

# CHAPTER 1

## BACKGROUND, PROJECT DESCRIPTION, AND AVIATION FORECASTS

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### 1.1 BACKGROUND

The City of Chicago (City), as owner and operator of the Chicago O'Hare International Airport (O'Hare or the airport), proposes to modernize O'Hare to provide updated facilities, retain operational efficiency for existing and future demand, avoid additional delay, and consolidate facilities. The City completed plans to update its Airport Layout Plan (ALP) to depict the proposed Terminal Area Plan (TAP), Capital Improvement Projects, and hotel developments. The City also requested that the Federal Aviation Administration (FAA) provide the necessary approvals to construct the TAP and other projects. The FAA proposes to permanently implement 2.5 degree offset (angled) approach procedures for Runway 10R/28L that were temporarily approved in the 2015 Written Re-Evaluation of the O'Hare Modernization Program Environmental Impact Statement (OMP EIS). The TAP, associated capital improvements, hotel developments, and offset air traffic approach procedures for Runway 10R/28L are referred to as the "Proposed Action." Projects evaluated in this Environmental Assessment (EA) are presumed to have a proposed implementation timeline—2023 to 2032—and inclusion on the draft ALP.

This EA has been prepared pursuant to the National Environmental Policy Act (NEPA), including its implementing regulations (40 CFR Parts 1500-1508 [1978])<sup>1</sup> promulgated by the Council on Environmental Quality (CEQ), FAA Order 1050.1F<sup>2</sup> and the 1050.1F Desk Reference,<sup>3</sup> FAA Order 5050.4B, and airspace actions under FAA Order JO 7400.2N. The FAA is responsible for analyzing the potential environmental consequences of federal approvals and other actions to support the Proposed Action and reasonable alternatives.

This chapter provides a brief background on O'Hare and an overview of the projects comprising the EA's Proposed Action. The projects within the Proposed Action are detailed in **Section 1.5**. The Proposed Action is divided into five areas:

1. Terminal Projects,
2. On-Airport Hotels,
3. Airfield and Taxiway Improvements Not Required by the Terminal Projects,
4. Support Facilities Not Required by the Terminal Projects, and
5. Air Traffic Actions for Offset Approach Procedures for Runway 10R/28L.

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<sup>1</sup> 40 CFR Sections 1500-1508 (1978). All references to CEQ regulations refer to the 1978 regulations. The FAA initiated preparation of the EA in 2019 prior to the September 2020 revisions to the CEQ regulations. The new regulations provide agencies the discretion to apply the 1978 regulations if the NEPA review process started before the implementation of the 2020 Final Rule. See 40 CFR 1506.13 (2020). See also 85 Federal Register at 43340 (July 16, 2020), which states, "For NEPA reviews in process that agencies began before the final rule's effective date, agencies may choose whether to apply the revised regulations or proceed under the 1978 regulations and their existing agency NEPA procedures."

<sup>2</sup> Federal Aviation Administration. Order 1050.1F Environmental Impacts: Policies and Procedures, Effective July 16, 2015. Accessed December 13, 2021, at [https://www.faa.gov/documentLibrary/media/Order/FAA\\_Order\\_1050\\_1F.pdf](https://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf).

<sup>3</sup> Federal Aviation Administration. 1050.1F Desk Reference (v2), Effective February 2020. Accessed December 13, 2021 at [https://www.faa.gov/sites/faa.gov/files/about/office\\_org/headquarters\\_offices/apl/desk-ref.pdf](https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/desk-ref.pdf).

This chapter also includes aviation forecasts, outlined in **Section 1.4**.

### **1.1.1 National Environmental Policy Act Process**

The purpose of this EA is to determine whether a federal action has the potential to cause significant environmental effects.

#### **1.1.1.1 Responsible Federal Agency and Regulatory Guidance**

The FAA has prepared this EA for review by regulatory agencies, local jurisdictions, and the public. During the preparation of this EA, the FAA coordinated with federal, state, and local entities including the United States Environmental Protection Agency, U.S. Army Corps of Engineers, Illinois Environmental Protection Agency, U.S. Fish and Wildlife Service, Advisory Council on Historic Preservation, Illinois Department of Natural Resources, Illinois Department of Transportation, Illinois State Toll Highway Authority, Northeastern Illinois Planning Commission, Chicago Area Transportation Study, local municipalities, the public, and other interest groups to facilitate early consideration of key issues and an understanding of the Proposed Action.

#### **1.1.1.2 Agency Responsibility for the Content of the Environmental Assessment**

The FAA is responsible for the preparation and content of this EA. The FAA is also responsible for reviewing and verifying the accuracy of environmental information provided by the City of Chicago. CEQ regulations permit the FAA to receive information related to the EA. Under the CEQ regulations, 40 CFR 1506.5:

If an agency requires an applicant to submit environmental information for possible use by the agency in preparing an environmental impact statement, then the agency should assist the applicant by outlining the types of information required. The agency shall independently evaluate the information submitted and shall be responsible for its accuracy. If the agency chooses to use the information submitted by the applicant in the environmental impact statement, either directly or by reference, then the names of the persons responsible for the independent evaluation shall be included in the list of preparers (Sec. 1502.17). It is the intent of this paragraph that acceptable work not be redone, but that it be verified by the agency.

In keeping with its oversight responsibility, the FAA maintains control over the scope, content, and development of this EA. The FAA selected a Third-Party Consultant to assist in the preparation of this EA. The FAA used environmental information submitted by the local agency—in this case the Chicago Department of Aviation (CDA)—in developing this EA, as permitted under 40 CFR 1506.5(a). The FAA also used its own resources, as well as those of its Third-Party Consultant, to independently evaluate environmental information submitted by the CDA and other entities. As proprietor and operator of O'Hare, the CDA is in a unique position to provide valuable current and historical information about the airport. The FAA requested the CDA provide specific environmental information in preparation of the EA.

The FAA is responsible for the accuracy of all information in this EA. The FAA independently and extensively reviewed the environmental information the CDA provided. The FAA closely supervised its Third-Party Consultant, and the FAA believes its involvement in the preparation/review of this EA is consistent with CEQ regulations and its own Orders and fully demonstrates the integrity and objectivity of the EA.

### **1.1.2 Organization of this EA**

The EA is organized into seven chapters, with an Executive Summary and supporting appendices as follows:

- **Chapter 1** – Background, Project Description, and Aviation Forecasts,
- **Chapter 2** – Purpose and Need,
- **Chapter 3** – Alternatives,
- **Chapter 4** – Airfield and Airspace Modeling,
- **Chapter 5** – Affected Environment and Environmental Consequences,
- **Chapter 6** – Public Involvement and Agency Coordination,
- **Chapter 7** – List of Preparers, and
- **Appendices A-P.**

The analyses presented in **Chapter 5** cover three separate conditions (e.g., specific years):

- The 2018 Existing Condition—representing the conditions present during calendar year 2018 and before the start of the EA process.
- The 2025 Interim Condition—representing the conditions three years after the proposed start of project construction for the No Action and Proposed Action Alternatives.
- The 2032 Build Out Condition—representing the conditions ten years after the start of the project and the planned timeframe for completion of project construction for the No Action and Proposed Action Alternatives.

The years utilized to assess the environmental effects of the Proposed Action include an Interim Condition year—representing a peak construction year—and a Build Out Condition year—representing the completion of the project. The only project within the Proposed Action determined to have any environmental impacts off-airport is the proposed permanent implementation of the 2.5 degree offset air traffic approaches to Runway 10R/28L that is already temporarily in place. Therefore, no analysis beyond the Build Out Condition is contained in this EA. If the FAA approves the permanent implementation of the 2.5 degree offset air traffic approaches to Runway 10R/28L, the continuation of existing impacts would occur after any approval.

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## **1.2 O'HARE INTERNATIONAL AIRPORT HISTORY, DESCRIPTION, AND LOCATION**

O'Hare is one of the busiest airports in the world. The airport is a hub to United Airlines and American Airlines, two of the largest airlines in the United States (U.S.). O'Hare has 978 daily direct flights to 179 U.S. cities and approximately 74 daily direct flights to 54 international destinations.<sup>4</sup> O'Hare is also the number one airport in North America for cargo by value at more than \$200 billion per year<sup>5</sup>. Further discussion about operational activity at the airport is discussed in **Section 1.3**.

Commercial service at O'Hare first began in 1955. Prior to that, Chicago Midway International Airport was Chicago's main airport and, in the 1930s, the world's busiest. In 1944, the Chicago Planning Commission adopted the goal of developing an airport that would make Chicago the center of aviation. In 1946, the federal government transferred the 1,080-acre Orchard Place Airport, which inhabited the current O'Hare site, to the City of Chicago under the Surplus Property Act of 1944. In 1955, its first year of service, O'Hare

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<sup>4</sup> 'Non-stop Service,' Chicago Department of Aviation, September 21, 2021, <https://www.flychicago.com/ohare/myflight/non-stop/pages/default.aspx>.

<sup>5</sup> CDA Legislative Guide 2020-2021, September 22, 2021, <https://www.flychicago.com/SiteCollectionDocuments/Business/FactAndFigures/5675%20-%20CDA%20Legislative%20Guide%202020-2021%20-%20LOW%20RES.pdf>.

served approximately 175,000 passengers. Today, tens of millions of passengers use the airport annually. In 2019, 84.6 million passengers traveled through O'Hare,<sup>6</sup> and in 2020, about 30 million passengers<sup>7</sup> used O'Hare.

### 1.2.1 Location

O'Hare is located on more than 7,200 acres in northeastern Illinois within the City of Chicago. Light industrial, commercial, and some residential and public land uses are directly adjacent to airport property.

The main access route to O'Hare is from the east via I-190, which is linked to other major area expressways: I-90 and I-294. The Chicago Transit Authority (CTA) Blue Line provides 24-hour rapid transit service directly into O'Hare.

### 1.2.2 Regional Context

O'Hare is the primary airport for the greater Chicago area and serves passengers from the Chicago metropolitan area, northeast Illinois, southeast Wisconsin, and northwest Indiana. O'Hare is part of the Chicago Airport System, which also includes Chicago Midway International Airport. Several commercial service airports in neighboring areas overlap O'Hare's service area, including:

- General Mitchell International Airport in Milwaukee, Wisconsin,
- Chicago-Rockford International Airport in Rockford, Illinois, and
- Gary Chicago International Airport in Gary, Indiana.

#### 1.2.2.1 Midway International Airport

Midway is located on the southwest side of Chicago and resides on about 775 acres. It was established in 1927 and served as Chicago's primary airport until O'Hare opened in 1955. The FAA has classified Midway as a large hub, and the airport is one of the fastest-growing commercial service airports in the nation. Midway complements O'Hare by offering service by low-fare airlines that offer point-to-point service to local passengers. Midway has five runways and 43 aircraft gates. Six air carriers at Midway provide services to nearly 80 destinations, including nine international locations.

It is a base for Southwest Airlines, which carries approximately 95 percent of Midway's passengers. Other airlines at Midway include Allegiant Air, Avelo, Delta, Frontier, Porter, and Volaris.

The CDA enhanced Midway's airfield and facilities, including a new terminal building, parking garages, a consolidated rental car facility, and airfield infrastructure as part of the Midway Modernization Program. Midway also completed enhancements to its passenger security checkpoint in 2020.

### 1.2.3 Existing Airport Facilities

As shown in **Exhibit 1-1** and **Table 1-1**, the airfield at O'Hare in 2018 consisted of eight active runways.

In addition to the airfield, terminal, and on-airport hotels described below, many other services support passenger and cargo airline operations at O'Hare. These include:

- General aviation facilities,
- Cargo facilities,

<sup>6</sup> <https://www.flychicago.com/business/CDA/factsfigures/Pages/airtraffic.aspx>

<sup>7</sup> The decline in passenger numbers in 2020 is due to the COVID-19 pandemic.



- Airline support facilities,
- Maintenance facilities,
- Fuel and de-icing fluid storage facilities,
- Aircraft rescue and firefighting (ARFF) facilities,
- United States Postal Service facilities,
- FAA Air Traffic Control Towers,
- Transportation Security Administration facilities, and
- Customs and Border Protection facilities.

### 1.2.3.1 Airfield

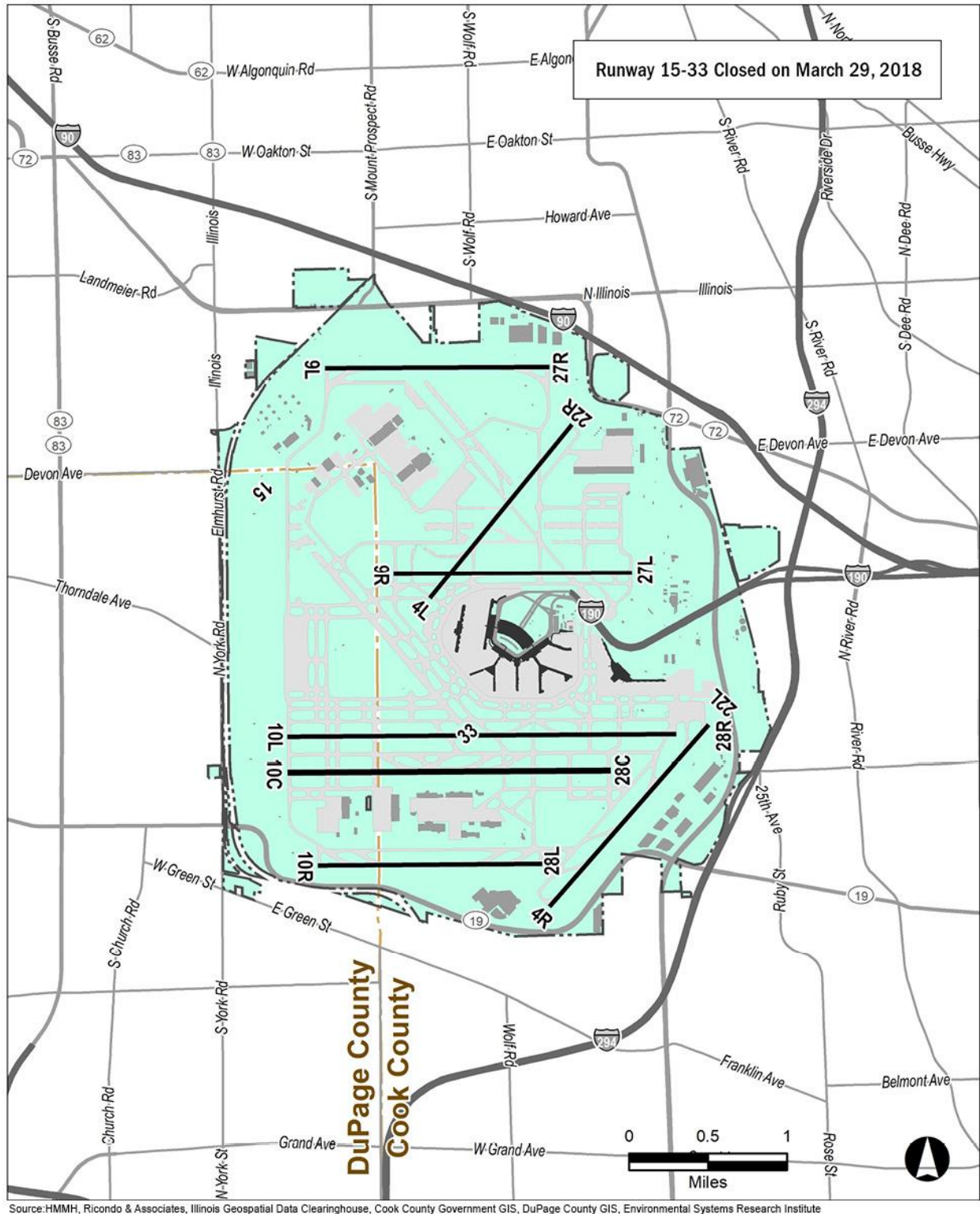
In 2018, O'Hare had two parallel east-west runways (9L/27R and 9R/27L)<sup>8</sup> in the north airfield. The south airfield included three parallel east-west runways (10L/28R, 10C/28C, and 10R/28L). There were also two northeast-southwest runways (4R/22L and 4L/22R) and one northwest-southeast runway (15/33 that was closed in March 2018).

