Summary of Documentation and Correspondence

OMP Completion Phase

Benefit-Cost Analysis

On March 1, 2009, the City of Chicago submitted a Request for Letter of Intent (LOI) AIP Funding for the O'Hare Modernization Program, Completion Phase (OMP CP). Included was a Benefit-Cost Analysis (BCA) prepared to support the LOI consistent with FAA requirements. Supplemental materials have subsequently been developed in response to FAA comments to elaborate on the initial document and provide additional detail and confirmation that the benefit-cost analysis remains valid under the most conservative of assumptions. This document summarizes the various coordination efforts between the City and FAA in support of the BCA review process. It presents, chronologically, the various documents and correspondence prepared in support of this effort.

The following documents are summarized and discussed.

- Request for Letter of Intent, Multi-year Commitment of Airport Improvement Program Grant-in-Aid Funding, March 1, 2009
- FAA Comments on the March 1, 2009 LOI Request Submittal, June 24, 2009
- Response to FAA comments on the March 1, 2009 LOI Request Submittal, July 7, 2009
- BCA Sensitivity Request, October 14, 2009

The final section of this document summarizes the results of the various BCAs prepared during the preparation of the original document and in response to FAA comments.

I. Request for Letter of Intent, Multi-year Commitment of Airport Improvement Grant-in-Aid Funding, March 1, 2009

On March 1, 2009, the City of Chicago submitted to the FAA a Request for a Letter of Intent Commitment of AIP Funding for the Completion Phase of the O'Hare Modernization Program (OMP CP). The request covered funding for runway and airfield development including Runway 9C-27C, Runway 10R-28L, extension of Runway 9R-27L, and associated connecting taxiways to facilitate aircraft movements. This LOI Request included a BCA prepared in support of the program consistent with FAA requirements.

A basic assumption in the initial BCA was that, without the development of additional gate facilities, both the Base Case (Phase I development) and Completion Phase would be gate limited at approximately 1,150,000 annual operations as defined by FAA as the limit of the Phase 1 airfield. Since additional gate facilities may not come on-line in the same timeframe as the airfield facilities, both the Base Case and Completion Phase were capped at this limit for the analysis period, and the benefits calculated as the travel time delay savings of the capped demand. While the City believes that gate capacity is not a constraint on operations at the Airport and that passenger handling capabilities would be developed even in the absence of new terminals through more extensive use of hardstand facilities, the benefits included in this analysis assume the absence of new terminals constrains operations. Passengers would continue to grow, at a somewhat slower pace, after reaching the constrained level consistent with the methodology employed in the FAA's constrained forecast of passengers developed in the Environmental Impact Statement (EIS).

The initial BCA included sensitivity analyses to confirm the economic viability of the program under varying assumptions regarding future conditions. The Benefit-Cost Ratios (BCR) for the initial BCA ranged from 1.03 to 2.45 considering only the travel time benefits to passengers and aircraft under

the constrained operations scenario. Other significant benefits, including schedule predictability and downstream delay benefits, were identified as hard-to-quantified in this analysis.

The March 1, 2009 LOI Request is included as **Appendix A** to this document.

II. FAA Comments on the March 1 LOI Request Submittal, June 24, 2009

On June 24, 2009, FAA provided comments to the City's original LOI Request. Many of the comments were clarifications and requests for additional information, but several were focused on the methodologies utilized and are more relevant to the BCA results. These generally included the following:

2.1 Use of the Constrained Forecast for both the Base Case and OMP CP

As previously discussed, the BCA utilized a constrained forecast of activity for both the Base Case and CP based on the fact that additional gate facilities are not the subject of the BCA and that their development may not occur in the timeline envisioned for the airfield development. As a result, any limitation imposed by the lack of new gate facilities will impact both the Base Case and CP development similarly. FAA in response requested that any cap on operations for the CP be based on reaching average aircraft delay levels consistent with those identified as limiting for the Base Case. Utilizing the same delay limit for both the Base Case and the CP would result in differing levels of operations under the two scenarios. Under this approach, demand accommodated under the Base Case and CP would not be equal.

2.2 Incorporation of Relevant Costs

The City did not include costs of new terminal facilities in the analysis because additional gates were not needed to accommodate the constrained demand. FAA requested justification for this assumption.

