may be required for construction that disturbs one or more acres to minimize impacts from stormwater runoff. The North Terminal Alternative has the potential to impact more than one acre due to construction, and therefore would require a permit. The process includes submittal of a Notice of Intent to be covered under the construction general permit and the development of a stormwater pollution prevention plan (SWPPP) or updates to the existing NPDES and SWPPP indicating the procedures used to reduce or eliminate the potential impacts on water quality from construction activities.

#### 10.3.13.4 *Groundwater Resources*

Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term aquifer is used to describe the geologic layers that store or transmit groundwater to wells, springs, and other water sources. Federal activities affecting groundwater are primarily governed by the Safe Drinking Water Act (SDWA); however, other state and local regulations may also be relevant.

FAA Order 1050.1F states the significance threshold for groundwater is an action that would:

- Exceed water quality standards established by Federal, state, local, and tribal regulatory agencies; or
- Contaminate public drinking water supply such that public health may be adversely affected.

Factors to be considered in this analysis are whether the action would have the potential to:

- Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values;
- Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or

- Present difficulties based on water quality impacts when obtaining a permit or authorization.

Nassau and Suffolk counties obtain their drinking water from three major aquifers underlying Long Island which constitute a sole source aquifer. There are nine locations on Long Island that are designated under the Special Groundwater Protection Area (SGPA) Program as described in Article 55-0113 (2012) of the New York Environmental Conservation Law. Prior to commencing any construction of the North Terminal Alternative, a review of existing groundwater resources, including any SGPA boundaries and wellhead protection areas, should be conducted to confirm no groundwater resources would be impacted.

#### 10.3.13.5 *Wild and Scenic Rivers*

The Wild and Scenic Rivers Act of 1968 provides protection for certain free-flowing rivers, which have “outstanding or remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.” The 1979 Environmental Message Directive on Wild and Scenic Rivers (August 2, 1979) from the President, directs Federal agencies to avoid or mitigate adverse effects on rivers identified in the Nationwide Rivers Inventory (NRI) as having potential for designation under the Wild and Scenic Rivers Act. The NRI is a listing of more than 3,400 free-flowing river segments that are believed to possess one or more outstanding remarkable natural or cultural values judged to be of more than local or regional significance.

According to the NRI database accessed on the U.S. Department of the Interior, NPS website, there are no NRI river segments or rivers designated as part of the National Wild and Scenic River System on Long Island.<sup>15</sup>

## 10.4 Summary and Environmental Strategy

FAA Advisory Circular 150/5070-6b<sup>16</sup> states, “The purpose of considering environmental factors in airport master planning is to help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. By using existing maps of the airport area, prior environmental documents, and the Internet, planners and environmental specialists can get an excellent overview of sensitive environmental resources in and around the airport.”

Based on this review of potential environmental requirements, it is expected that a NEPA environmental review document would be required prior to the development of the North Terminal Alternative in order to identify and quantify the potential adverse environmental impacts. The determination of purpose and need and potential environmental impacts would need to be disclosed for the project and any alternatives. Coordination with the FAA will determine the federal action in accordance with Section 163 of the FAA Reauthorization Act and confirm the appropriate type of environmental documentation as required by NEPA. The potential mitigation requirements and permitting would be identified through coordination

<sup>15</sup> National Wild and Scenic Rivers Systems, Online at: <https://www.rivers.gov/new-york.php>, Accessed on March 10, 2022.

<sup>16</sup> FAA Advisory Circular 150 5070-6b, Change 1, *Airport Master Plans*, Chapter 5 Environmental Considerations, 501 General (a). January 27, 20015.

with the appropriate environmental regulatory agencies, i.e., USEPA, USFWS, USACE, NYNHP, NYSDEC, and the SHPO.

- Air Quality
  - General Conformity Evaluation
  - Appropriate measures recommended to reduce construction air quality impacts on surrounding communities
- Biotic Communities
  - Coordination with the USFWS and NYNHP to determine potential impacts to threatened and endangered species
- Hazardous Waste
  - Coordination with the NYSDEC to ensure proper assessments are conducted and abatement practices are followed if necessary
- Historical, Architectural, Archeological, and Cultural Resources
  - Appropriate surveys and coordination with SHPO may need to be conducted
- Water Resources
  - Update current NPDES Permit.
  - Coordination with the USEPA concerning sole source aquifer
  - Coordination with USACE and NYSDEC to determine permitting requirements under Sections 401 and 404 of the CWA.

In addition to the above listed requirements, most projects or activities proposed by a state agency or unit of local government, and all discretionary approvals (permits) from a NYS agency or unit of local government, require an environmental impact assessment as prescribed by 6 NYCRR Part 617 State Environmental Quality Review (SEQR).