**TABLE 1-1**  
**EXISTING CONDITION AIRFIELD RUNWAYS (2018)**

Runway	Length (in feet)
Runway 4L/22R	7,500
Runway 9R/27L	7,967
Runway 10L/28R	13,000
Runway 4R/22L	8,075
Runway 9L/27R	7,500
Runway 10C/28C	10,801
Runway 10R/28L	7,500
Runway 15/33 (closed March 2018)	9,686
Source: CDA 2019	--

Runway 9C/27C at 11,245 feet long was commissioned on November 20, 2020, and the Runway 9R/27L extension to 11,260 feet was commissioned on December 2, 2021. These runway changes are reflected in the Interim and Build Out Conditions for this EA and were approved in the 2005 OMP EIS.

<sup>8</sup> The Runway 9R/27L extension was commissioned in December 2021.



Chicago O'Hare International Airport

**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

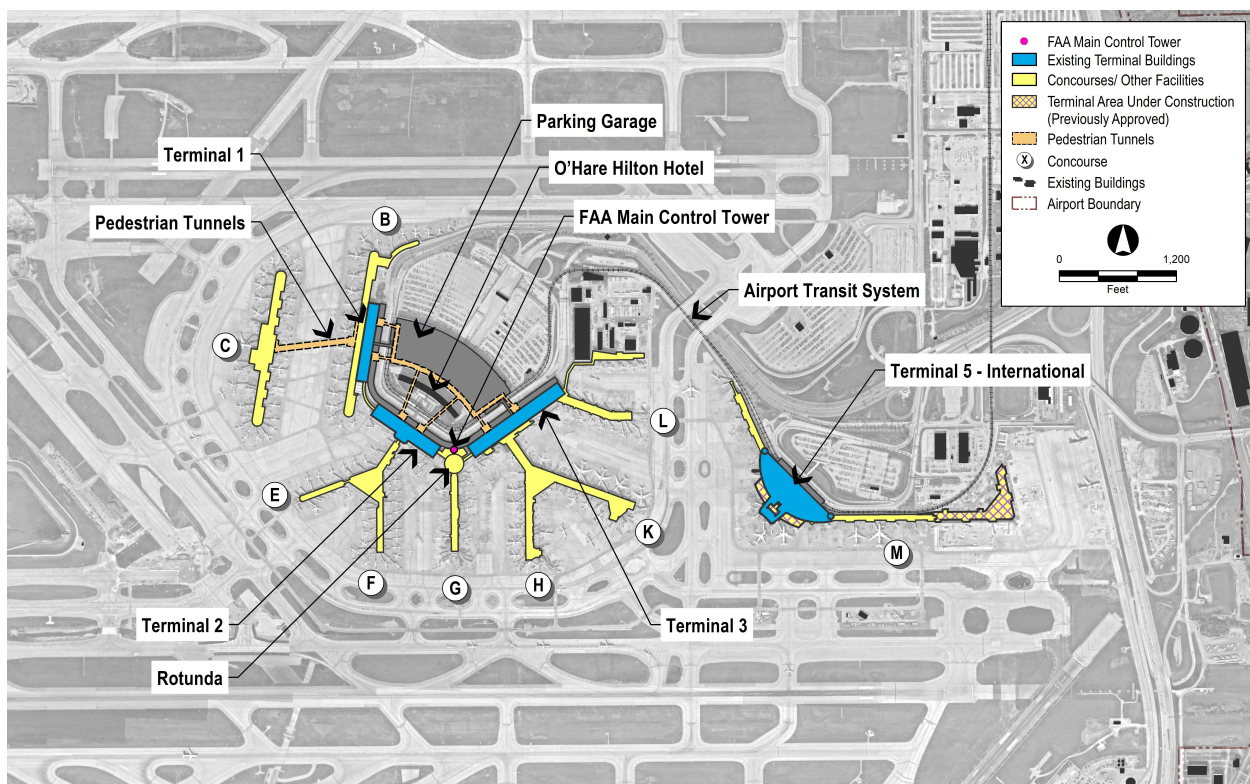
Runway Layout for  
Existing Condition

► Exhibit 1-1

### 1.2.3.2 Terminal Facilities

At the center of O'Hare, Terminals 1, 2, and 3 form the Terminal Core Area, arranged in a U-shaped plan that opens to the northeast. The interior of the U is occupied by two large surface parking lots bisected by a central roadway that provides access to the Elevated Parking Building. Terminal 1 forms the west side of the U-plan. The O'Hare Hilton Hotel is located between the Elevated Parking Building and Terminal 2 (the base of the U), and the CDA Control Tower (formerly an FAA control tower) is in-between the hotel and Terminal 2. The Rotunda is a connecting structure located at the juncture of Terminal 2 (to the west), Terminal 3 (to the east), and Concourse G, as shown on **Figure 1-1**. Glass-enclosed, concourse-level walkways connect Terminals 2 and 3 to the Rotunda. Immediately adjacent to the north perimeter wall of the Rotunda is the three-story FAA base building—designed to match the curve of the Rotunda but not touch the building—for the neighboring 1995 FAA Main Control Tower. Concourse G is attached to the southern side of the Rotunda and connects directly to the Rotunda (unlike Terminals 2 and 3).

**FIGURE 1-1**  
**EXISTING TERMINAL FACILITIES AT O'HARE**



Source: HMMH

The outside of the U formed by Terminals 1, 2, and 3 in 2018 was occupied by 171 contact gates and 15 remote hardstands. Terminals 2 and 3 have concourses that extend onto the aprons in a Y shape, while Terminal 1 has a concourse (Concourse B) with gates along the west side of the main terminal building and a separate, parallel concourse (Concourse C) accessed via an underground pedestrian tunnel.

Interstate Highway 190 (I-190) and the CTA Blue Line enter the airport from the east. The Blue Line follows the central roadway to the parking area, and the O'Hare CTA Station is located below ground. The Airport Transit System (ATS) links via rail the three domestic terminals, the international terminal, and the Multi-Modal Facility (MMF) to the northeast. The MMF is next to the METRA commuter rail station for O'Hare.

In the terminal core area, the ATS tracks and a two-level vehicular circulation roadway separate the parking lot, garage, hotel, and the CDA Control Tower from the terminals. The upper roadway level provides access to the ticketing area for departing passengers, while the lower level provides access to the baggage claim and transportation for arriving passengers. ATS stations are located opposite of Terminals 1, 2, 3, and 5 and are linked via covered pedestrian walkways across the roadway.

O'Hare supports the hub operations of American and United and their codeshare partners and offers nonstop service to 188 domestic and 76 international destinations provided by 65 passenger airlines. Terminal 1 serves United. Terminal 2 is not used specifically by either hub airline, serving a variety of non-hub carriers. Terminal 3 is used by American. Terminal 5 is predominantly used by international carriers, but it also serves additional domestic non-hub carriers.

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## 1.3 AVIATION FORECASTS

Aviation activity forecasts are an integral element of the NEPA evaluation process and form the bases upon which key environmental resources are established. The level of aircraft activity, fleet mix, and the distribution of operations over a 24-hour period have a notable effect on aircraft noise and air emissions.

The CDA submitted to the FAA documentation with their annual activity and design day forecasts for enplanements and operations, including passenger airlines, cargo airlines, general aviation, and military. This documentation can be found in **Appendix B**, Attachment B-2. The FAA completed a comprehensive review of the CDA's forecasts to determine if the annual enplanement and operation levels and assumptions were appropriate and if the Design Day Flight Schedules developed by the CDA were reasonable and appropriate for environmental modeling purposes for the EA. A key element in the review of the forecasts was whether historically the addition of new runway capacity with the OMP and gates provided over time has induced demand. The analysis included a review of passenger traffic trends at O'Hare, Chicago, and the U.S. aviation industry, trends in aircraft operations and fleet mix, and peak month average day activity in design day flight schedules. In addition, gated flight schedules demonstrate that forecast future activity can be accommodated on the existing gates, albeit with a reduced level of service. The detailed analysis of the review can be found in **Appendix B**.

### 1.3.1 Passenger Airlines Activity

This EA uses the FAA's 2018 Terminal Area Forecast (TAF) enplanement (passenger) forecast for O'Hare. The 2018 TAF was the latest version released at the start of the EA process. The TAF is prepared through the review of recent industry trends and schedule data to inform near-term forecasts and statistical analysis of the relationship between historical demand and regional economic conditions to inform longer-term forecasts. Per the FAA, the TAF assumes a demand-driven forecast for aviation services based upon local and national economic conditions, inclusive of trends within the aviation industry. It is developed independent of the ability of the airport and air traffic control system to provide the capacity required to meet demand.

The CDA prepared two analyses to assess the reasonableness in using the 2018 TAF for O'Hare for the annual enplanement forecast. These analyses include:

1. Regression analyses of O'Hare's total enplanements using both local and national economic and demographic data as independent variables and forecasting enplanements in future years using the generally accepted sources of economic forecasts and the historical relationship between those variables and enplanements.

2. Review of O'Hare's historical share of U.S. Revenue Enplaned Passengers, generating a forecast of enplaned passengers at O'Hare should its share of the U.S. total remain at 4.5 percent over the forecast period.

Both analyses' growth rates were in line with the 2018 TAF Compound Annual Growth Rate (CAGR) of 2.1 percent from 2018 to 2030.

Because O'Hare has been subject to schedule limitations in the past, this analysis assessed whether there is evidence that pent-up demand growth occurred after capacity limitations were eased or if facility constraints resulted in curbing of traffic growth. Pent-up demand is also known as latent demand.

The CDA analyzed the current use of gates at O'Hare by reviewing the current flight schedule and finding that the current gates at O'Hare are not utilized as intensively as they could be. The CDA found that existing gates could accommodate more flights per day or larger aircraft.

The FAA, through its Third-Party Consultant, conducted an independent analysis that examined the historic changes that occurred after lifting prior capacity constraints on the airport and reached the same conclusion with respect to historic cause and effect. Specific emphasis was placed on examining O'Hare's carriers' seat capacity responses after the addition of new runway capacity (and subsequent easing of FAA schedule limits) or the addition of gates. This has occurred three times in O'Hare's recent past:

1. In 2004, the FAA enforced a schedule limit on the number of aircraft operations that O'Hare could accommodate. This was done in response to excessive delays caused by insufficient runway capacity. This schedule limit was lifted in 2008 after new Runway 9L/27R opened and the capacity of the airfield increased.
2. Remedies required by the U.S. Departments of Justice and Transportation to approve the merger of American Airlines and U.S. Airways in December of 2013 resulted in American Airlines making gates available to other airlines.
3. In 2018, five new gates opened for American in the Concourse L-Stinger.

To complete this analysis, the following criteria were reviewed:

- Passenger development in comparison to other large U.S. airports,
- Outbound passenger development in relation to local economic and demographic development,
- Inbound passenger development in comparison to other large U.S. airports,
- Non-stop international seat capacity in comparison to other large U.S. airports,
- Low-cost and ultra-low-cost carrier seat capacity and market share versus the U.S. average,
- The impact of gate reallocation at O'Hare following airline mergers: American/US Airways, Delta Air Lines/Northwest Airlines, and United/Continental Airlines,
- Origin-Destination versus connecting passenger trends at O'Hare on American Airlines and United Airlines,
- The impact of the removal of slot controls at O'Hare in 2008,<sup>9, 10</sup>

<sup>9</sup> The High Density Rule (or "Slot" rule) is a federal regulation established in 1969 (14 CFR Section 93.123) to manage congestion at five high density airports: Ronald Reagan Washington National Airport, New York City's John F. Kennedy International, LaGuardia, Newark Liberty International airports, and Chicago's O'Hare International Airport. A slot is an Instrument Flight Rules (IFR) reservation for an arrival or a departure. A "slot pair" is equivalent to a round trip flight. O'Hare was subject to slot controls until 1999 when the slot control system was phased out through 2004. Slot controls were reimposed for a temporary period while additional runways were built as a part of the O'Hare Modernization Plan, but have been removed since 2008.

<sup>10</sup> Due to significant delays following the phasing out of the High Density Rule in 2002, the FAA imposed slot controls on O'Hare starting in 2004. The flight caps expired when the new runway opened in 2008.

- The impact of peaking and de-peaking on passenger traffic,
- The impact of Global Alliances on airline capacity and traffic at O'Hare, and
- The impact of the new L-stinger gates on traffic and capacity at O'Hare.

Overall, the market response to new runway capacity and the addition of gates was found to be consistent with passenger growth trends in the industry rather than indicating facility-induced growth that might have been associated with historically constrained capacity.

- Despite the removal of FAA's orders Limiting Scheduled Operations<sup>11</sup> in 2008, O'Hare experienced a steep decline due to a weak economy during the Great Recession in 2008 and 2009. For the six-year period following the removal of schedule limitations at O'Hare, there was no evidence of pent-up demand being stimulated by the removal of limitations.
- In 2014, gates historically used by the hub carriers were made available to Low Cost Carriers because of major carrier consolidation. Initially O'Hare's growth accelerated. However, compared to large hubs and the industry, O'Hare's annual growth rate was only faster in 2014 and 2015, and then lagged behind annual growth rates for the airline industry and large hubs in 2016.
- Despite the addition of the five L-stinger gates in Spring of 2018, O'Hare's growth in 2018 was lower than that of large hubs and the airline industry as a whole.

### **1.3.2 Enplaned Passenger Forecast**

Based on analysis the CDA provided on historic and future passenger trends at O'Hare, and the FAA's independent analysis, the 2018 TAF growth rate for enplanements is reasonable and appropriate for environmental analysis. The CDA conducted a regression analysis and a market share forecast that supported the TAF's 2018 growth rate of 2.1 percent per year. The FAA analyzed O'Hare's historical passenger trends to understand whether O'Hare's passenger demand has been suppressed in the past due to constraints placed on the airport. The FAA determined that O'Hare's previous constraints have not led to pent-up demand in the Chicago market in the time period analyzed, and the 2018 TAF growth rate is appropriate to use for the passenger forecast.

### **1.3.3 Passenger Airline Operations Forecast**

Similarly, to the enplanement forecast, the CDA analyzed the FAA's 2018 TAF passenger aircraft operations forecast for O'Hare for use in this EA. While the enplanement forecast is projected to grow by 2.6 percent over the next five years, the TAF forecasted a decline in annual passenger aircraft operations in the near-term at an average of -1.5 percent per annum.

This decline in passenger aircraft operations caused the CDA to further analyze the TAF operations forecast. As a result, the following issues were identified as potential causes for the decline:

- The TAF assumes that all 50-seat regional jet aircraft will be retired by 2023.
- The TAF combines cargo operations with passenger operations.

While the TAF forecast was deemed adequate for future enplanement growth, it is the view of both the CDA and the FAA that passenger aircraft operations in the TAF are underrepresented at O'Hare. An adjusted passenger operations forecast was developed after analyzing the future fleet mix, average seats per departure, and average load factors. These factors were then applied by the CDA to the TAF passenger forecast to develop its aircraft operations forecast.