2.3 Variable Operating Costs (VOC) and use of Full Block Hour Costs

The initial BCA utilized full block-hour costs for VOC and the calculation of benefits. Given that a portion of delay benefits would occur on the ground, FAA requested reconsideration of the VOC calculation for future submittals.

The FAA comments received on the LOI Request are provided in **Appendix B** in their entirety.

III. Response to FAA Comments on the March 1, 2009 LOI Request Submittal, July 7, 2009

The City of Chicago responded to the FAA comments on the LOI on July 7, 2009 (**Appendix C**). This response provided additional clarification and information on specific issues identified by the FAA and addressed broader issues regarding questions on the methodology utilized in the BCA. The following BCA methodology issues were addressed.

3.1 Use of Constrained Forecast for both the Base Case and CP

In response to the FAA's concerns on the use of the constrained forecast for both the Base Case and CP, Sensitivity Analyses were performed to test the economic viability of the project assuming operational growth continues under the CP. Under these Sensitivity Analyses the delays continue to grow (beyond those of the Base Case) under the CP program. Two methodologies are considered for the quantification of passenger delay benefits, one yielding a BCR of 1.26 and the other 1.25. Neither fully quantifies the value of additional operational and passenger traffic accommodated

under the CP relative to the Base Case, nor considers downstream delay benefits, both of which are legitimate benefits of the CP, locally and nationally.

3.2 Calculation of Variable Operating Costs

In response to FAA comments on the VOCs used in the BCA, the VOC was modified to better reflect the mix of air and ground delay time and associated costs. **Appendix D** presents tabular information provided in support of this revision.

IV. BCA Sensitivity Request, October 13, 2009

Upon review of the City's response to comments dated July 7, 2009, the FAA requested an additional BCA Sensitivity Analysis. This BCA Sensitivity Analysis document, included in **Appendix E**, presents the additional sensitivity test requested by FAA, and provided additional documentation on the two sensitivity tests included in the City's July 7, 2009 response to FAA comments.

The Sensitivity Analyses included in the July 7, 2009 Response to FAA Comments (Sensitivity 2a and 2b) considered constrained growth under the Base Case and continued growth under the CP. As such, the CP accommodated more passengers and operations than the Base Case. Sensitivities 2a and 2b did not, however, consider the need for additional terminal facilities under the CP to accommodate this demand. The Phase 1 BCA (supplemental analysis dated September 27, 2005) included the costs of the west terminal satellite in the analysis ultimately used to approve the BCA, and FAA placed emphasis on this specific BCA as part of their review and approval of the Phase I LOI (dated November 18, 2005). In the City's opinion, additional gate development would only be needed to the extent that demand grows beyond the capacity of these facilities or beyond that capable of being accommodated through hardstand operations.

The FAA requested development of an additional sensitivity analysis including the cost of additional new gate facilities. Even with this additional cost, the BCR remained above 1.0. For the purposes of this sensitivity analysis, it was assumed that new gates would need to be developed to the extent that the existing facilities could not accommodate demand at contact gates. Under this conservative approach, it was determined that a total of 45 new contact gates could be needed by the end of the analysis period.

Sensitivity 3 considered only the delay savings benefits to passengers and operations in comparison to the costs associated with the airside program and additional gate facilities. It did not attempt to quantify the monetary value of accommodating more passengers (over 36 million) over the life of the project or downstream delay benefits to passengers and aircraft. Thus this sensitivity includes the cost of additional gate/terminal facilities but not their primary benefit (accommodating additional passengers) and therefore significantly understates the project's BCR. Sensitivity 3 produces a BCR of 1.0 without consideration of these significant benefits and represents the extreme lower limit. Any reasonable sensitivity test quantifying the full benefits and probable costs would produce a greater ratio.

V. Summary

Table 1 presents a summary of the BCAs prepared in support of the OMP CP LOI Request. These sensitivities have demonstrated that project benefits outweigh costs under even the most conservative accounting of benefits and generous accounting of costs. Furthermore these analyses do not fully quantify the benefits resulting from the program, most notably the value of additional passengers accommodated with the CP development, and the downstream delay benefits. Even with this limited accounting of benefits, the OMP Completion Phase is demonstrated to be cost beneficial.