# 11 Sustainability Assessment

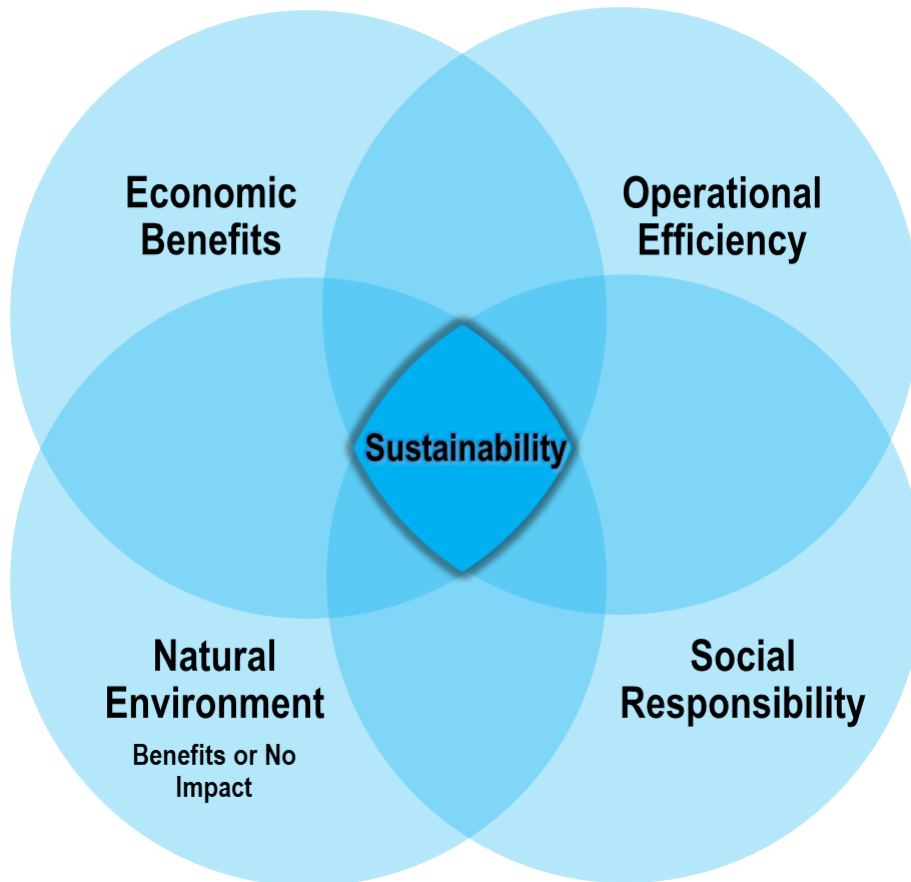
Airport sustainability is a broad term that encompasses a wide variety of practices applicable to the operation and management of airports. The term refers to practices that ensure airport operational efficiencies; financial benefits, including maintenance of high and stable levels of economic growth and employment; no impact, or benefits to the natural environment; and social progress that recognizes the needs of all stakeholders.

This section is designed to identify existing sustainable practices employed by the Airport, and in order to build on existing practices, identify additional areas where sustainable programs or features could potentially be integrated into the overall program.

## 11.1 Definition of Sustainability

The common definition of sustainability is the “Triple Bottom Line,” or balance of environmental, financial, and social goals. In an airport environment, it is important to also consider the critical fourth category of operational efficiency, as shown on **Exhibit 11-1, *Eons Approach to Airport Sustainability***.

**EXHIBIT 11-1 EONS APPROACH TO AIRPORT SUSTAINABILITY**



This approach was developed by Airports Council International (ACI) and is commonly referred to as “EONS,”<sup>17</sup> which stands for a balance of:

- Economic viability,
- Operational efficiency,
- Natural resource considerations (benefits or no impact),
- Social responsibility

Sustainable practices are measures incorporated into projects, which are designed to produce balanced operational, environmental, financial, and social benefits. Sustainable practices reduce impact on the environment by reducing the use of raw or material resources (materials, fossil fuels, energy consumption, etc.), reducing air emissions, reducing waste, and reducing water pollution, as key examples, which in turn increase operational efficiency and provide positive benefit to the surrounding community. Thoughtful and early planning to incorporate sustainable practices in planning, design, and construction projects helps to reduce impacts while also creating financial and operational benefits.

## 11.2 Sustainability within the Airport Industry

Airports today are challenged to look ahead and plan to meet projected increases in demands for capacity and service, while also preserving economic viability and addressing potentially formidable constraints to growth. To meet this challenge, airports need strategies that allow for sustained aviation growth while controlling costs and pursuing a goal of reducing environmental impacts over time.

Managing operating costs and capacity, reducing environmental risks and liability, and ensuring customer and employee satisfaction, while demonstrating a commitment to the health and vitality of their communities is the new order of business. Sustainability programs combine operational, environmental, social, and economic concerns into a balanced approach to meeting the unique challenges facing airports today.

## 11.3 Sustainability Benefits

Sustainability goals and strategies have achieved priority at global levels as more airports in more countries are realizing the benefits of striving for, and achieving, efficiency in all aspects of airport management and operations. Airports at the forefront of sustainability are given a prominent place on the “aviation global stage” and are viewed as world leaders in operational efficiency. Efficient operating practices and reduced operational costs are major attractants to airline partners.

There are opportunities for applying principles of sustainability in all areas of airport operations - airside, landside, terminals, and hangars, just to name a few. New buildings, runways and taxiways, and maintenance facilities can be designed with sustainable principles in mind. Sustainability can also be applied as a component of retrofit and repair activities. The most beneficial opportunities for employing

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<sup>17</sup> Airports Council International – North America (ACI-NA) Sustainability Working Group, 2008.

sustainable principles is during the initial planning and design phases of an airport development project, but there are potentially even more opportunities to consider in facility replacement and maintenance.

To ensure their success, sustainability programs must begin during planning and design and continue through construction and operation/maintenance, as well as decommissioning and demolition. This approach takes into account the lifetime impacts of processes and equipment and minimizes not only total costs but also lifetime environmental impacts. The expense of “green” technologies, which may often be perceived as a detriment to implementation due to higher upfront costs compared to traditional systems, often produce lower life-cycle costs as compared to traditional systems; and in some cases, significant cost savings can be generated when sustainable practices are incorporated instead of traditional practices. Sustainability programs make good business sense by providing:

- Greater asset utilization
- Reduced costs of asset management and asset development
- Reduced life-cycle costs
- Optimization of new and better technologies
- Improved work environment for employees leading to higher productivity
- Benefits to local communities and the environment
  - Reduced environmental footprint
  - Improved benefits to and greater support from the community

## 11.4 Current Airport Sustainability Initiatives

A core value of the Airport is to ensure the safety and operating efficiency of ISP while also minimize the impact on its surroundings wherever possible. The current sustainability initiatives at ISP serve to improve efficiency and reduce waste – and are also mindful of the overall health of passengers and employees. The sustainability initiatives at ISP include the following:

- Deicing Fluid Collection and Treatment System<sup>18</sup>
  - An integral part of the stormwater system at ISP is the deicing fluid collection system, which includes a glycol treatment facility built in 2011. Typical gate deicing involves glycol runoff from the ramp being collected in the existing stormwater system located under the terminal ramp through a series of catch basins and concrete pipes. The glycol travels through the drainage to a submerged wetlands treatment facility located southeast of the terminal building where microscopic organisms consume it and return the effluent back into the stormwater. Ultimately, the water moves to a recharge basin where a blower then forces air into the wetlands while chemical nutrient is dispensed to keep the microscopic organisms thriving.
- Connection to possible micro grid

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<sup>18</sup> Long Island MacArthur Airport Master Plan Update February 2017



- Air Pathogen Reduction System
  - Heating Ventilation and Cooling System (HVAC) in the terminal building upgraded with a continuously operating air purification system
- Anti-microbial films installed at all high-touch areas in the terminal
- Exterior LED airfield ramp lighting
- Interior LED terminal lighting
- Reuse of construction millings in pavement projects
- Future installation of solar canopy at the rental car area of the Ground Transportation and Vehicle Center
- Future improvement of direct connectivity with the Long Island Railroad (LIRR) for passengers and employees
- Connection to sewer

## 11.5 Potential Future Sustainability Initiatives for the Terminal Program

In order to build on existing initiatives, it is recommended that the Airport work with its key stakeholders to develop a statement of Sustainability Vision and Goals for the terminal program, which would allow the future identification of areas where sustainability initiatives, programs, or features could be integrated into the design and construction of the facility, as well as ongoing operations and maintenance activities for both the Airport and its concessionaires/tenants within the terminal.

The following are examples of elements that could be included in a Sustainability Vision and Goals statement for the terminal program. These examples offer a preliminary framework for consideration based on global airport best practices. It is recommended that this preliminary list be of examples be expanded, as needed, and also refined for ISP's unique operating environment.

- Specify a minimum level of sustainability certification for the terminal, either to be actually achieved by the design team, or to be used as a design standard in lieu of actual certification
  - Examples of sustainability certifications include LEED, Envision, Fitwel, Sustainable Sites, Parksmart, Green Globes, Living Building Challenge, WELL, and others
- Develop sustainable design and construction guidelines for integration into Master Specifications in order to address the following:
  - Construction waste management practices and recycling of construction materials
  - Reduce truck/haul trips to and from the project site
  - Specify preference for local/regional construction materials
  - Ensure outdoor air quality and construction pollution prevention

- Reduce the overall Urban Heat Island Effect of the airfield through use of vegetated roofs and/or white roofs, for example
- Incorporate renewable energy, such as solar, from on-site and/or off-site sources
- Maximize energy efficiency and water-use efficiency within the terminal
  - Maximize daylighting and views
  - Incorporate dynamic glass
  - LED lighting
  - Water-efficient fixtures
- Improve the human experience for passengers and employees in the terminal
  - Create a sense-of-place in keeping with the Long Island/Islip regional and cultural setting
  - Incorporate local art
  - Maximize touchless interfaces
  - Recycling programs
- Ensure sustainable site management through use of water-efficient landscaping, for example
- Improve connectivity to local/regional transportation for passengers and employees
- 2040 Goal – 0 emissions
  - Incorporation of LEED components and standards

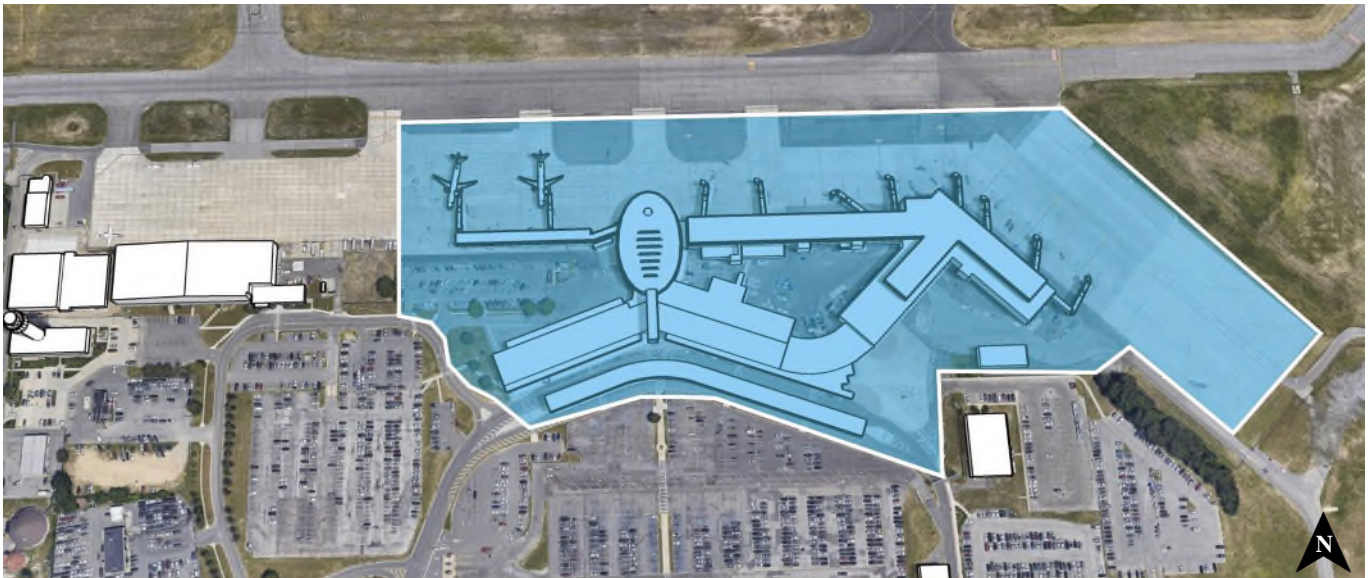
## 12 South Terminal Reuse Study

The Town of Islip is exploring opportunities regarding the land use reuse opportunities for the existing terminal area at Long Island MacArthur Airport (ISP or the Airport). A new North Terminal will replace the existing terminal facilities located to the south. The existing southern terminal facilities will be abandoned and demolished once the North Terminal begins operations, unless a reuse scenario is identified that could use all or a portion of the existing terminal facilities.

