# Chapter 7. Facility Implementation and Cost

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None

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The timing of facility construction greatly depends on decisions by the Metropolitan Airports Commission (MAC). Other factors, such as airline decisions, technology changes, evolving regulatory requirements, and aviation demand magnitude and characteristics may also influence these decisions. Most specific improvements outlined in the 2040 Long-Term Plan (LTP) would be triggered by activity (demand-driven) levels, policy decisions, regulatory changes, or discretionary development decisions. MAC has a process for identifying future projects as candidates for the capital improvement plan (CIP). This includes monitoring the need for a particular project to an eventual evaluation of the project (including design, scope, cost, etc.), coordinating with appropriate stakeholders (planning, engineering, and finance teams) and eventually integrating the project into the final CIP.

This process emphasizes the development of cost-benefit analyses and the definition of business cases for each project proposed for inclusion in the CIP. By using this process, the MAC management can make well-informed decisions regarding the CIP, which is one of the key drivers of the MAC's strategic business plan.

## 7.1 FACILITY IMPLEMENTATION

This section describes the recommended development plan for the 2040 LTP. The development plan includes the expansion of landside, terminal, and cargo facilities with efficiency improvements to the airfield and aprons. The strategy of the 2040 LTP is to identify projects that would provide the necessary capacity to meet projected vehicle, passenger, and aircraft demand while maintaining an optimal Level of Service (LOS) throughout the development.

The timing of implementation is based on the characteristics and magnitude of actual and forecasted demand. As actual demand may vary from what is forecasted, the phased development schedule includes specific triggers to reflect the point at which specific improvements are required to be operational to meet demand. This approach provides the MAC the flexibility needed to respond effectively to actual demand as it materializes, rather than making development decisions on a calendar-based schedule. Through regular monitoring, data analysis, and understanding the impacts of various airline and industry trends, the MAC can respond strategically to meet tenant and passenger needs by the timely development of demand-driven facilities.

Maximizing responsiveness to future changes and growth in demand requires the deferral of facility development decisions or actions for as long as reasonably feasible without compromising operational safety or efficiency. However, to meet the demands of growth and other requirements, it will be essential to make decisions that allow adequate time for comprehensive planning, environmental processing, design, and construction of necessary facilities.

During these crucial stages, the MAC must have a clearly defined development plan that takes into account the conditions and characteristics at the demand triggers, including provisions for enabling work and construction. Maintaining operational landside, terminal, and airside efficiency is a primary goal for the Airport. Project implementation must minimize impact to existing operations within the airport during development. The sequencing of phases has been considered

regarding the impact on the operational efficiencies of the Airport while meeting the demand triggers of each phase of development.

The 2040 LTP is envisioned to involve three phases based on demand triggers; however, the phasing and timing of projects may change as conditions at the airport develop and will ultimately be determined by the MAC and its stakeholders. The 2040 LTP implementation strategy can summarily be described by three demand-based phases: Near-Term, Mid-Term, and Long-Term:

- **Near-Term:** Near-Term development projects are focused on expanding the current facilities' capacities while staging for further projects in the later terms. Projects in the Near-Term focus on relieving east airfield congestion and adding new gate capacity.
- **Mid-Term:** Mid-Term projects center on replacing end-of-life facilities with more integrated passenger-forward facilities. The projects concentrate on improving landside capacity, updating the concourses and apron to meet future aircraft needs, and maximizing Terminal 1 (T1)'s connectivity between Domestic and International flights.
- **Long-Term:** Long-Term projects help unify the T1 and Terminal 2 (T2) complexes with increased passenger and aircraft capacity. Projects include the expansion of gate capabilities on both terminals and the relocation of facilities not directly involved with commercial passenger service.

Each phase of development includes improvements to the landside, terminal, and airside to maintain balance of operations and growth within the Airport. Each project within the phase may have enabling projects that are identified, due to their impact on development. Though there is no direct development timeline indicated for each project, the enabling projects will need to be addressed prior to or during the project development process.

### 7.1.1 Near-Term Projects

Projects within the Near-Term are the basis for staging improvements within the Mid- and Long-Term while maintaining airfield capacity and a high passenger LOS.