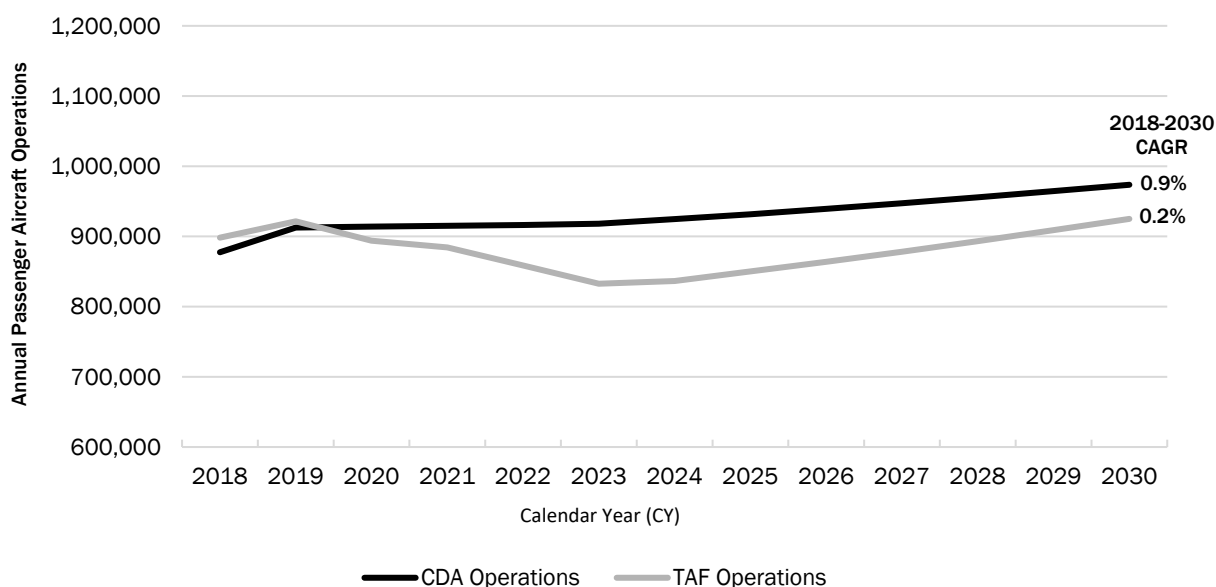
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<sup>11</sup> FAA Orders limiting scheduling at O'Hare were adopted on January 21, 2004, April 21, 2004, and August 18, 2004.



**Figure 1-2** shows a comparison of the CDA passenger operations forecast and the TAF. The CDA projects that passenger operations will grow at an average annual rate of 0.9 percent between 2018 and 2030, while the TAF assumed an average annual growth rate of 0.2 percent over the same period. The FAA views these assumptions as reasonable and regards the passenger operations forecast as reasonable.

**FIGURE 1-2**  
**CDA PASSENGER AIRCRAFT OPERATIONS FORECAST VS FAA TAF**



Note: TAF operations include Air Carrier and Air Taxi operations. The TAF is converted from federal fiscal years to calendar years.

Source: CDA's Annual Forecast and Induced Demand Technical Document 08-23-2019; FAA, 2018 Terminal Area Forecast

### 1.3.4 Cargo Aircraft Operations Forecast

Since 2014, cargo operations at O'Hare have seen a steady increase. With new cargo facilities at O'Hare, the airport can process additional cargo. Unlike passenger operations, cargo activity peaks during the winter months, as well as during nighttime hours.

The CDA developed cargo operations forecasts based on O'Hare's share of the FAA's forecast of U.S. cargo activity. The CDA confirmed that the FAA's cargo forecast for the U.S. is reasonable in that it links cargo to economic activity in the U.S. Then, the CDA made assumptions about average aircraft size, load, and routes to derive cargo operations at O'Hare. The FAA reviewed the methodology and results and finds them reasonable and appropriate for environmental modeling.

### 1.3.5 General Aviation and Military Aircraft Operations Forecast

Both general aviation and military operations make up a small share of total operations at O'Hare, accounting for 0.6 percent of total operations at the airport. As a result, the CDA assumed the TAF was a sufficient forecast of future operations. The FAA agrees with this approach.

### 1.3.6 Total Aircraft Operations Forecast

Based on the analysis provided by the CDA on the aircraft operation trends at Chicago historically and for the future and the FAA's independent analysis, the adjusted aircraft operations forecast seems reasonable.

### 1.3.7 Schedule Analysis

From the annual forecasts of passengers and aircraft operations, the CDA derived forecasts of peak period activity to develop design day flight schedules for 2023 and 2030<sup>12</sup> that provide the basis and detail for environmental modeling. Peak period scheduled passenger airline activity in summer 2019 provided the basis for the passenger and passenger aircraft activity. For non-scheduled activity including cargo, general aviation, and military activity, a variety of data sources collected by the U.S. Department of Transportation and the City of Chicago for activity in 2018 were used to form a base schedule of activity by those airport users. The CDA then applied the expected annual growth rates discussed in the previous section to passenger, cargo, general aviation, and military activity to develop design day flight schedules that reflect the amount, time of day, and expected aircraft in 2023 and 2030. The FAA reviewed the source data, analytical methodology, modeling, and results, and determined that the resultant design day flight schedules are appropriate for environmental modeling purposes.

During the month of July, passenger airlines schedule the most flights and have the most capacity available of any month during the year. Passenger airline schedules typically include a similar number of flights each weekday, with lower levels of activity on weekends or during holiday weeks, such as the week that contains the Independence Day holiday. Published schedules for passenger airline activity throughout 2019 reflect a peak in July and exhibit the typical pattern of peak activity during weekdays. Because all the weekdays outside of the holiday week had virtually identical schedules in July of 2018, the CDA selected Wednesday, July 24, 2019, as a representative day. The flight schedule from the selected day provides all the detail of each flight including arrival and departure times, airline operator, route, and aircraft type. The FAA believes the CDA's approach and its selection of a base design day for passenger activity is reasonable and appropriate for environmental evaluation.

While general aviation and military activity are relatively consistent over the course of the year, cargo aircraft activity peaks in the fall and winter months. Cargo activity seasonality peaks are driven by increased consumer activity leading up to the holidays toward the end of the calendar year. At O'Hare, cargo operations typically peak in October or November; in 2018 the cargo operations peak occurred in October. To ensure that cargo operations were not under-represented in a design day schedule from July, the CDA reviewed cargo activity from October 2018 and found that the amount of cargo activity in the nighttime was not under-represented in terms of aircraft types or operations in the July schedules.

For this reason, the CDA has proceeded with an unadjusted July peak for cargo, general aviation, and military activity. The FAA reviewed the CDA's data sources, analysis, reasoning, and conclusions, and believes the July design day flight schedule for cargo, general aviation, and military activity based on 2018 data is reasonable and appropriate for environmental modeling purposes.

Passenger load factors were sourced from the U.S. Department of Transportation T-100 data base by airline and city pair market, and origin and destination passengers were sourced from the U.S. Department of Transportation Origin and Destination Passenger Survey by airline and route. The FAA believes this is reasonable and appropriate.

Over the forecast period, the CDA applied annual forecast growth rates to passengers on a flight-by-flight basis. As load factors on existing aircraft reached operational limits (95 percent), the CDA increased the

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<sup>12</sup> The original analysis years were 2023 and 2030. See Section 1.3.8 for information on project delays that revised EA analysis years.



size of aircraft to the next largest variant of the aircraft group. In addition, the CDA phased out certain aircraft types over the forecast period to reflect aircraft replacement strategies of the various airlines. Consistent with these aircraft replacement plans, the new aircraft is typically larger than the old aircraft it replaced.

Once up-gauging and aircraft replacement opportunities were exhausted, the CDA added additional flights in the city-pair market. New flights were added proportionally across the day to preserve the peaks and troughs or waves of flights that are typical at O'Hare. New flights also preserved the day-night split of activity, and the relative market shares of the airlines so as not to change the character of passenger air service at O'Hare. The FAA believes the CDA's analysis and conclusions in developing the design day flight schedules for passenger activity to be reasonable and appropriate.

For cargo, general aviation, and military activity, the CDA applied annual forecast growth rates to aircraft operations. As additional operations were appropriate, the CDA added flights to the design day flight schedule that preserved the timing and character of the operations over the course of the day as well as the proportion of operations operated during the day and during the night. The FAA believes the CDA's analysis and conclusions in developing the design day flight schedules for cargo, general aviation, and military activity to be reasonable and appropriate.

In developing the design day flights schedules, the CDA included the typical share of nighttime aircraft activity at O'Hare between 10:00 PM and 06:59 AM. As described above, passenger operations were added proportionally across the day in a manner that preserves the hourly profile of flight activity over the course of the day and the night. Additional cargo flights were added in proportion to the day and night split of such activity. While general aviation activity overwhelmingly occurs during the daytime hours, the design day flight schedules include general aviation activity in the nighttime to ensure appropriate representation.

Historically, nighttime activity at O'Hare has represented approximately 10 percent of total activity at the airport. In 2019, nighttime activity represented 10.4 percent of total activity during the peak month average day. In the CDA's 2023 design day flight schedule, nighttime activity represented 10.5 percent of total activity, while in the CDA's 2030 design day flight schedule, nighttime activity represented 10.6 percent of total activity. The FAA believes the CDA's design day flight schedule activity in the daytime and the nighttime are reasonable and appropriate for environmental modeling.

### **1.3.8 Analysis of the Impact of Project Delays on the Forecast of Activity**

Work on the EA process commenced in 2019. Due to extensive special purpose law analysis, the EA timeline was extended and the proposed construction schedule for the Proposed Action was shifted by two years accordingly. The original forecast period utilized to assess the environmental effects of the Proposed Action was 2019-30 with specific design days analyzed for the Interim Condition in 2023, representing a peak construction year, and 2030, reflecting the Build Out Condition. As a result of the revised timetable, the forecast year representing peak construction conditions analyzed in the Interim year shifts from 2023 to 2025 and the Build Out year shifts from 2030 to 2032. The FAA re-examined the differences in passenger operations, passenger fleet mix and total aircraft operations from 2023 and 2030 to 2025 and 2032. The analysis found in **Appendix B-1** demonstrates that differences in fleet mix and operations are not material and that there would not be significant changes to the forecast with the analysis years shifted.

Total aircraft operations were analyzed by operation type between 2023 and 2025, and between 2028 and 2030. The increase in operations between 2028 and 2030 is similar to the expected increase in the operations forecast in 2031 and 2032. Over the life of the forecast, O'Hare's operations are forecast to increase at approximately one percent per year, as shown in **Table 1-2**. Passenger operations are projected to increase at 0.7 percent per year between 2023 and 2025 and 0.9 percent per year between 2028 and 2030. General aviation and military operations are forecasted to remain constant throughout the forecast period and are

not expected to change beyond 2030. Cargo operations are forecast to increase at the highest rate of 2.8 percent over the forecast period of 2018 and 2030. However, cargo operations remain a small portion of total operations as they account for approximately three percent of total flights at O'Hare throughout the forecast period. Changes in cargo operations between the years of 2023 and 2025, and 2030 and beyond would not be significant to the overall forecast activity levels for environmental analysis.

**TABLE 1-2**  
**O'HARE'S TOTAL AIRCRAFT OPERATIONS FORECAST**

Total Aircraft Operations Forecast					
Year	Passenger	Cargo	General Aviation	Military	Total
2018	877,461	24,739	5,770	75	908,045
2019	912,737	25,878	5,906	75	944,596
2020	914,029	26,704	5,906	75	946,714
2021	915,044	27,361	5,906	75	948,386
2022	916,379	27,937	5,906	75	950,297
2023	918,075	28,433	5,906	75	952,489
2024	924,654	28,994	5,906	75	959,629
2025	931,555	29,718	5,906	75	967,254
2026	939,218	30,572	5,906	75	975,771
2027	947,240	31,485	5,906	75	984,706
2028	955,702	32,410	5,906	75	994,093
2029	964,531	33,360	5,906	75	1,003,872
2030	973,592	34,283	5,906	75	1,013,856
Compound Annual Growth Rate					
<b>2018-2030</b>	0.9%	2.8%	0.2%	0.0%	0.9%
<b>2023-2025</b>	0.7%	2.2%	0.0%	0.0%	0.8%
<b>2028-2030</b>	0.9%	2.8%	0.0%	0.0%	1.0%

Source: Chicago Department of Aviation's Annual Forecast and Induced Demand Technical Document, 08-02-2019

In conclusion, the FAA found that changes in passenger operations, the passenger fleet mix, and total aircraft operations were not significant; therefore, shifting the analysis years for the peak construction conditions of the Interim Condition to 2025 and the Build Out Condition to 2032 would not meaningfully impact the activity levels forecast for environmental analysis.

### 1.3.9 COVID-19 Sensitivity Analysis

The aviation activity forecasts presented in **Appendix B** represented the expected level of activity at O'Hare during the forecast period of 2019 through 2030. This forecast was prepared prior to the onset of the COVID-19 pandemic. For the purposes of understanding the impact that COVID-19 has had on air travel demand on O'Hare, the FAA examined two scenarios that could lead to a shift in O'Hare's passenger

demand, thus changing the passenger level or mix and aircraft fleet mix in the forecast. This analysis can be found in **Appendix N**. The two scenarios evaluated were:

1. Scenario 1 examined O'Hare's role as a connecting hub to assess whether the trend seen nationally of Low-Cost Carrier and Ultra Low Cost Carrier growth will increase point-to-point traffic at O'Hare and/or reduce O'Hare's role as a connecting hub.
2. Scenario 2 examined the impact the pandemic has had on O'Hare international traffic as well as shifts in business traffic.

The analysis concluded that while O'Hare has been slow to recover, it would fully recover as a major connecting hub for both United and American and in fact there would be no shifts in how the airport is served. The FAA estimates that enplanements will recover to 2019 levels in 2023 and will almost fully recover to the CDA's 2019 forecast levels by 2027. The sensitivity analysis forecasts that enplanement levels remain three percent below the CDA's 2019 forecast in 2030. The sensitivity analysis forecasts that O'Hare will reach the CDA's 2030 forecast enplanement level between 2031 and 2032. The sensitivity analysis estimates that operations will reach 921,000 in 2025 and 985,000 in 2030. Similar to the enplanement forecast, the level of operations will reach the CDA's 2030 forecast between 2031 and 2032.

The fleet mix assumptions in the City's forecasts remain appropriate for environmental modelling purposes because trends in fleet replacement and retirement at O'Hare have not been altered by the pandemic.

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## 1.4 SECTION 163 AND FEDERAL APPROVALS

Recent changes in federal law have required the FAA to revisit whether FAA approval is needed for certain types of U.S. airport projects. Section 163(d) of the FAA Reauthorization Act of 2018 limits the FAA's review and approval authority for ALPs to those portions of ALPs or ALP revisions that:

- Materially impact the safe and efficient operation of aircraft at, to, or from an airport,
- Adversely affect the safety of people or property on the ground adjacent to an airport because of aircraft operations, or
- Adversely affect the value of prior federal investments to a significant extent.

Therefore, the City of Chicago is requesting the following FAA actions for the proposed improvements subject to FAA approval:

- Unconditional approval of the ALP to depict the Proposed Improvements Subject to FAA Approval pursuant to 49 United States Code (U.S.C.) Sections 40103(b) and 47107(a)(16); 14 CFR Part 77, Safe, Efficient Use and Preservation of the Navigable Airspace; and 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports,
- Determinations under 49 U.S.C. Sections 47106 and 47107 associated with the eligibility of the proposed improvements subject to FAA approval for federal funding under: the Airport Improvement Program; under 49 U.S.C. Section 40117, as implemented by 14 CFR Section 158.25, to use passenger facility charges collected at O'Hare for portions of the Proposed Action to assist with construction of potentially eligible development items from the ALP, and
- Airspace actions under FAA Order JO 7400.2N Procedures for Handling Airspace Matters.

The FAA screened each project with the Proposed Action for conformity with the criteria of Section 163(d) and determined that it retains legal authority to approve or disapprove changes to the ALP for all proposed airfield improvement projects described in **Section 1.5**.<sup>13</sup>

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## 1.5 DESCRIPTION OF PROPOSED PROJECTS

The projects comprising the Proposed Action are listed in **Table 1-3**. They are organized into five groupings. The number of projects in each grouping and its associated subsection number are listed below.

1. Terminal Projects (18; **Section 1.5.1**),
2. On-Airport Hotels (two; **Section 1.5.2**),
3. Airfield and Taxiway Improvements Not Required by the Terminal Projects (six; **Section 1.5.3**),
4. Support Facilities Not Required by the Terminal Projects (nine; **Section 1.5.4**), and
5. Air Traffic Actions for Offset Approach Procedures for Runway 10R/28L (one; **Section 1.5.5**).<sup>14</sup>

Project numbers generated by the CDA appear in the section titles in brackets, e.g., “[CDA Project #1].”