The Town of Islip and Airport has requested a Reuse Study that investigates the unique characteristics of 27-acre site, shown in **Exhibit 12-1, Study Area**, and explores the land use development potential. The study will identify what opportunities exist within the current land use character, while meeting current and emerging airport needs.

This Reuse Study provides an analysis of the study area, including site specific content that provides a historical overview of the parcel, its current character, opportunistic considerations, and suggests a variety of appropriate land use reuse options. The potential land use options are supported by evaluations, justifications, requirements, and next steps. This study serves as a strategic roadmap to help the Town of Islip define viable development options for the identified study area.

### EXHIBIT 12-1 STUDY AREA



Source: Landrum & Brown, 2022

## 12.1 Overview of Study Area

The existing terminal area will be the focus of the Reuse study. The study assumes the entire passenger terminal building, jet bridges, concourses, vehicle curbs and rental return lot will be abandoned and demolished. The existing airside access and portions of the existing ramp area are likely to be maintained and will be an asset when determining future land use options. The vehicle surface parking lots, currently serving the commercial terminal passengers, are not included in the study area<sup>19</sup>. However, any automobile parking currently located inside the “loop” could be moved to Lot 10 in the future, if some or all of it is needed by the future reuse option identified for the “study area.”

### 12.1.1 Study Area Context

The following section depicts the study area’s location within the larger context of the surrounding on-airport land use and off-airport land use.

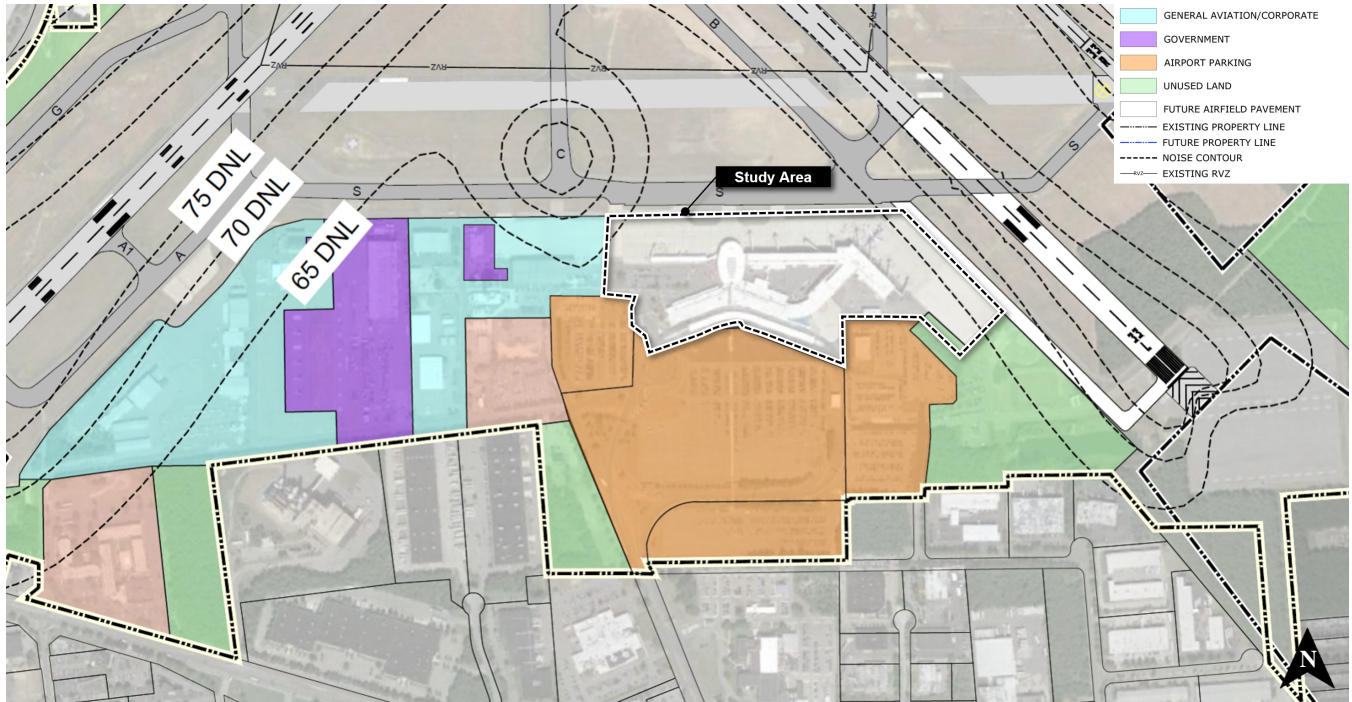
The study area’s northern limits have direct airside access along Taxiway S and Taxiway B. General Aviation forms the study area’s west boundary, which consists of the Modern Aviation FBO Hangar and ramp. The southern edge of the study area borders the existing passenger terminal surface parking lots. **Exhibit 12-2, *On-Airport Land Use*** depicts the on-airport land use surrounding the study area.

**Exhibit 12-3, *Off-Airport Land Use*** shows areas beyond the airport property. Surrounding land use context and patterns will also help determine reuse options to consider. Once the North Terminal becomes operational, a significant volume of the Airport’s traffic will no longer originate in the south. Instead, much of the surrounding land uses and adjacent developments in this area will serve “southern” Airport users. Located directly south of the Airport property is a mixture of industrial and institutional lands.