Landside improvements at T1 and T2 both increase parking capacity and create staging space for the redevelopment of the terminals' landsides. Additional curb improvements at T2 will help with increasing demand for vehicles at the curbfront. Due to impacts to existing landside facilities and light rail transit, close coordination with Metro Transit will be necessary.

Additional gates on T2 will allow for maintaining gate requirement growth, with the flexibility of absorbing gate demand from concourses that will be impacted during development. To develop the south T2 gate expansion, the southern airfield apron areas will need to be reconfigured, including the Ground Runup Enclosure (GRE), support facilities, and Remain Overnight (RON) apron.

Taxiway improvement projects include reconfiguring taxiway edge pavement at 90-degree corners for improved pilot visibility, and an additional Runway 12L-30R partial parallel taxiway for improved 30R departures queuing.

**Table 7-1: Near-Term Projects**

| Project Number | Project Name | Enabling Projects |
|---|---|---|
| **1-1** | Existing T1 FIS Facility Enhancements | N/A |
| **1-2** | T2 FIS South Terminal Expansion | Relocate flight kitchen, GRE, QTA; Realign TW S2, add baggage makeup |
| **1-3** | Taxiway Edge Geometry | N/A |
| **1-4** | Runway 12L-30R Partial Parallel Taxiway and Taxiway P3 Reconfiguration | N/A |
| **1-5** | GRE Relocation and RON Apron Construction | Relocate/demolish flight kitchen |
| **1-6** | USPS Site Redevelopment | Terminate USPS lease and demolish existing facilities |
| **1-7** | Orange Ramp North Expansion and Outrigger Expansions | Coordination with Metro Transit |
| **1-8** | Orange and Purple Ramps Vertical Expansion | Relocation of the ASR |
| **1-9** | T2 Curb Frontage Improvements | Relocation of the Rental Car CSB |

NOTE: Timing for projects will depend on further staging, development, and design of the proposed facilities.
GRE - Ground Runup Enclosure; QTA - Quick Turnaround Area; TW - Taxiway; FIS - Federal Inspection Station; CSB – Customer; Service Building; USPS - United States Postal Service; Airport Surveillance Radar (ASR)
SOURCES: HNTB Corporation, 2023; Ricondo & Associates, Inc., 2023, Kimley-Horn and Associates, Inc., 2023.

### 7.1.2 Mid-Term Projects

Projects within the Mid-Term begin to replace facilities that are nearing the end of service and improve capacity for landside, terminal, cargo, and airfield.

The landside adjacent to T1 will be reconfigured in conjunction with the Green/Gold ramp redevelopment to allow for better curbside/terminal integration and additional parking. Parking along 34th Ave. will be built to support the facilities at and adjacent to Building C.

Concourses A and B will be reconstructed to accommodate larger aircraft as smaller commercial aircraft are not part of the future fleet mix at the Airport. The 60-year-old Concourse F will be reconstructed to accommodate the expanded international demand with improved LOS. The T1 Federal Inspection Service (FIS) facility will be relocated to the redeveloped Green/Gold ramps for more centralized Terminal access.

The Fixed Base Operator (FBO) will be relocated to the north side of the airfield to allow for further expansion of the T2 facility. Additional cargo projects in the western airfield are included to meet Mid- and Long-Term cargo demand.

Taxiway improvement projects include realigning Taxiway B and Q for better apron and gate access. Taxiway improvements will help minimize taxiway clearance issues in that area. Both RON/deicing locations by Runway End 30L and 30R will be reconfigured for better deicing throughput, including an increase in RON positions. These two projects also open more space for the development of concourse and gates along the eastern side of T1.

**Table 7-2: Mid-Term Projects**

| Project Number | Project Name | Enabling Projects |
|---|---|---|
| **2-1** | Reconstruct Concourse A; Demolish Concourse B | Demolish Concourse B; (2-8) Reconfigure 30R Deice pad |
| **2-2** | Reconstruct Concourse F | Demolish Concourse F |
| **2-3** | Central Cargo Apron Expansion | N/A |
| **2-4** | Runway 30L RON Apron and Deice Pad Reconfiguration | N/A |
| **2-5** | West Cargo Apron and Facility | N/A |
| **2-6** | FBO Relocation | Relocate RTR/RCAG and fire training facilities |
| **2-7** | Runway 12R-30L Tunnel Reconstruction and Taxiway B Realignment | Reconfiguration of the Concourse G gating and VSR |
| **2-8** | Runway 30R Deice Pad Reconfiguration | (2-1) Demolish Concourse B |
| **2-9** | T1 Two-Level Roadway Reconstruction | (2-10) Green/Gold Ramps redevelopment |
| **2-10** | Green/Gold Ramp Redevelopment with New FIS Facility | Landside APM modifications; (1-6) USPS parking redevelopment; (1-7) Orange Ramp North Expansion |
| **2-11** | 34th Avenue Parking Development | N/A |
| **2-12** | TH 5 Interchange Reconstruction | N/A |