### 1.5.1 Terminal Projects (Group 1)

The following subsections briefly describe the projects in the Terminal Projects group.

#### 1.5.1.1 O'Hare Global Terminal and Concourse and Associated Apron Pavement [CDA Project #1]

The proposed O'Hare Global Terminal and Associated Apron Pavement project would replace existing Terminal 2, including Concourses E and F, with a new terminal building and attached concourse that would integrate with existing Terminal 1 and Concourse B to the west and the Rotunda to the east. The O'Hare Global Terminal and Associated Apron Pavement project would support a full range of terminal functions, including capability of expanding from 12 to 21 aircraft gates at any time, passenger holdrooms, check-in facilities, security screening, baggage claim and handling systems, baggage make-up areas, a Federal Inspection Station, various passenger amenities, and circulation space.

The O'Hare Global Terminal and Associated Apron Pavement project would also expand the existing Terminal 2 Airport Transit System station by providing an additional platform north of the existing Airport Transit System track and guideway. The existing pedestrian bridge connecting the Terminal 2 Airport Transit System station to the existing Terminal 2 would be replaced with a larger pedestrian bridge that would connect the expanded Airport Transit System station to the proposed O'Hare Global Terminal.

#### 1.5.1.2 Satellite 1 Concourse and Associated Apron and Taxiway Pavement [CDA Project #2]

The Satellite 1 project would replace sections of several taxiways with a new concourse building that would connect to the existing south end of Concourse C. The Satellite 1 project would support a range of airside terminal functions, including capability of expanding from 11 to 21 aircraft gates at any time, passenger

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<sup>13</sup> FAA March 28, 2022 letter to Chicago Department of Aviation Commissioner Jamie Rhee, Subject: FAA Approval Authority Review – Chicago O'Hare International Airport (ORD), Chicago, Illinois – Multiple projects, including Terminal Area Plan Projects (18 projects), On-Airport Hotel Projects (2), Airfield and Taxiway Improvements Not Required by the Terminal Projects (6), and Support Facilities Not Required by the Terminal Projects (9); and associated MS Excel file Parcel Exhibit ORD 002-2022 Section 163\_FINAL.xlsx.

<sup>14</sup> Projects in Groups 2 through 5 are not connected to the projects in the other Groups. Indeed, they are independent actions that do not trigger the need for one another; implementation of one does not require the implementation of the other action.

holdrooms, baggage handling systems and make-up areas, various passenger amenities, and circulation space.

#### **1.5.1.3 Satellite 2 Concourse and Associated Apron Pavement [CDA Project #3]**

The Satellite 2 project would replace sections of several taxiways with a new concourse building. The Satellite 2 project would support a range of airside terminal functions, including 24 aircraft gates, passenger holdrooms, baggage handling systems and make-up areas, various passenger amenities, and circulation space.

#### **1.5.1.4 Terminal 1 Concourse B Northeast End Expansion [CDA Project #4]**

The Concourse B Expansion project would replace an existing surface parking lot with a terminal building expansion integrating with existing Terminal 1 and Concourse B. The Concourse B Expansion would support a range of terminal functions, including check-in facilities, security screening, airline office space, various passenger amenities, and circulation space.

#### **1.5.1.5 Terminal 3 Concourse L Stinger One-Gate Addition and Associated Apron Expansion [CDA Project #5]**

The Concourse L Stinger One-Gate Addition project would replace the AT&T Building with aircraft parking apron pavement for one new aircraft gate position.

#### **1.5.1.6 Consolidated Baggage, Pedestrian/Moving Walkway, and Utility Tunnel [CDA Project #6]**

The Consolidated Tunnel project would connect the proposed O'Hare Global Terminal, Satellite 1, and Satellite 2 with a tunnel beneath the associated apron.

The Consolidated Tunnel would include rights-of-way for baggage handling systems, utility corridors, motorized vehicle rights-of-way, and circulation space for conveying passengers, utilities, and baggage between the proposed O'Hare Global Terminal, Satellite 1, and Satellite 2.

#### **1.5.1.7 Terminal 5-Related Projects [CDA Projects #7, #8, #9, #26]**

The following four projects are related to Terminal 5:

- Curbside Addition and Interior Reconfiguration would renovate and expand the existing Terminal 5. [CDA Project #7]
- Roadway Improvements would reconfigure the existing Terminal 5 access roadway network by adding lanes and ramps, replacing existing roadways, and demolishing certain areas. It would also enhance the existing access roadway network by building a viaduct over Balmoral Avenue to Interstate 190. [CDA Project #8]
- Curbside Expansion would increase capacity of the existing upper- and lower-level curbside roadways, supplementing the existing curbside roadways with pavement restriping, adding lanes, and enlarging sidewalks. [CDA Project #9]
- Parking Garage Phase 2 would provide for a 1,400-space,<sup>15</sup> seven-level elevated public parking structure extending west from the future Phase 1 parking garage. (The Phase 1 parking garage is not part of this EA). [CDA Project #26]

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<sup>15</sup> In conjunction with the proposed surface parking lot associated with the proposed Roadway Improvements

#### **1.5.1.8 Taxiway Replacements [CDA Projects #16, #17, #29, #30, #31]**

The following five projects are related to taxiway replacements:

- Taxiways K and L Extension would replace sections of five existing taxiways with new taxiway pavement, providing parallel Airplane Design Group V/Taxiway Design Group 6 taxiways. [CDA Project #16]
- Taxiways North of Satellite 2 would replace sections of four existing taxiways and the Penalty Box Hold Pad with new taxiway pavement, providing parallel Airplane Design Group V/Taxiway Design Group 6 taxiways. [CDA Project #17]
- Taxiways A and B Reconfiguration would replace sections of two existing taxiways with new taxiway pavement, increasing centerline separation to provide parallel Airplane Design Group V/Taxiway Design Group 6 taxiways. [CDA Project #29]
- Taxiway G would replace sections of existing Taxiway H with new taxiway pavement, increasing centerline separation from Runway 9R/27L to 400 feet (becomes Taxiway G). [CDA Project #30]
- Taxiways H and J would replace sections of five existing taxiways with new taxiway pavement, providing parallel Airplane Design Group VI/Taxiway Design Group 6 taxiways. [CDA Project #31]

#### **1.5.1.9 Terminal 1 Concourse C Expansion (North) [CDA Project #33]**

The Concourse C North project would integrate with existing Terminal 1 Concourse C and provide space for an airline lounge area, holdrooms, commercial space, and mechanical, electrical, and plumbing engineering systems.

#### **1.5.1.10 Temporary Projects [CDA Projects #T1 and #T2]**

These two projects include the following:

- Temporary Walkway/Extended Jetway from Concourse C project would relocate Terminal 1 Concourse C gates to enable construction of proposed Satellite 1 (**Section 1.5.1.2**) and provide an enclosed temporary walkway during proposed Satellite 1 construction. The Temporary Extended Jetway would be removed after completion of proposed Satellite 1.
- Temporary Heating and Refrigeration Facility would support the proposed O'Hare Global Terminal, Satellite 1, and Satellite 2 and include administrative and support spaces and an accompanying surface parking lot with construction of a temporary facility at one entrance to the proposed Consolidated Tunnel (**Section 1.5.1.6**). The Temporary Heating and Refrigeration Facility would be removed after completion of Satellites 1 and 2 (**Section 1.5.4.1**).

#### **1.5.2 On-Airport Hotels (Group 2)**

Two on-airport, non-aeronautical projects are briefly described in the following subsections. These projects are not required for construction or operation of any project included in other Groups. In other words, these projects are not connected to the Terminal Projects. Indeed, they are independent actions that do not

trigger the need for one another; implementation of one does not require the implementation of the other action.<sup>16</sup>

#### **1.5.2.1 Multimodal Facility Hotel, Mixed-Use Development, and Detention Basin Relocation [CDA Project #22]**

The MMF was completed in 2018. The proposed MMF Hotel and Mixed-Use Development project would include construction of a new building complex west of the MMF. The new complex would include a hotel with space for mixed-use development, a surface parking lot, and access road pavement.

#### **1.5.2.2 Terminal 5 Hotel Facility and Pedestrian Bridge [CDA Project #25]**

The proposed Terminal 5 Hotel project would construct a new building on the northwest section of existing public parking Lot D. A pedestrian bridge would be built to connect the hotel to the future Terminal 5 Parking Garage.

### **1.5.3 Airfield and Taxiway Improvements Not Required by the Terminal Projects (Group 3)**

The Airfield and Taxiway Improvements group consists of six projects briefly described in the following subsections. These projects are not required for construction or operation of any project listed in the other Groups. In other words, these projects are not connected to the Terminal Projects. Indeed, they are independent actions that do not trigger the need for one another; implementation of one does not require the implementation of the other action.

#### **1.5.3.1 Bravo Hold Pad Conversion [CDA Project #20]**

The proposed Bravo Hold Pad Conversion project would replace the temporary United Airlines Temporary Employee Parking Lot with a hold pad (airfield pavement for holding aircraft). Temporary employee parking would be relocated to the proposed West Employee Parking Garage (Section 1.5.4.3).

#### **1.5.3.2 Runway 28R Blast Pad Expansion [CDA Project #24]**

The proposed Runway 28R Blast Pad Expansion project would widen the blast pad from 150 feet to 220 feet and increase its length from 200 feet to 400 feet.

#### **1.5.3.3 Taxiway Additions, Replacement/Realignment, and Removal [CDA Projects #23, #32, #37, #38]**

These four projects consist of the following:

- Runway 9L/27R Exit Taxiways would connect Runway 9L/27R to Taxiways C and M1 with new taxiway pavement. [CDA Project #23]
- Taxiways P, V, and Y Reconfiguration would replace existing sections of four taxiways. [CDA Project #32]
- Taxiway T Demolition would eliminate approximately 35,000 square feet of an irregular taxiway intersection. [CDA Project #37]
- Taxiway DD Realignment would realign the southernmost portion of Taxiway DD and easternmost portion of Taxiway Q. [CDA Project #38]

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<sup>16</sup> 40 CFR 1508.25(a)(1). Accessed at: <https://www.ecfr.gov/on/2017-01-03/title-40/chapter-V/part-1508/section-1508.25>

#### **1.5.4 Support Facilities Not Required by the Terminal Projects (Group 4)**

The Support Facilities group consists of nine projects briefly described in the following subsections. These projects are not required for construction or operation of any project listed in the other Groups. In other words, these projects are not connected to the Terminal Projects. Indeed, they are independent actions that do not trigger the need for one another; implementation of one does not require the implementation of the other action.

##### **1.5.4.1 West Heating and Refrigeration Facility [CDA Project #10]**

The West Heating and Refrigeration (H&R) Facility would increase O'Hare heating and refrigeration capacity to support the West Employee Ground Transportation Facility and Parking Garage and West Employee Landside Access listed below and provide redundancy for the overall airport heating and cooling system. Besides the plant, the facility would also include administrative and support spaces and an accompanying landside surface parking lot.

##### **1.5.4.2 West Employee Screening Facility [CDA Project #11]**

The proposed West Employee Screening Facility project would provide areas for employee security screening, circulation space, and space for support functions through a new building on an undeveloped site on the western side of O'Hare.

##### **1.5.4.3 West Employee Ground Transportation Facility and Parking Garage [CDA Project #12]**

The proposed West Employee Parking Garage project would construct an eight-level elevated parking structure, with approximately 14,000 spaces, on an undeveloped site on the western side of O'Hare to replace the temporary United Airlines Parking Lot and other parking locations.

##### **1.5.4.4 West Employee Landside Access [CDA Project #13]**

The proposed West Employee Landside Access project would enable roadway access to proposed facilities on the western side of O'Hare. Facilities served include the proposed West H&R Facility, West Employee Screening Facility, West Employee Parking Garage, and related support facilities (associated collateral land development). West Employee Landside Access would connect the west facilities and off-airport roadways, including York Road, Illinois Route 390, and future Interstate 490 (O'Hare West Bypass).

##### **1.5.4.5 West Landside Detention Basins [CDA Project #14]**

The proposed West Landside Detention Basins project would increase O'Hare's stormwater detention capacity by 86 acre-feet of stormwater across three detention basins on undeveloped sites comprising approximately 400,000 square feet of land on the western side of the airport property.

##### **1.5.4.6 Airside Service Roadways [CDA Project #15]**

To maintain airside roadway connectivity between various proposed and existing airside facilities, the proposed Airside Service Roadways project would reconfigure the existing airside service roadway network.



#### **1.5.4.7 Aircraft Rescue and Firefighting Station 4 Relocation [CDA Project #19]**

The proposed ARFF Station 4 Relocation would construct a new building and associated pavement across Taxiway Z from the future United Airlines Ground Equipment Maintenance Building (the latter of which is not part of the EA). The ARFF Station 4 Relocation project would provide a garage building with administrative and support spaces, airside pavement, and an accompanying surface parking lot.

#### **1.5.4.8 Commercial Vehicle Holding Area Expansion [CDA Project #21]**

The proposed Commercial Vehicle Holding Area (CVHA) Expansion project would reconfigure the existing CVHA to increase vehicle holding area capacity.

#### **1.5.4.9 Centralized Distribution and Receiving Facility [CDA Project #35]**

The Centralized Distribution and Receiving Facility (CDRF) project would support goods delivery and recyclables removal while consolidating deliveries away from the terminal area, enhancing security, and reducing traffic congestion in the terminal area via a new building on an undeveloped site in the western area of airport property.

### **1.5.5 Air Traffic Actions for Offset Approach Procedures for Runway 10R/28L (Group 5)**

The proposed FAA Air Traffic actions include retaining the existing 2.5 degree offset (angled) approaches to each end of Runway 10R/28L. With only 3,100 feet separating Runway 10R/28L and its adjacent parallel runway (Runway 10C/28C), the final approach courses to Runways 10R and 28L must be offset from their extended centerline to allow independent simultaneous approaches to Runways 10R and 10C or to Runways 28L and 28C. These projects are not required for construction or operation of any project listed in the other Groups. In other words, these projects are not connected to the Terminal Projects. Indeed, they are independent actions that do not trigger the need for one another; implementation of one does not require the implementation of the other action.

**Exhibits 1-11** and **1-12** show examples of the offset air traffic approaches for existing conditions, with the offset air traffic approaches temporarily approved, during east or west flow, respectively.

Two operating conditions are used most of the time at O'Hare: east flow, when winds are from the east, and west flow, when winds are from the west, since the predominant winds at O'Hare are from the east and west.

Portions of a pilot's approach to an airport are described in segments, as labeled in **Exhibits 1-11** and **1-12**. In the downwind segment, the aircraft flies with the wind away from the airport. During the final leg, the aircraft flies into the wind toward the airport.

Except for Runway 10R/28L at O'Hare, the point where the aircraft aligns with the runway extended centerline is normally five miles from the runway's threshold and is called the final approach fix. For runways with an offset final approach course, the point at which that course intercepts the extended runway centerline is approximately a half mile from the runway threshold.

The ground track for the downwind segment and the ground track for the final segment are south of what their corresponding locations would be if an offset procedure were not in place, since the 2.5 degree offset is toward the south. The offset air traffic approach procedures currently temporarily allow for simultaneous approaches to three runways in east or west flows, with one of the three runways being Runway 10R/28L. For example, in east flow, the offset air traffic approach procedures allow for simultaneous approaches to Runways 10R, 10C, and 9L. In west flow, offset air traffic approach procedures allow for simultaneous approaches to Runways 28L, 28C, and 27R.

These 2.5 degree offset final approach paths to Runway 10R/28L were temporarily approved in October 2015 in the Written Re-Evaluation of the OMP EIS. The 2015 Written Re-Evaluation temporarily approved the offset air traffic approach paths to increase separation between aircraft on parallel approaches involving Runway 10R/28L and Runway 10C/28C.