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<sup>19</sup> These lots include resident parking (lot 6), long-term parking, employee parking, the rental car storage area (lots 6A and 6B – to the east side of the loop), and the economy lot (which will be saved for a future employee parking area).

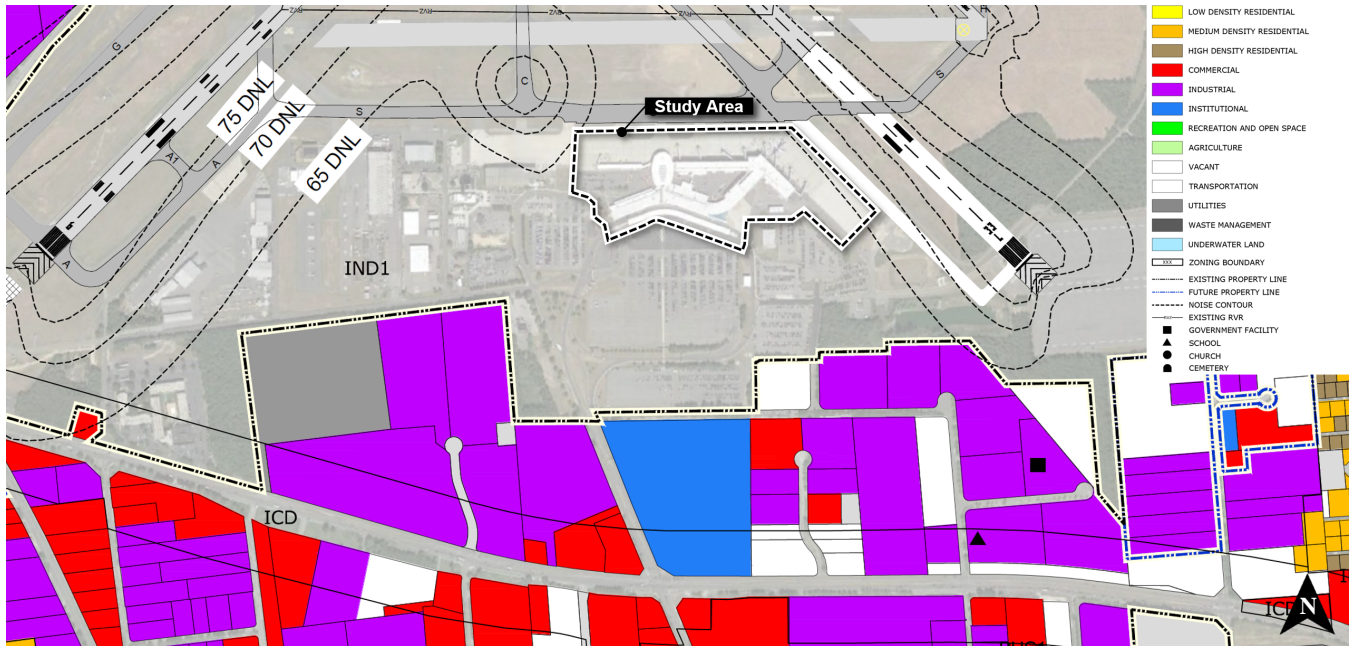
**EXHIBIT 12-2 ON-AIRPORT LAND USE**



Note: Runway 33L extension shown for informational purposes

Source: Landrum & Brown, 2022

**EXHIBIT 12-3 OFF-AIRPORT LAND USE**



Note: Runway 33L extension shown for informational purposes

Source: Landrum & Brown, 2022

## 12.2 Methodology

### 12.2.1 Guiding Strategies

When analyzing the study area, it was important to take into consideration guiding strategies to help develop the best land use reuse options. These guiding strategies included:

**Consistency with the Current Master Plan:** The 2017 Master Plan's future vision is a crucial guiding strategy for integrating future reuse options into the current airport land use design. This strategy acts as a filter for eliminating the types of possible land use options that have already been achieved or are already reserved for other areas at the airport. Reuse options must also consider the opportunity to meet any airport needs identified by the 2017 Master Plan.

**Strategic Investment:** Airports have land use needs that require immediate attention and others that are best aligned with future planning efforts. The long-term land use potential was taken into consideration when creating land use options. Some reuse options may be best suited for immediate needs, waiting on outside factors to align down the road, or are flexible for land use changes over time.

**Practical Approach:** Employing practicality as a guiding strategy helps ensure that any recommended land uses make site-specific sense. Practical land uses are both marketable and functional in nature.

**Maximize Land Use Potential:** This strategy is aimed at identifying the characteristics of the study area that are best suited to maximize the Airport's earning potential. The study area size, airport location, and land use flexibility factor into airport revenue potential.

**Integrate Land Uses:** The integration of a land use strategy takes into consideration the Airport's current land use design when recommending appropriate land uses. This strategy highlights which potential land uses would be incompatible with surrounding uses and which flow nicely into the immediate and broader overall land use design.

**Enhance Airport Operations:** Given that the study area occupies space within and at the edge of the Airport Operations Area (AOA), careful consideration of current airport operational characteristics must factor into site-specific land use suitability.

Additionally, the study area was evaluated against the following site evaluation criteria to help guide the analysis, determining what potential land uses were best suited for the study area, and what land uses were not appropriate for the study area:

- Proximity and connection to the terminal
- Proximity and connection to the airfield
- Opportunity to meet airport needs
- Land use compatibility
- Adjacent land uses
- Parcel size
- Challenges with potential land use modification
- Airport Layout Plan land designation

- Parcel marketability to a third-party developer
- Availability of utilities
- Availability to additional parking area
- Landside access (roadways)

### 12.2.2 Aeronautical Use vs Non-Aeronautical Use

The study area has direct access to the airfield and offers approximately 2,000 linear feet of apron frontage. The existing apron has the potential to be maintained and utilized by an aeronautical related tenant, offering apron depths of 250 feet.