NOTE: Timing for projects will depend on further staging, development, and design of the proposed facilities.
RON - Remain Overnight; FBO - Fixed Base Operator; FIS - Federal Inspection Station; USPS - United States Postal Service; Vehicle Service Road (VSR); Remote Transmitter Receiver (RTR); Remote Communications Air/Ground (RCAG)
SOURCES: HNTB Corporation, 2023; Ricondo & Associates, Inc., 2023, Kimley-Horn and Associates, Inc., 2023.

### 7.1.2 Long-Term Projects

Projects within the Long-Term begin to integrate the two terminal complexes with additional increases in gate capabilities at both T1 and T2.

The entry and exit ways adjacent to the T2 landside will be redeveloped for better access and efficiency on the expanded T2 terminal complex.

Concourse E will be reconstructed to better align with the Concourse C flight line and reduce aircraft congestion between Concourses E and F. Concourse G will be expanded for additional gate capacity on the southern side on T1. With the relocation of the FBO, the site will include an expansion of gate and RON positions along the north end of T2. A new underground airside T1-T2 passenger connection will also be developed. The secure-side passenger tunnel will create the possibility for more unified terminal operations between T1 and T2.

A new RON apron will be developed on the southern airfield to add additional overnight aircraft capabilities adjacent to the Humphrey remote Apron.

**Table 7-3: Long-Term Projects**

| Project Number | Project Name | Enabling Projects |
|---|---|---|
| | | |
| **3-1** | New T2 North Expansion | (2-6) FBO Relocation; Demolish FBO Campus; realign ARFF entry road and 70th St. |
| **3-2** | Concourse G South Expansion | Demolish end of Concourse G |
| **3-3** | Reconstruct Concourse E | Demolish Concourse E and D |
| **3-4** | T1–T2 APM Tunnel Construction | Coincides with scheduled apron and Runway 12R- 30L rehabilitation |
| **3-5** | Runway 4-22 Tunnel Reconfiguration and Deice Pad Construction | (2-6) Relocation of the FBO |
| **3-6** | South RON Apron Construction | Relocation of the Building 3 employee surface lot |
| **3-7** | Runway 12R End-Around Taxiway Construction | Reconfiguration of Runway 12R ALSF-2 |
| **3-8** | 34th Ave. and East 70th St. Reconstruction | (1-9) T2 curb frontage improvements; (2-12) TH-5 Interchange Reconstruction |

NOTE: Timing for projects will depend on further staging, development, and design of the proposed facilities.
RON - Remain Overnight; FBO - Fixed Base Operator; FIS - Federal Inspection Station; CSB - Customer Service Building
SOURCES: HNTB Corporation, 2023; Ricondo & Associates, Inc., 2023, Kimley-Horn and Associates, Inc., 2023.

## 7.2 COST ESTIMATES

Rough order of magnitude (ROM) project cost estimates for the 2040 LTP are summarized in **Table 7-7**. In total, the projects in the 2040 LTP are estimated to cost approximately $6,195,871,000 over the approximately 20-year planning period. Cost estimates were developed by Connico, Inc. and Kimley Horn and Associates, Inc. and are included in **Appendix E**.