**Exhibits 1-13** and **1-14** show the approaches for the No Action Alternative for east and west flows, respectively. The 2015 Written Re-Evaluation assumed the offset air traffic approaches would expire when the Build Out of the OMP occurred; i.e., when the extension of Runway 9R/27L is fully operational (currently planned for the end of 2022, at the earliest). Consequently, the Interim and Build Out Conditions of the No Action Alternative of this EA do not include the offset air traffic approaches and the associated offset downwind approach procedures, relying instead on approaches aligned with the extended runway centerline.

Simultaneous approaches to three runways in east or west flows, with one of the three runways being Runway 10R/28L, would be feasible but with less efficiency and capability inherent in dependent (as opposed to independent), simultaneous approaches to parallel runways. Dependent approaches to Runway 10C/28C in conjunction with Runway 10R/28L would mean that aircraft on approach for each runway must be spaced in reference to aircraft on the other runway. In other words, the arrival of aircraft on each runway would be dependent on the other runway. Independent approaches are not dependent on the activity on the other runway, as currently temporarily in place.

**Exhibits 1-15** and **1-16** show the approaches for the Proposed Action for east and west flows, respectively. Retaining the offset air traffic approach procedures permanently is also a possible component to enable the future use of simultaneous, independent approaches to four runways (quadruple approaches) during east or west flows, with one of the four runways being Runway 10R/28L. For example, in east flow, aircraft could simultaneously approach Runways 10R, 10C, 9C, and 9L. In west flow, aircraft could simultaneously approach Runways 28L, 28C, 27C, and 27R. Quadruple approaches were previously assessed and approved at O'Hare in the 2005 OMP EIS. Permanent retention of the offset air traffic approaches would preserve one future way to potentially operate quadruple approaches. While quadruple approaches have not yet been necessary at O'Hare since operations have not grown to a level to warrant their use, a sufficient volume of operations is expected by the Build Out.

To maintain efficient aircraft movement in the vicinity of O'Hare and to provide flexibility, the FAA proposes to retain the offset final approaches and associated offset downwind approach procedures as analyzed in the Interim and Build Out Conditions of the Proposed Action in this EA.

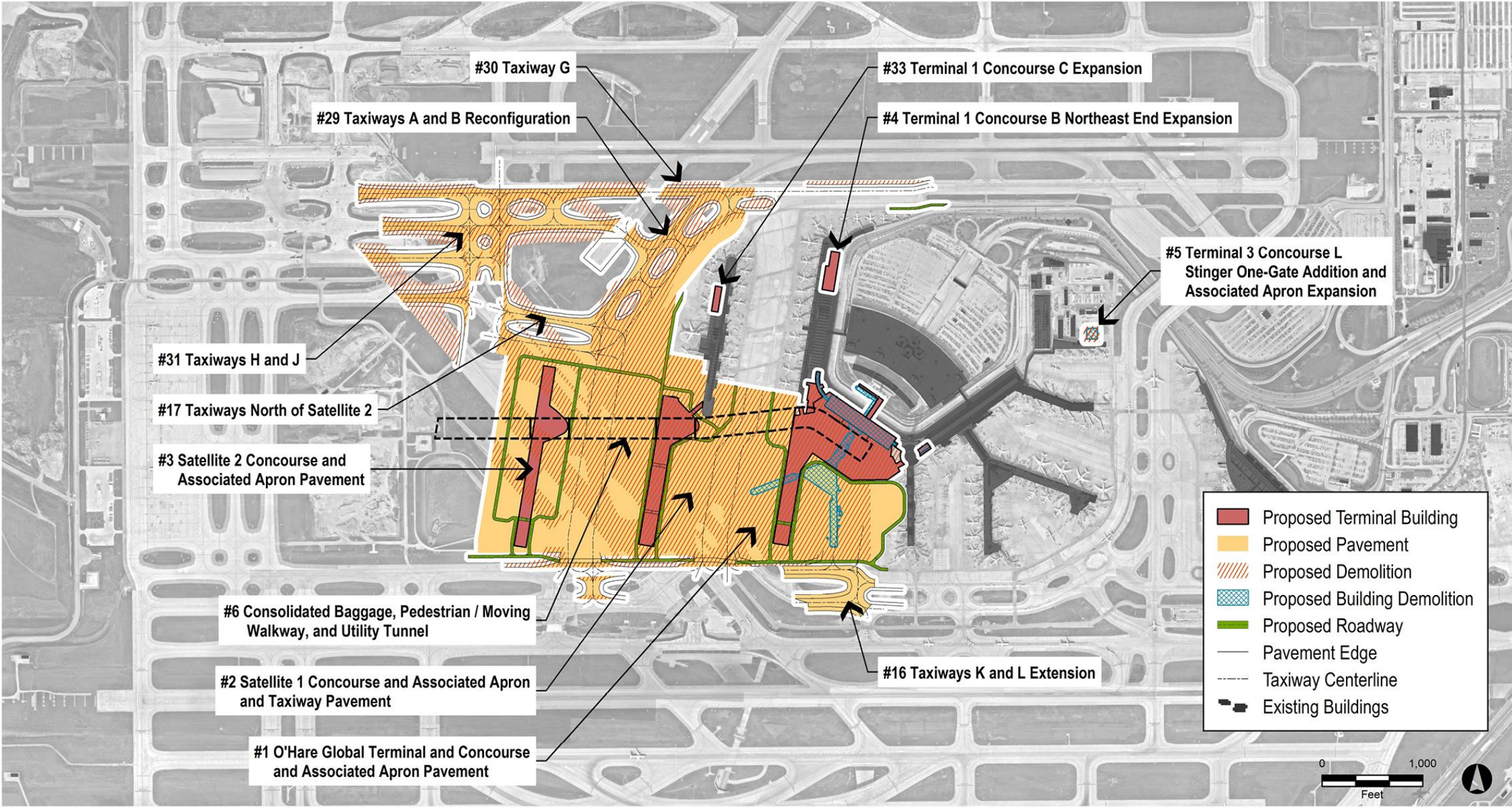
**Table 1-3** lists the proposed project footprint area for the project, as applicable. The table also lists abbreviated names for the projects if they differ from the more formal project names. Projects with construction of structures or pavement are depicted in **Exhibits 1-2** through **1-10** following **Table 1-3**. The proposed air traffic actions and the existing conditions are depicted in **Exhibits 1-11** through **1-16**. For cross-referencing purposes, **Table 1-3** lists the figure number in which the project is depicted. CDA project numbers are also listed in **Table 1-3**.

**TABLE 1-3**  
**PROPOSED ACTION**

<b>EA Project Grouping</b>	<b>[CDA Project Number] and Figure Number</b>	<b>Project Name (full)</b>	<b>Proposed Resultant Footprint Area (sq. ft. unless otherwise specified) at Build Out</b>
<b>Terminal Projects</b>	[1] 1	O'Hare Global Terminal and Concourse and Associated Apron Pavement	800,000 sq. ft. main building and concourse 1.7 million sq. ft. new apron pavement
	[2] 1	Satellite 1 Concourse and Associated Apron and Taxiway Pavement	300,000 sq. ft. concourse 2.6 million sq. ft. new apron pavement 60,000 sq. ft. new taxiway
	[3] 1	Satellite 2 Concourse and Associated Apron Pavement	270,000 sq. ft. concourse 1.7 million sq. ft. new apron pavement
	[4] 1	Terminal 1 Concourse B Northeast End Expansion	41,000
	[5] 1	Terminal 3 Concourse L Stinger One-Gate Addition and Associated Apron Expansion	24,000 sq. ft. new apron pavement
	[6] 1	Consolidated Baggage, Pedestrian/Moving Walkway, and Utility Tunnel	N/A
	[7] 3	Terminal 5 Curbside Addition and Interior Reconfiguration	63,000
	[8] 3	Terminal 5 Roadway Improvements	195,000 sq. ft. new roadway pavement; 150,000 sq. ft. surface parking lot pavement
	[9] 3	Terminal 5 Curbside Expansion	100,000 sq. ft. new roadway; 76,000 sq. ft. reconfigured/restriped roadway
	[26] 3	Terminal 5 Parking Garage - Phase 2	55,000
	[16] 1	Taxiways K and L Extension (Between Taxiway A11 and Taxiway A13)	260,000 sq. ft. new taxiway
	[17] 1	Taxiways North of Satellite 2 (Between Relocated Taxiways A and B and Penalty Box Hold Pad)	620,000 sq. ft. new taxiway
	[29] 1	Taxiways A and B Reconfiguration (Between Penalty Box Hold Pad and Taxiway G)	780,000 sq. ft. new taxiway
	[30] 1	Taxiway G (Existing Taxiway H; Between Future Taxiway T and Taxiway A1)	700,000 sq. ft. new taxiway
	[31] 1	Taxiways H and J (South of Runway 9R Extension from Taxiway SS to Runway 4L/22R)	750,000 sq. ft. new taxiway
	[33] 1	Terminal 1 Concourse C Expansion (North)	16,000
	[T1] 2	Temporary Walkway/Extended Jetway from Concourse C (With 6 Gates)	20,000
	[T2] 2	Temporary Heating and Refrigeration Facility (Near Satellite 2)	44,000 sq. ft. facility; 20,000 sq. ft. pavement
<b>On-Airport Non-</b>	[22] 4	Multimodal Facility (MMF) Hotel, Mixed-Use Development, and Detention Basin Relocation	43,000 sq. ft. facility 55,000 sq. ft. pavement 82,000 sq. ft. new basins

<b>EA Project Grouping</b>	<b>[CDA Project Number] and Figure Number</b>	<b>Project Name (full)</b>	<b>Proposed Resultant Footprint Area (sq. ft. unless otherwise specified) at Build Out</b>
<b>Aeronautical Projects</b>	[25] 4	Terminal 5 Hotel Facility and Pedestrian Bridge	82,000
<b>Airfield and Taxiway Improvements</b>	[20] 5	Bravo Hold Pad Conversion	1.09 million sq. ft. pavement
	[23] 6	Runway 9L/27R Exit Taxiways	405,000 sq. ft. taxiway
	[24] 5	Runway 28R Blast Pad Expansion	58,000
	[32] 5	Taxiways P, V, and Y Reconfiguration (Between Taxiway RR and the Existing Runway 28R Hold Pad)	1.3 million sq. ft. taxiway
	[37] 5	Demolition and Removal of Temporary Taxiway T Between Taxiway P and Taxiway P6 (North of Runway 10C/28C)	removal of 35,000 sq. ft. of taxiway
	[38] 5	Taxiway DD Realignment at the Taxiway Q Intersection (near the South-Central Cargo Apron)	replacement and realignment of 120,000 sq. ft. of taxiway
<b>Support Facilities</b>	[10] 9	West Heating and Refrigeration Facility	130,000
	[11] 9	West Employee Screening Facility	346,000 sq. ft. facility; 128,000 sq. ft. pavement
	[12] 9	West Employee Ground Transportation Facility and Parking Garage	740,000 sq. ft. facility; 170,000 sq. ft. pavement
	[13] 9	West Employee Landside Access	800,000 sq. ft. roadway pavement
	[14] 9	West Landside Detention Basins	397,000
	[15] 7, 9	Airside Service Roadways	512,000
	[19] 8	Aircraft Rescue and Firefighting (ARFF) Station 4 Relocation	18,000 sq. ft. building 49,000 sq. ft. pavement
	[21] 7	Commercial Vehicle Holding Area (CVHA) Expansion	172,000
	[35] 9	Centralized Distribution and Receiving Facility (CDRF)	75,000 sq. ft. building 204,000 sq. ft. pavement 48,000 sq. ft. basin
<b>Air Traffic Actions</b>	[N/A] 10-15	Offset Approach Procedures for Runway 10R/28L	N/A