Careful consideration must be paid to any reuse options that result in a land use change from aeronautical to non-aeronautical use. When a sponsor submits an ALP update that requests a change in land use from aeronautical to non-aeronautical, the FAA must determine whether the proposal is subject to the agency's authority, as defined/limited by Section 163. This determination involves a two-step process and requires extensive coordination with FAA. Specifically, in order to ensure the FAA exercises its regulatory authority consistently and within statutory constraints, the FAA must not only examine and reach a determination regarding its ALP approval authority (under section 163d), but also determine how the land was acquired (i.e., if Federal funds were used to acquire the land) and if a release of obligations may be required under section 163a-c).

Based on its site elements, access to the airside facilities, and Section 163 requirements, it is recommended that that potential reuse options focus only on aeronautical uses.

## 12.3 Reuse Options

The following section presents three options for the reuse of the southern terminal area. These initial options will create a roadmap to help guide the Town of Islip's/Airport's future planning efforts for the 27-acre study area. The range of land use possibilities were developed using the aforementioned six guiding principles, overall compatibility with the study area's driving strategy for aeronautical use, and stakeholder coordination. The options assume the existing facilities are demolished and are ready to accommodate new development, unless a reuse scenario is identified that could use all, or a portion of, the existing terminal facilities.

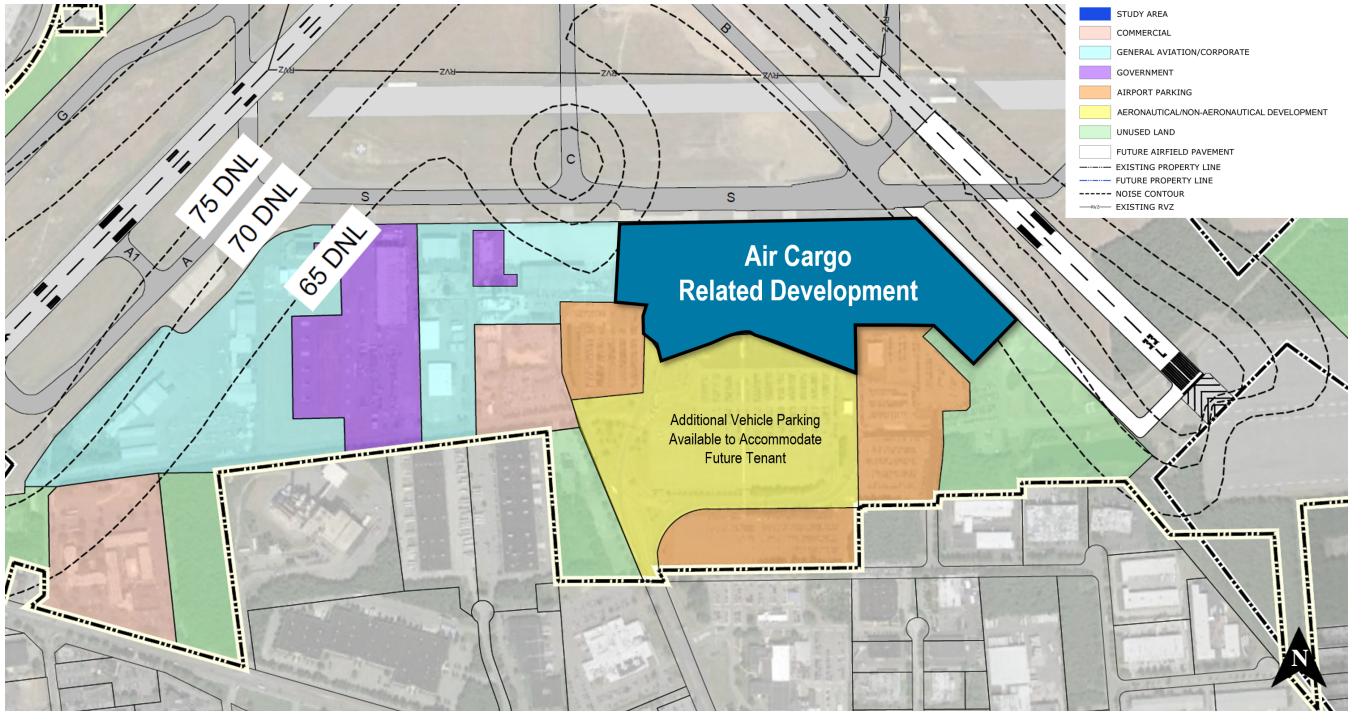
The following three land uses were evaluated as possible reuse considerations:

- Air Cargo Development
- Advanced Air Mobility (AAM)
- Aircraft Maintenance Facility

### 12.3.1 Air Cargo Development

The first reuse option recommends that the study area be reserved for air cargo development, as the study area has the size and access (airside and landside) to attract a wide range of cargo related development, shown in **Exhibit 12-4, Air Cargo Development**.

**EXHIBIT 12-4 AIR CARGO DEVELOPMENT**



Note: Runway 33L extension shown for informational purposes  
Source: Landrum & Brown, 2022

#### *Justification*

The study site has the appropriate size, airside access, and landside elements required to attract an air cargo integrator operator to the Airport. The Airport’s existing air cargo operations consist primarily of belly-haul cargo, carried in the cargo holds of commercial passenger aircraft; this type of cargo is usually comprised of small parcels and U.S. Mail. An air cargo integrator operator type development would allow the Airport the opportunity to diversify their revenue stream and attract air freight. Given its proximity to the Metropolitan New York area and the rise in air cargo supply chain needs, the Airport is well-positioned to attract a major cargo operation to the 27-acre study area.