The projects' direct costs were based on a traditional design, bid, and build development model. The general contractor's overhead and profit, insurance, and payment and performance bonds were included in the unit costs. Additional cost contingencies, or markups, were added to the direct costs in the ROM estimation. As outlined in the appendix, the estimates were developed including the following markups:

- Estimating Design Evolution: 25.0%
- General Contractor Markups
    - Project Logistics / Phasing & Labor Factor: 5.0%
    - General Requirements and Temporary Construction: 5.0%
    - General Conditions: 8.0%
    - General Contractor Overhead and Profit: 5.0%
    - Insurance: 2.0%
    - Payment and Performance Bonds: 1.0%
- Owner's Soft Costs: 21.3%
    - Construction Manager / Program Management: 0.0%
    - Planning and Preconstruction: 0.2%
    - Architectural / Engineering Design: 10.0%
    - Architectural / Engineering Construction Admin: 2.0%
    - Airport Staff: 4.0%
    - Materials Testing / Inspection / Commissioning: 2.5%
    - Plan Check Services: 0.1%

- Cost Estimating and Scheduling: 0.5%
- Miscellaneous Owner Costs (i.e., Legal): 1.0%
- Artwork: 1.0%

Specific timing of the projects has not been determined and can fluctuate due to changing conditions at the airport and changes in demand and regulatory requirements. Therefore, no escalation was included in the estimation. Additional contingency allowances may be necessary upon further development of each project and/or changes in implementation and scope.

The implementation of the 2040 LTP projects will require further development of design and costs during more in-depth architectural and engineering analyses. Due to these projects being developed at a high level, these costs should be considered “best estimates” that are sufficient for the development of the CIP.

**Table 7-4** includes the ROM costs for each project with subtotals for the Near-, Mid-, and Long-Term.

**Table 7-4: Rough Order of Magnitude Cost Estimates**

| Project Number | Project Name | Cost |
|---|---|---|
| **1-1** | Existing T1 FIS Facility Enhancements | $4,918,000 |
| **1-2** | New T2 FIS South Terminal Expansion | $270,322,000 |
| **1-3** | Taxiway Edge Geometry | $1,220,000 |
| **1-4** | Runway 12L-30R Outboard Taxiway and Taxiway P3 Reconfiguration | $65,665,000 |
| **1-5** | GRE Relocation and RON Apron Construction | $76,512,000 |
| **1-6** | USPS Site Redevelopment | $620,666,000 |
| **1-7** | Orange Ramp North Expansion and Outrigger Expansions | $375,353,000 |
| **1-8** | Orange and Purple Ramps Vertical Expansion | $438,050,000 |
| **1-9** | T2 Curb Frontage Improvements | $134,026,000 |
| | **Near-Term Total** | **$1,986,732,000** |
| **2-1** | Reconstruct Concourse A, Demolish Concourse B | $161,779,000 |
| **2-2** | Reconstruct Concourse F | $297,621,000 |
| **2-3** | Central Cargo Apron Expansion | $29,469,000 |
| **2-4** | Runway 30L RON Apron and Deice Pad Reconfiguration | $4,457,000 |
| **2-5** | West Cargo Apron and Facility | $107,524,000 |
| **2-6** | FBO Relocation | $177,000,000 |
| **2-7** | Runway 12R-30L Tunnel Reconstruction and Taxiway B Realignment | $14,150,000 |
| **2-8** | Runway 30R Deice Pad Reconfiguration | $1,689,000 |
| **2-9** | T1 Two-Level Roadway Reconstruction | $265,978,000 |
| **2-10** | Green/Gold Ramp Redevelopment with New FIS Facility | $1,288,511,000 |
| **2-11** | 34th Ave. Parking Development | $396,054,000 |
| **2-12** | TH 5 Interchange Reconstruction | $76,742,000 |
| | **Mid-Term Total** | **$2,820,974,000** |
| **3-1** | New T2 North Expansion | $331,536,000 |
| **3-2** | Concourse G South Expansion | $256,894,000 |
| **3-3** | Reconstruct Concourse E | $232,323,000 |
| **3-4** | T1–T2 APM Tunnel Construction | $317,715,000 |
| **3-5** | Runway 4-22 Tunnel Reconfiguration and Deice Pad Construction | $65,607,000 |
| **3-6** | South RON Apron Construction | $86,331,000 |
| **3-7** | Runway 12R End-Around Taxiway Construction | $68,664,000 |
| **3-8** | 34th Ave. and East 70th St. Reconstruction | $29,095,000 |
| | **Long-Term Total** | **$1,388,165,000** |
| | **2040 LTP Total** | **$6,195,871,000** |

NOTES: Dollar amounts are rounded to the nearest $1,000. Project costs are for planning purposes only.
RON - Remain Overnight; FBO - Fixed Base Operator; FIS - Federal Inspection Station; USPS - United State Postal Service