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

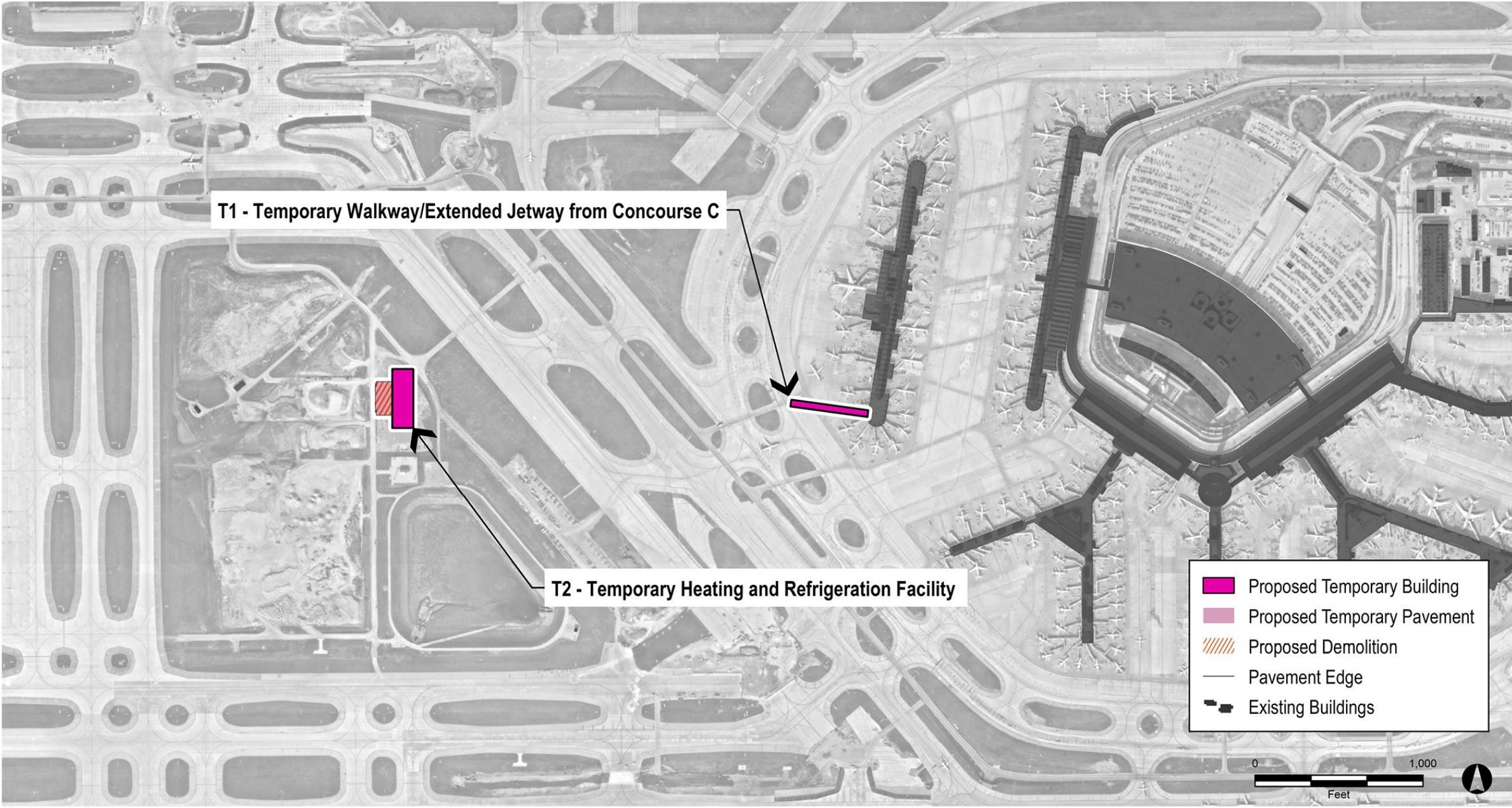


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

**Terminal Projects (Set 1 of 3) - O'Hare Global  
Terminal and Satellite Terminal Projects**

► Exhibit 1-2





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

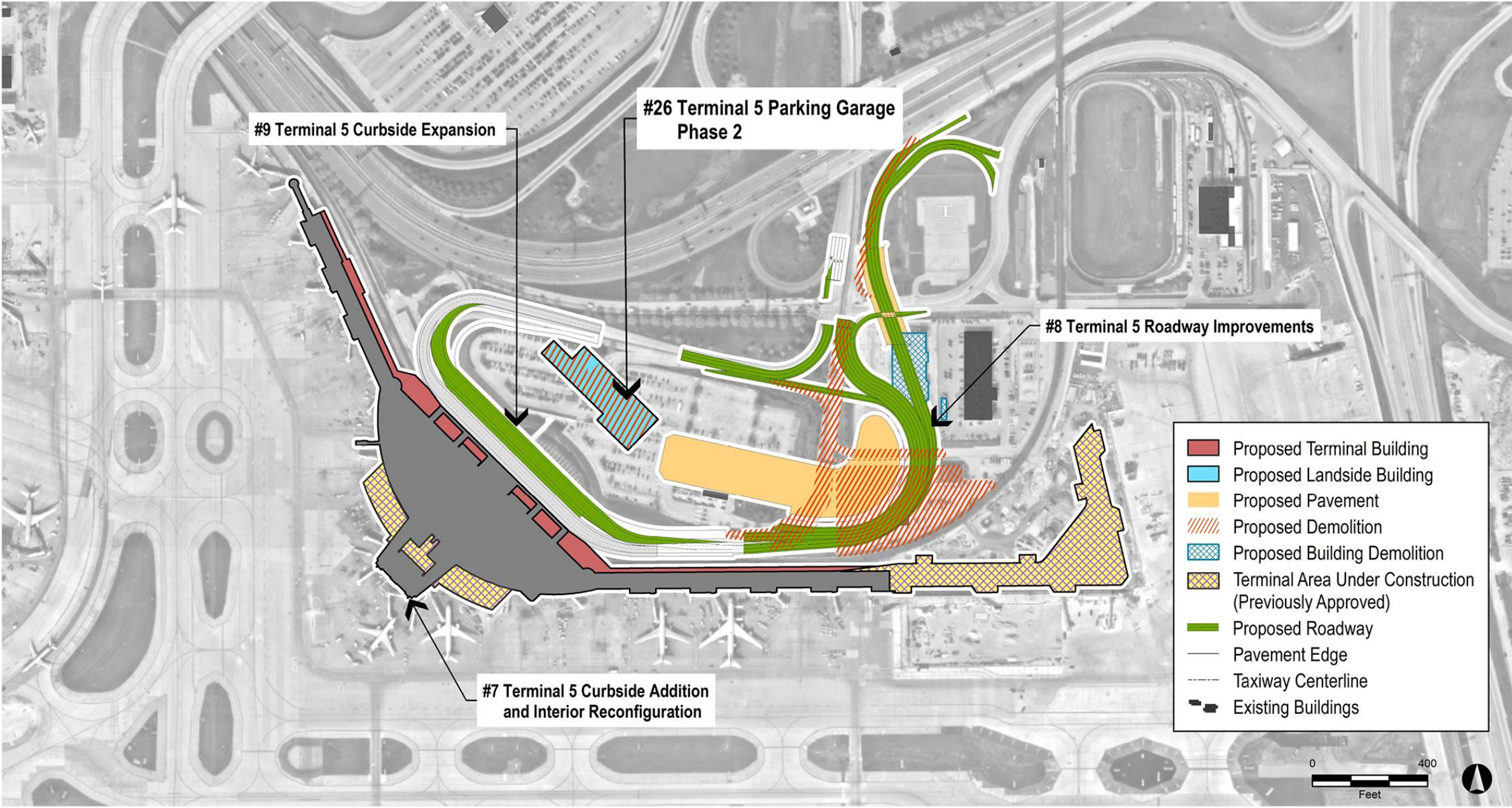


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

**Terminal projects (Set 2 of 3) - O'Hare Global  
Terminal and Satellite Terminal Temporary Projects**

► Exhibit 1-3





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

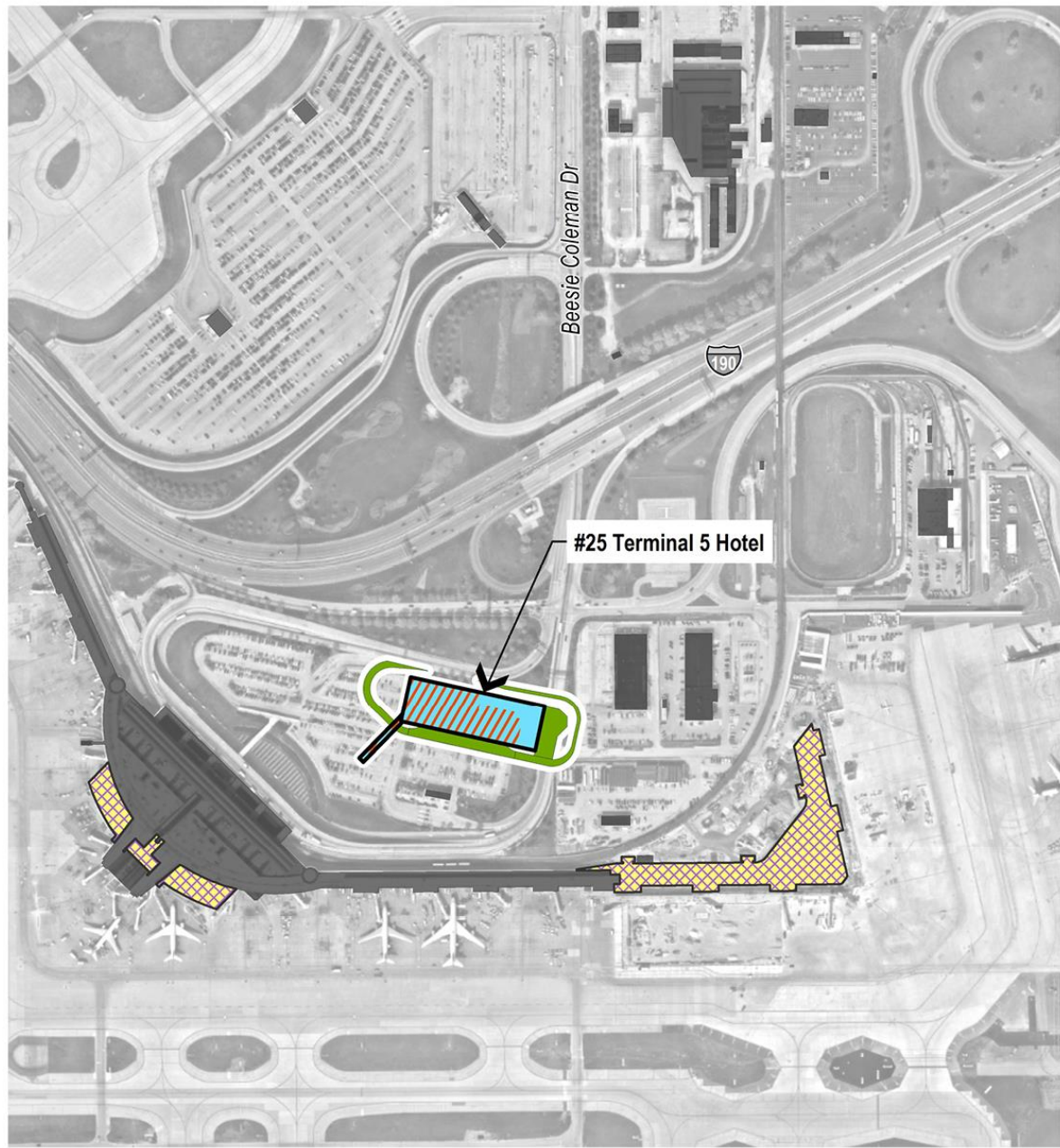


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

Terminal Projects (Set 3 of 3) - O'Hare Terminal 5  
Projects

► Exhibit 1-4





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

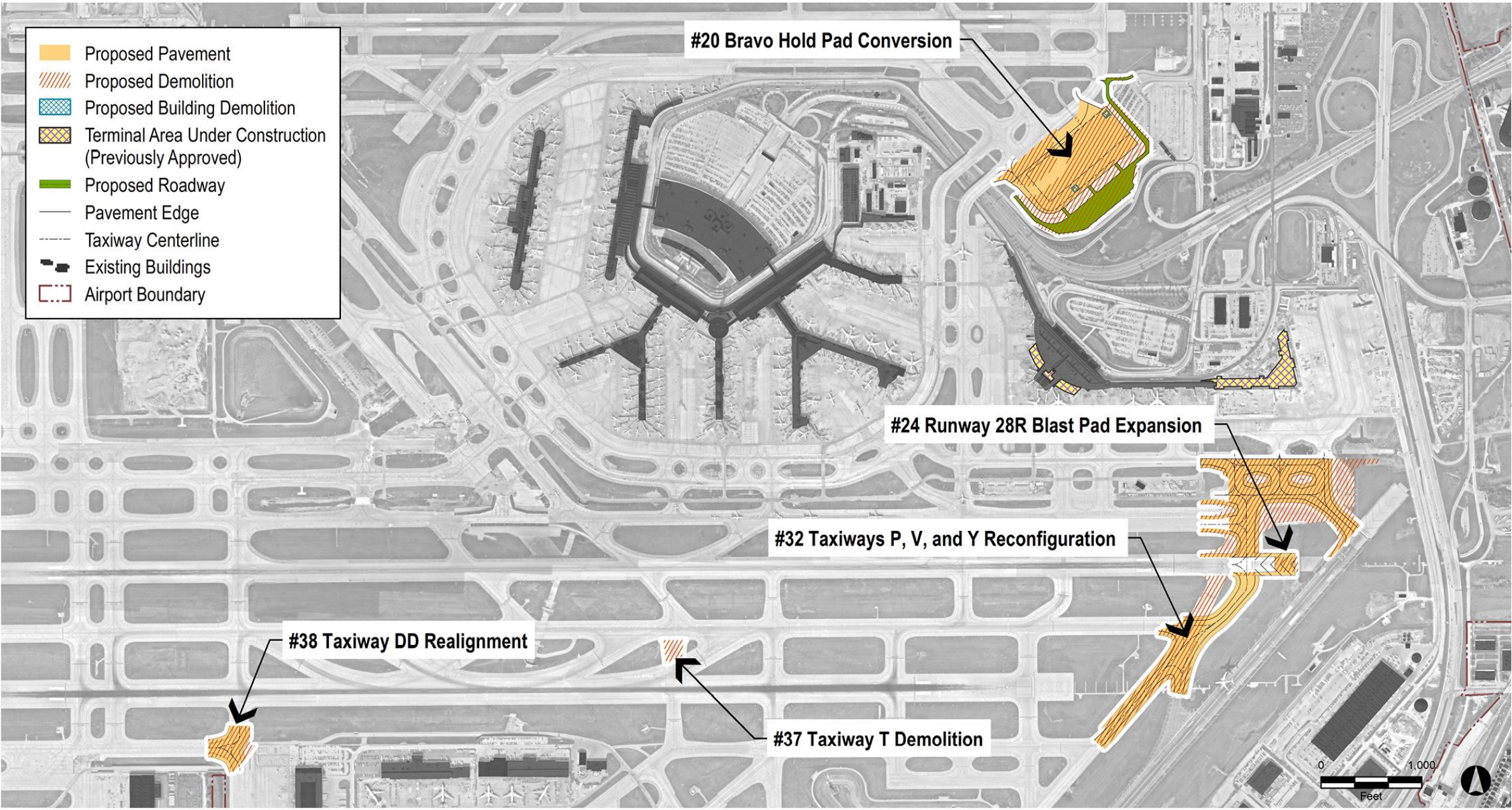


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

On-Airport Hotels

► Exhibit 1-5





Source: HMMH, Landrum & Brown, Ricordo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

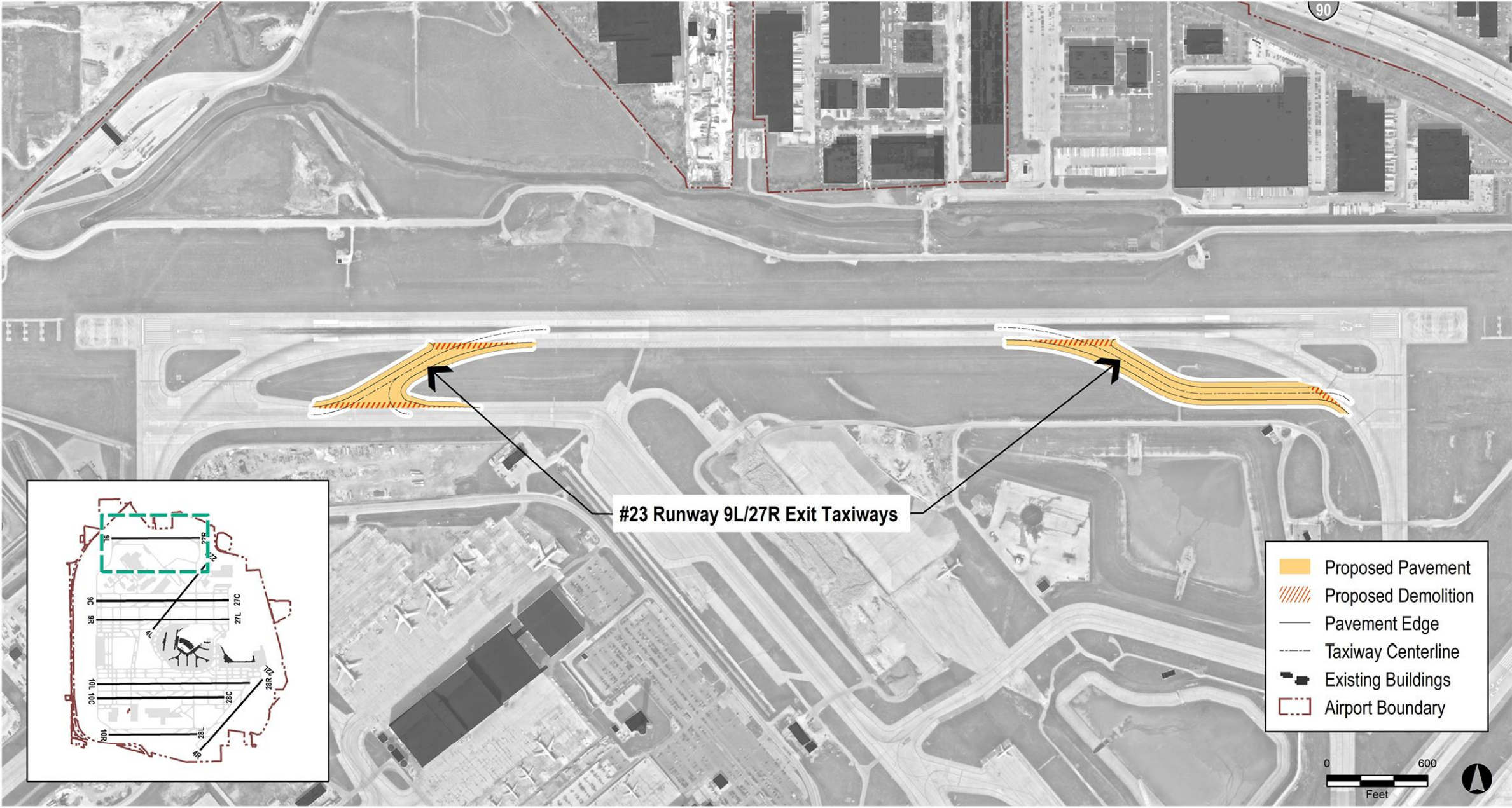


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

**Airfield and Taxiway Improvements Not Required by  
the Terminal Projects (Set 1 of 2)**

► Exhibit 1-6





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI



Chicago O'Hare International Airport  
Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment

Airfield and Taxiway Improvements Not Required by  
the Terminal Projects (Set 2 of 2)