#### *Site Evaluation*

The study area has existing taxiway access along two sides and can easily accommodate a cargo related campus in the 27-acre site. The existing ramp depth allows for traditional ADG-IV cargo aircraft and any associated ground service equipment to operate easily and meet all required loading/unloading procedures. A future cargo operator would utilize Runway 6-24 via Taxiway S and Taxiway A for arrivals and

departures. Therefore, operational takeoff requirements will need to be validated for any potential cargo operator to confirm a departure length of 7,006 feet meets their need/requirements. Pushback operations would occur on Taxiway S and be coordinated by the air traffic control tower.

A typical cargo warehouse facility would be situated south of the apron, with the landside, truck docks, and employee parking located adjacent to and south of the warehouse. If additional area (beyond what is available within the study area) is required to accommodate the required employee and truck parking, then the parking lot area located directly south of the study area (within the loop road) could be used to accommodate this need. Any displacement of existing parking uses that might result from an air cargo facility development need could be accommodated in existing Lot 10.

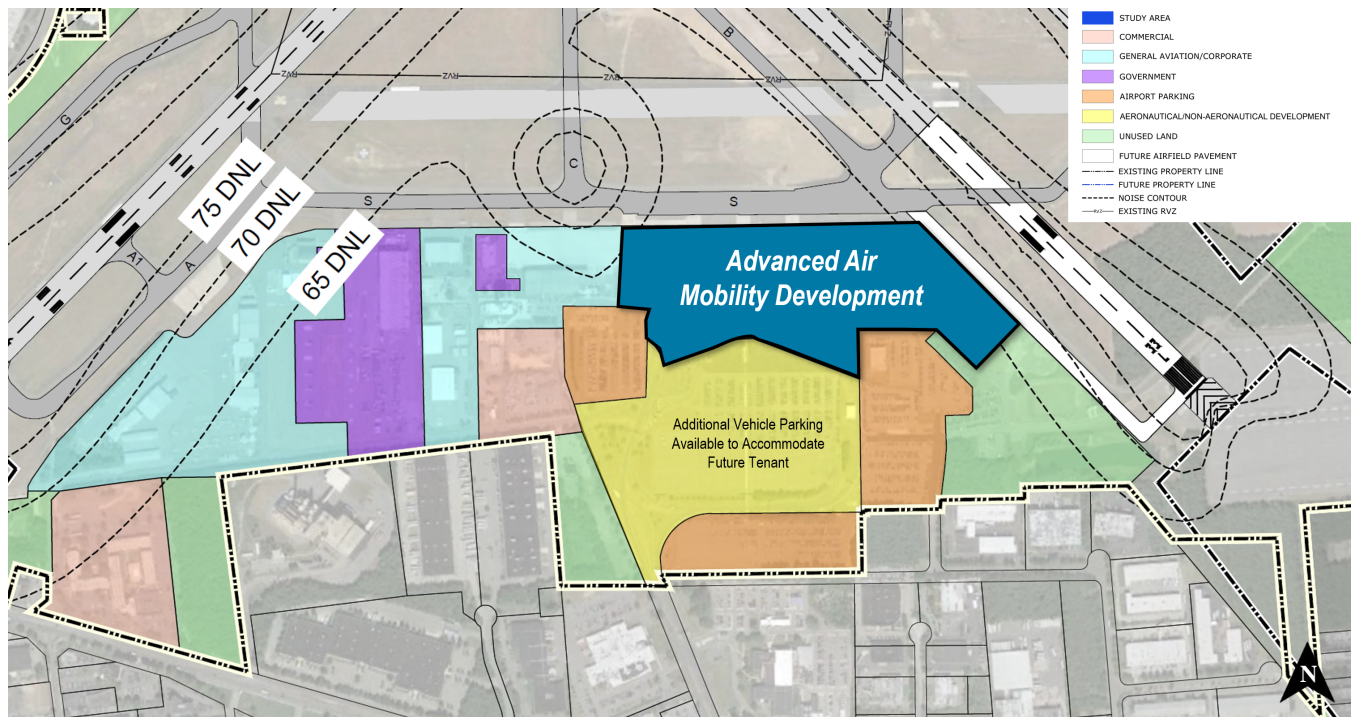
*Requirements/Next Steps*

Perform a comprehensive air cargo feasibility study to examine the airport’s resources, region, and market demand to gauge the potential for attracting an air cargo operator.

12.3.2 Advanced Air Mobility

The second reuse option recommends that the study area be reserved for Urban Air Mobility (UAM)/Advanced Air Mobility (AAM) operations. The study area has the size, location, and access (airside and landside) required to serve a variety of future aviation development trends, including space for UAM/AAM operations, shown in **Exhibit 12-5, Advanced Air Mobility Development**.

EXHIBIT 12-5 ADVANCED AIR MOBILITY DEVELOPMENT



Note: Runway 33L extension shown for informational purposes

Source: Landrum & Brown, 2022

### *Justification*

UAM, also known as AAM, refers to urban transportation systems that move people by air and is a new mode of air transportation that is quickly evolving. These transportation systems were developed in response to traffic congestion. Urban air mobility is a subset of a broader Advanced Air Mobility concept, which includes intra-city passenger transport. NASA describes Advanced Air Mobility as small drones, electric aircraft, and automated air traffic management (among other technologies) that perform a wide variety of missions, including cargo and logistics. To a large degree, these aircraft are similar to helicopters in that they fundamentally operate with vertical take-off and landing characteristics.

### *Site Evaluation*

While it's not currently possible to predict the exact requirements for UAM/AAM facilities at ISP, the study area is considered appropriately sized and located to accommodate these new technologies. Facility designs for future UAM/AAM vertiports will be similar to current heliport regulations and site plans. The study area could accommodate several vertiports, parking positions, and a processing terminal building. The operator would function independent from the north passenger terminal facility. Analysis to determine and plan the future flight paths would be required. However, the study area is positioned such that direct UAM/AAM flight paths could be directed to the south, thereby avoiding conflict with commercial aircraft flight paths.