► Exhibit 1-7





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

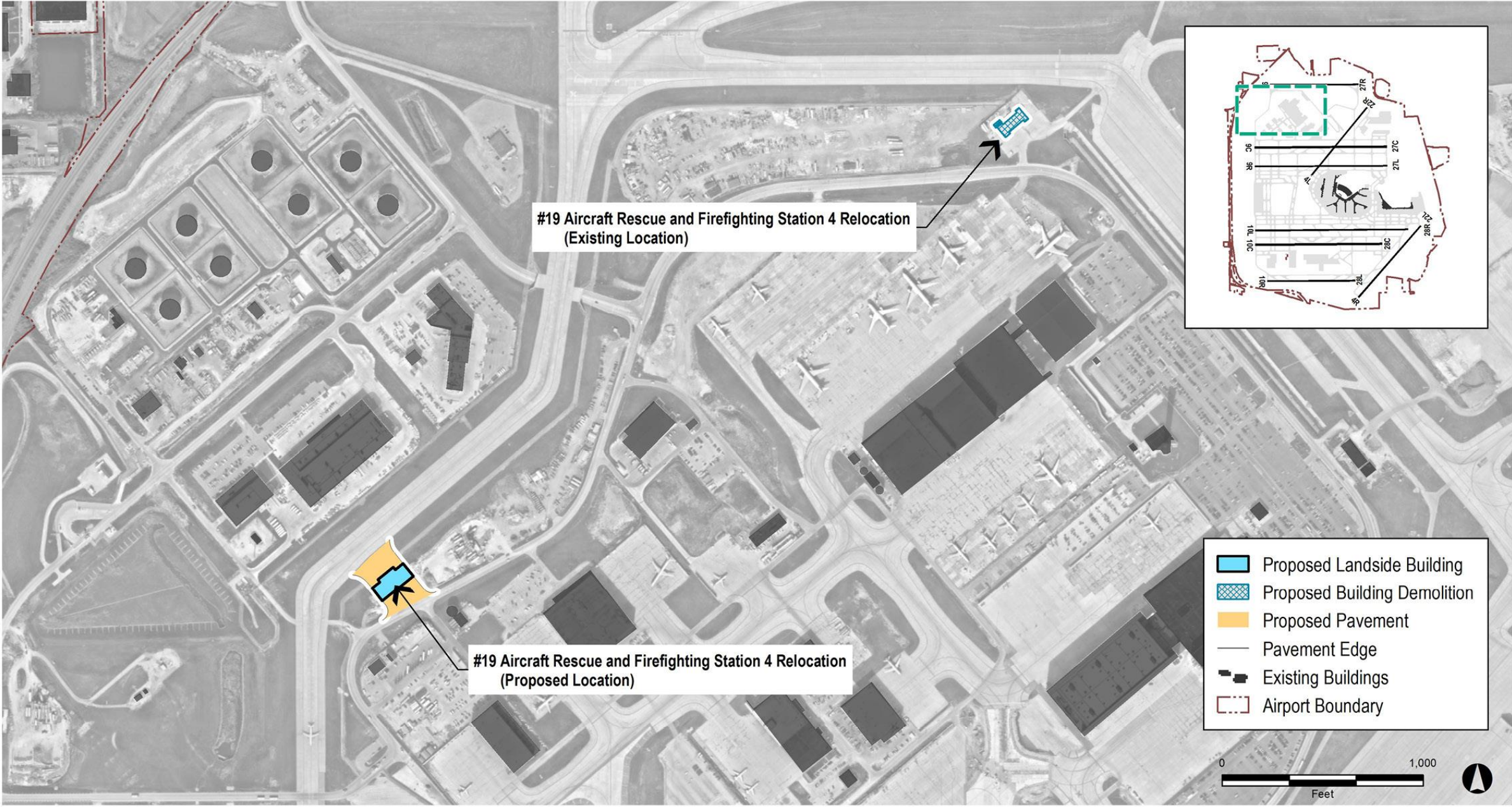


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

**Support Facilities Not Required by the Terminal  
Projects (Set 1 of 3)**

► Exhibit 1-8





Source: HMMH, Landrum & Brown, Ricondo & Associates, Illinois Geospatial Data Clearinghouse, Cook County Government GIS, DuPage County GIS, ESRI

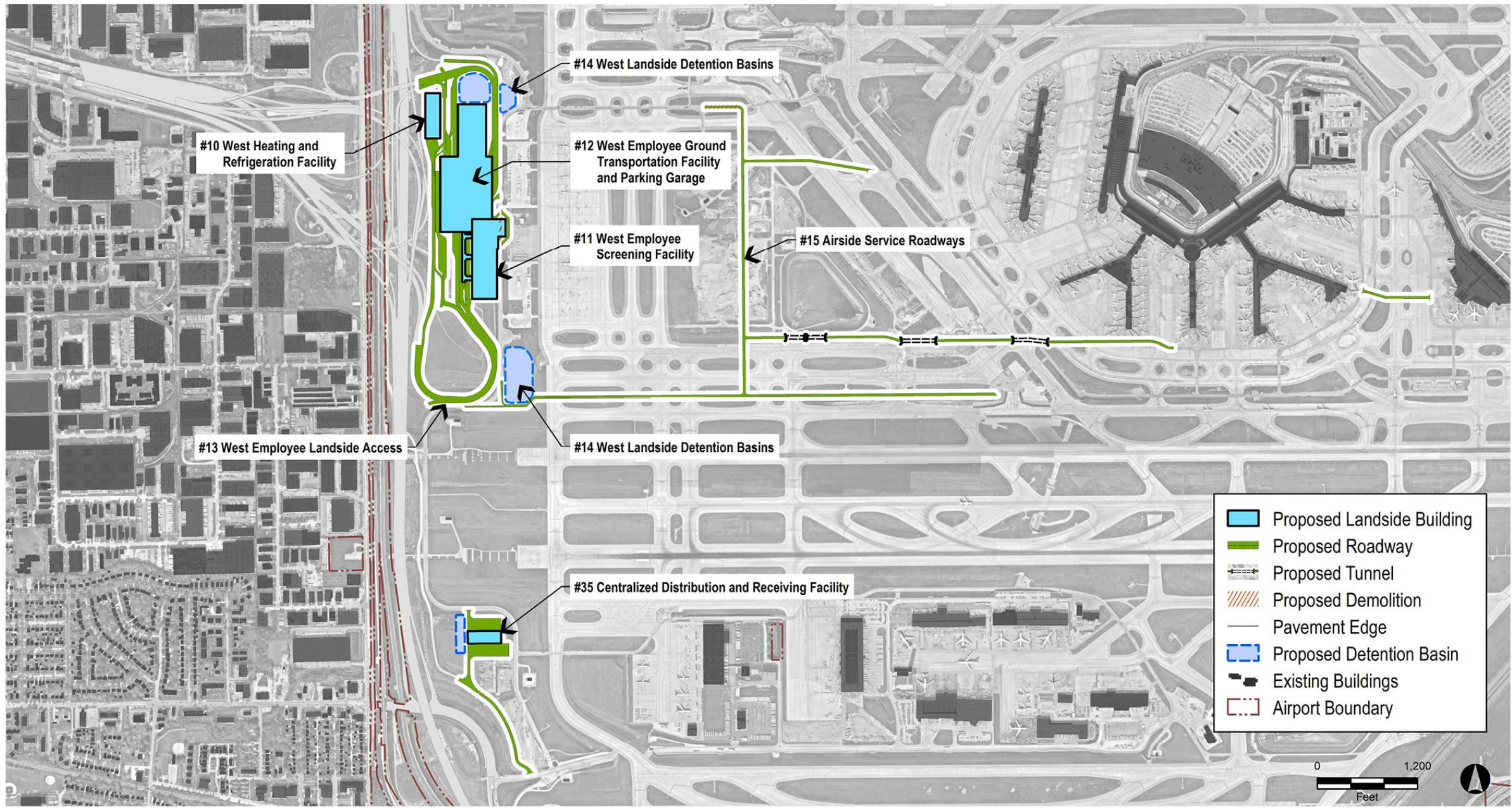


Chicago O'Hare International Airport  
**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

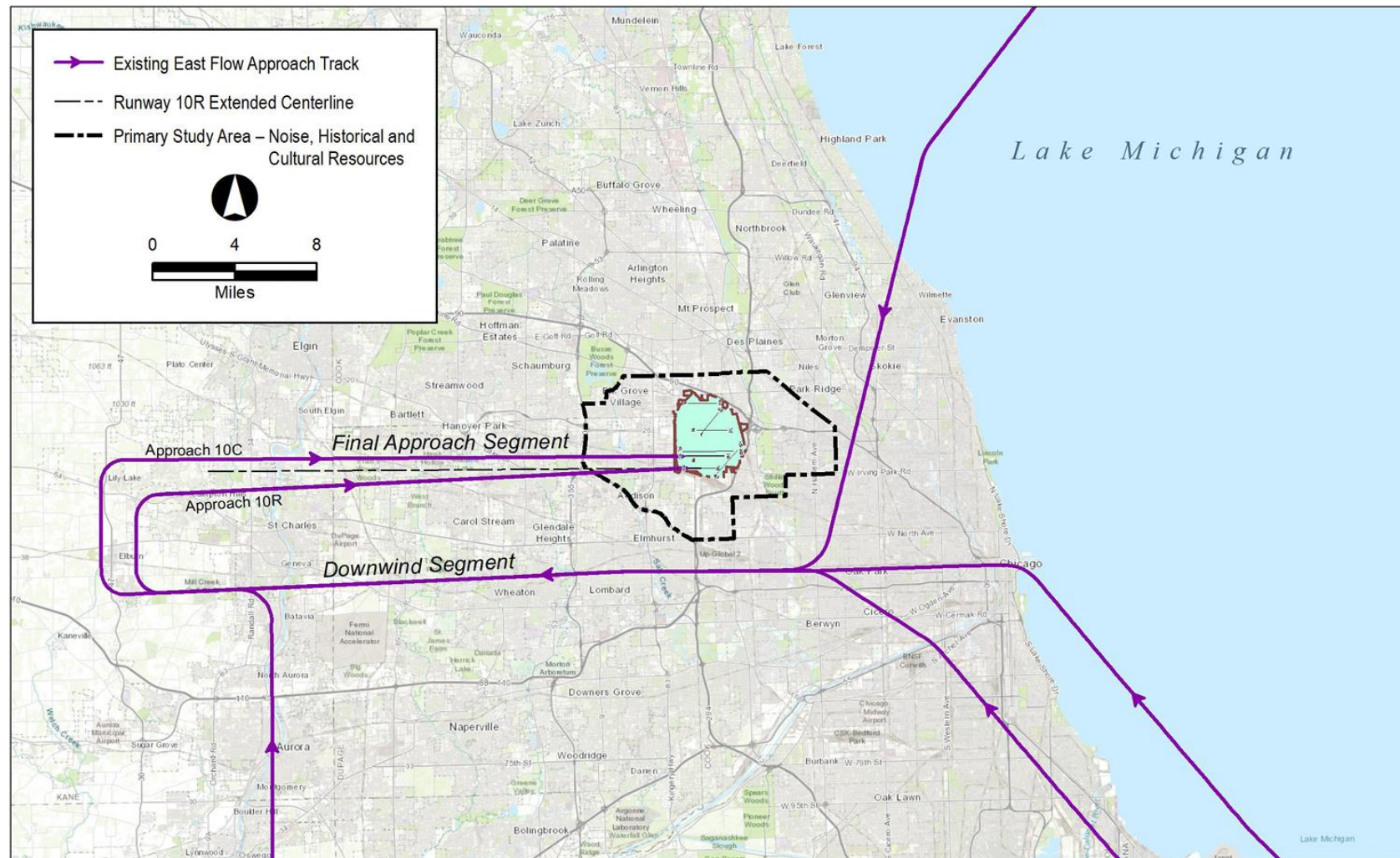
**Support Facilities Not Required by the Terminal  
Projects (Set 2 of 3)**

► Exhibit 1-9









Source: HMMH, DeLorme, Intermap, GeoBase, USGS, NPS, ESRI

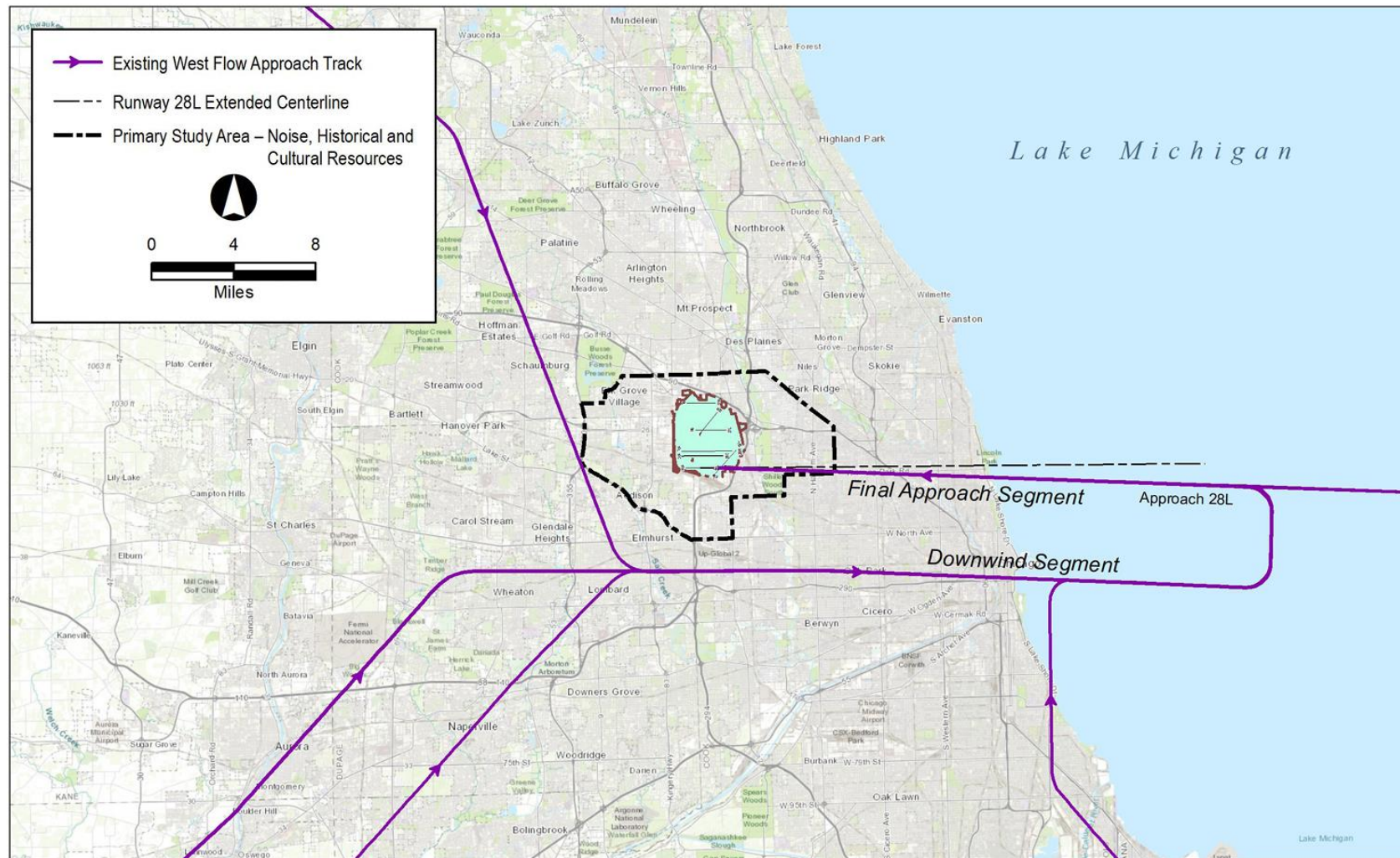


Chicago O'Hare International Airport

**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

**2.5 Degree Offset Approaches  
for Existing East Flow**

► Exhibit 1-11



Source: HMMH, DeLorme, Intermap, GeoBase, USGS, NPS, ESRI



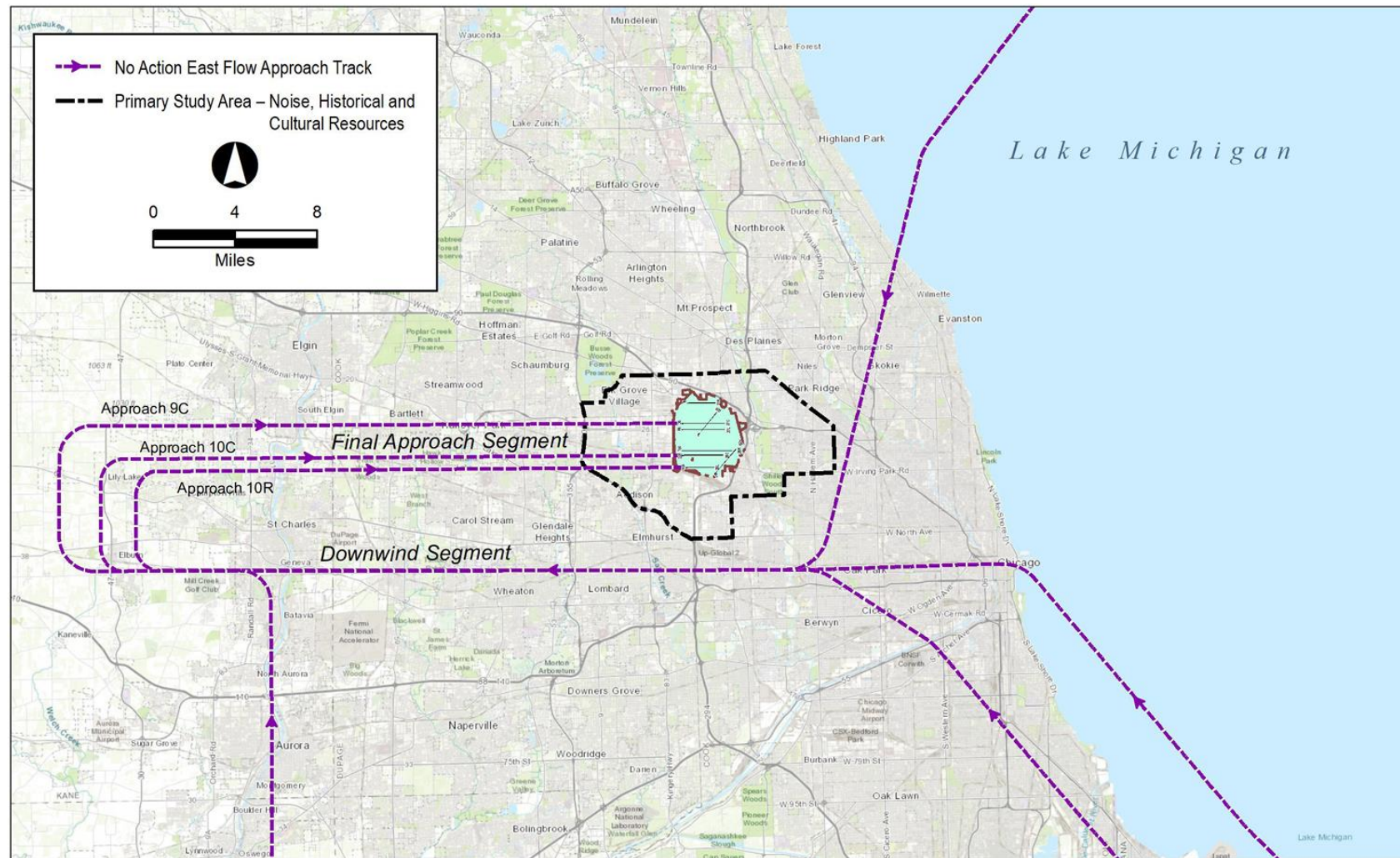
## Chicago O'Hare International Airport

## Terminal Area Plan and Air Traffic Procedures Environmental Assessment

### 2.5 Degree Offset Approaches for Existing West Flow

▶ Exhibit 1-12





Source: HMMH, DeLorme, Intermap, GeoBase, USGS, NPS, ESRI



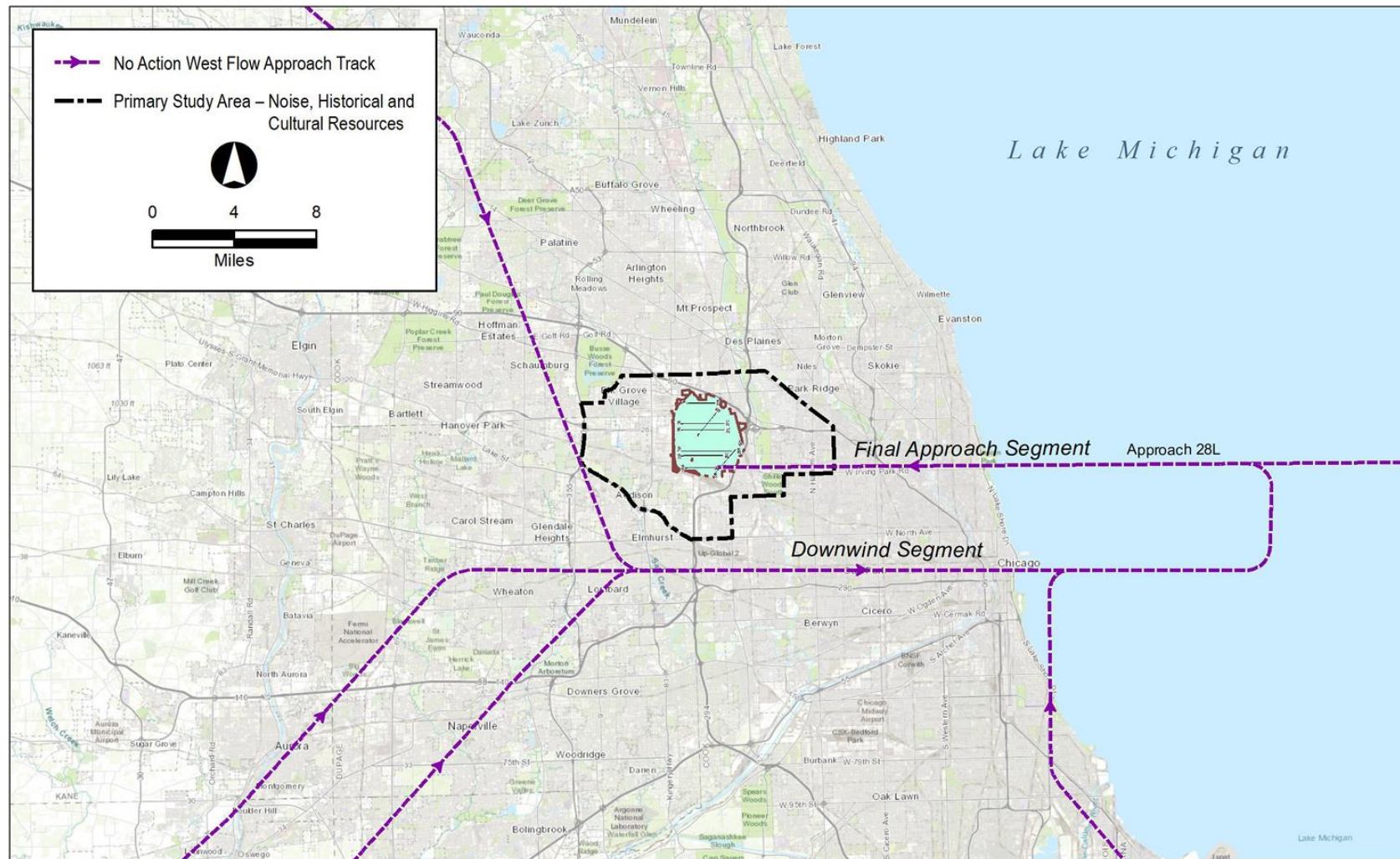
Chicago O'Hare International Airport

### Terminal Area Plan and Air Traffic Procedures Environmental Assessment

Approaches Without Offset  
for No Action East Flow

► Exhibit 1-13





Source: HMMH, DeLorme, Intermap, GeoBase, USGS, NPS, ESRI

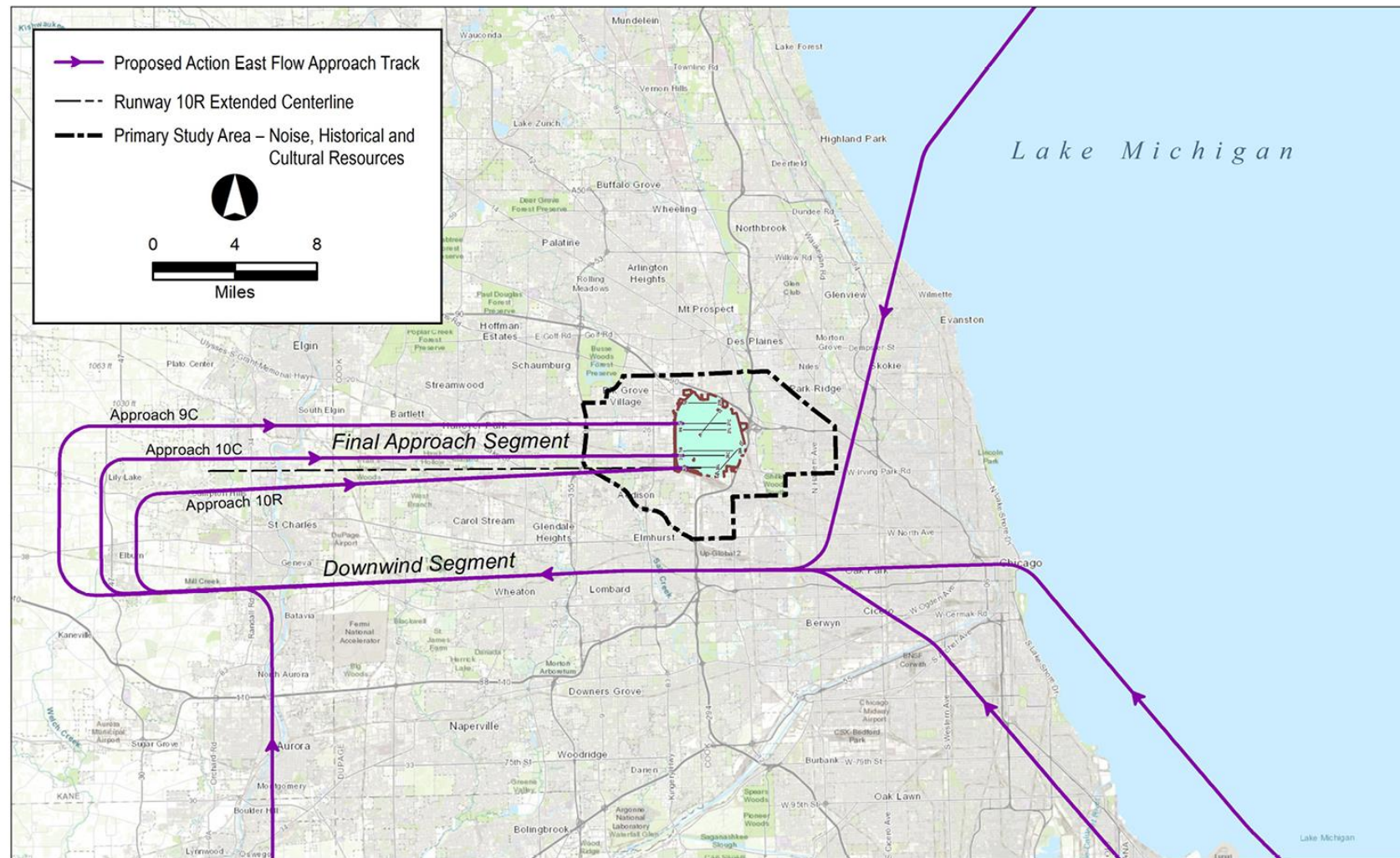


Chicago O'Hare International Airport

**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

Approaches Without Offset  
for No Action West Flow

► Exhibit 1-14



Source: HMMH, DeLorme, Intermap, GeoBase, USGS, NPS, ESRI



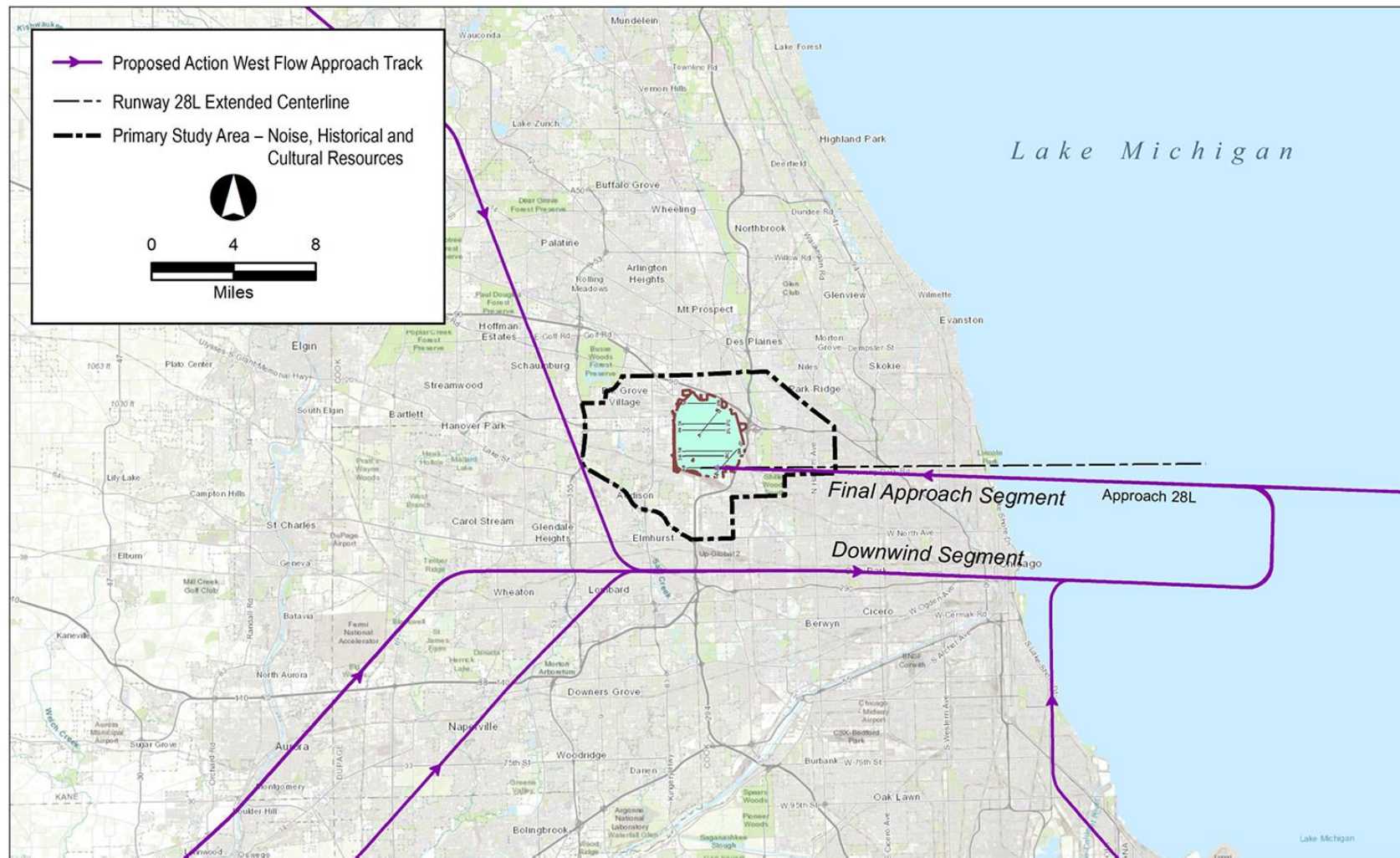
Chicago O'Hare International Airport

### Terminal Area Plan and Air Traffic Procedures Environmental Assessment

2.5 Degree Offset Approaches  
for Proposed Action East Flow

► Exhibit 1-15





Source: HMMH, DeLorme, Intermap, GeoBase, USGS, NPS, ESRI



Chicago O'Hare International Airport

**Terminal Area Plan and Air Traffic  
Procedures Environmental Assessment**

**2.5 Degree Offset Approaches  
for Proposed Action West Flow**

► Exhibit 1-16