### *Requirements/Next Steps*

Work with FAA and local market representatives to determine the market required to accommodate this emerging technology at ISP.

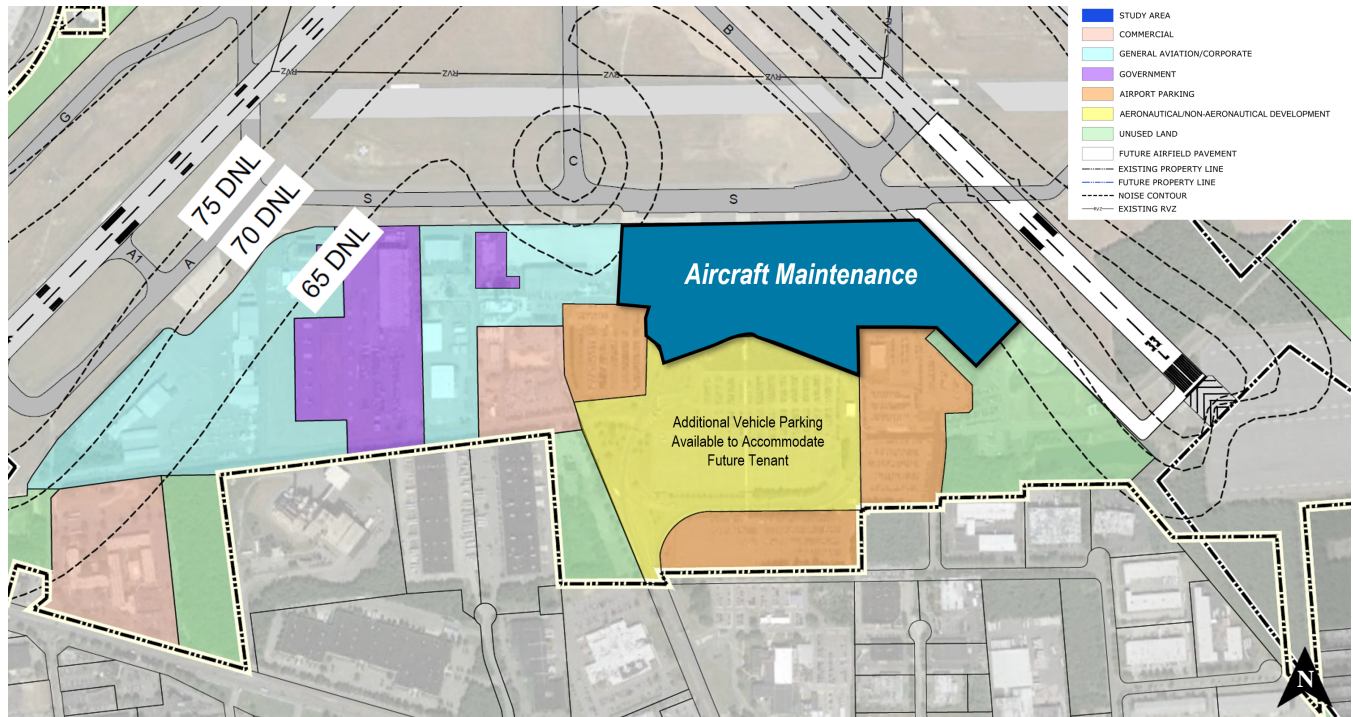
## 12.3.3 Aircraft Maintenance

The third reuse option recommends that the study area be reserved for an aircraft maintenance development. This development could be operated by an existing ISP airline or operated by a third-party independent aircraft maintenance, repair, and overhaul (MRO) company. The study area has the size, location, and access (airside and landside) required to serve a MRO company and all associated facilities, shown in **Exhibit 12-6, Aircraft Maintenance**.

### *Justification*

As previously stated, the study area should be reserved for aeronautical/airport related development. Although the need to provide space for aircraft maintenance is not identified by the 2017 Master Plan, reserving MRO space for an airline(s) using the new North Terminal area could be a good strategic move. The new North Terminal presents an opportunity to attract new airlines and provide additional operational capacity at the airport to serve their existing and anticipated future needs. With this new operational capacity, as well as existing operational activity, comes the need to service the associated aircraft. As such, an independent MRO company, such as Aviation Technical Services (ATS), could supplement MRO facilities for military, commercial, and regional aircraft operators across the country, who need additional capacity or do not have dedicated MRO facilities. This option allows the Town of Islip to promote aeronautical development with proven revenue potential.

**EXHIBIT 12-6 AIRCRAFT MAINTENANCE**



Note: Runway 33L extension shown for informational purposes

Source: Landrum & Brown, 2022

*Site Evaluation*

The study area has direct airside access and sufficient ramp space to accommodate MRO facilities and operations. The existing ramp area and adjacent property offers adequate depth and area to park several aircraft for an extended period of time, as well as multiple hangar facilities, offices, and support buildings. The area to the south of the facility could be used for employee parking and could accommodate additional truck parking.

*Requirements/Next Steps*

Work with the Airport's airlines and local market representatives to determine the market required to accommodate and support possible MRO services at ISP.

**12.4 Next Steps**

The role of this study is to serve as a guiding document for the Airport to respond to future development options as the parcel becomes available for reuse. All options outlined in this study should be considered viable for future land uses. It is recommended the study area be identified as "Reserved for Aviation Related Development" on the Airport Layout Plan (ALP). This recommendation allows the Airport to maintain flexibility when considering different development options, so they can maximize the highest-best use for the study area.

## 13 Appendix A – Preferred Concept Plans

## 14 Appendix B – Presentations

## 15 Appendix C – Stakeholder Outreach

## 16 Appendix D – Public Outreach