Table 1

BCA Summary

	Present Value Benefits (billions)	Present Value Costs(billions)	Net Present Value [1/] (billions)	Benefit-Cost Ratio
Original BCA (March 1, 2009)				
Proposed Action	$4.0	$2.4	$1.6	1.68
Increase capital cost by 25 percent	$4.0	$2.9	$1.1	1.37
Decrease benefits by 25 percent	$3.0	$2.4	$0.6	1.26
Increase capital costs by 25 percent and decrease benefits by 25 percent	$3.0	$2.9	$0.07	1.03
Constrained passenger growth at operations limit	$3.9	$2.4	$1.6	1.66
Delay construction by 5 years	$4.1	$1.7	$2.4	2.45
2002 TAF as Base for Constrained Forecast	$6.5	$2.4	$4.2	2.77
Response to FAA Comments (July 7, 2009)				
Sensitivity 1 – Base Case, Updated VOC	$3.5	$2.4	$1.1	1.47
Sensitivity 2A – Continued delay growth under CP, benefits applied to constrained activity. Revised VOC	$2.9	$2.4	$0.6	1.25
Sensitivity 2B – Continued delay growth under CP, benefits applied to unconstrained activity. Revised VOC	$3.0	$2.4	$0.6	1.26
BCA Sensitivity Request (October 14, 2009)				
Sensitivity 3 – Continued delay growth under CP, benefits applied to constrained activity. Additional gate costs. Revised VOC	$2.9	$2.9	$0.005	1.00

Note:

1/ Totals may not add due to rounding.

Source: Ricondo & Associates, Inc., November 2009.
Prepared by: Ricondo & Associates, Inc., November 2009.

Appendix A

CHICAGO AIRPORT SYSTEM

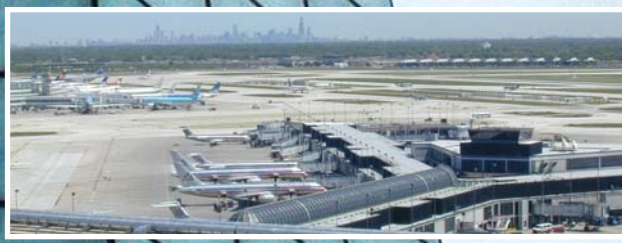
Richard M. Daley
Mayor

Rosemarie S. Andolino
Executive Director

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009



City of Chicago
Richard M. Daley, Mayor

O'Hare Modernization Program

Rosemarie S. Andolino
Executive Director

P.O. Box 66848
10510 West Zemke Road
Chicago, Illinois 60666

(773) 462-7300
(773) 462-8552 (FAX)

http://www.oharemodernization.org

March 1, 2009

Mr. James Keefer, Manager
Federal Aviation Administration
Chicago Airports District Office, CHI-ADO-600
2300 E. Devon Avenue
Des Plaines, Illinois 60018

Re: Request for Letter of Intent AIP Funding, Chicago O'Hare International Airport

Dear Mr. Keefer:

The City of Chicago continues to move forward with implementation of the O'Hare Modernization Program (OMP). Last year saw completion of two of the initial runway projects, and the remainder of OMP Phase 1 is under construction. Design activities for the remainder of the OMP's airfield, a collection of projects referred to as the OMP Completion Phase, are now beginning. This application respectfully requests the Federal Aviation Administration (FAA) provide Letter-of-Intent (LOI) Airport Improvement Program (AIP) grant funding for the OMP Completion Phase projects.

The attached document describes in detail this funding request. We believe this federal funding support is warranted, given the significant benefits this program provides to the national airspace system. An enclosed benefit-cost analysis reviews the economic justifications for these projects and documents the sizable return on investment that is expected to result from such projects.

The City of Chicago has proven its ability to successfully implement major airport improvements through its work on the OMP thus far, and we look forward to continuing that success, with the help of the FAA, in completing the program.

We stand ready to review the details of this application with you and your staff. Thank you in advance for considering this funding request.

Sincerely,

Rosemarie S. Andolino
Acting Commissioner
Department of Aviation

We stand ready to review the details of this application with you and your staff. Thank you in advance for considering this funding request.

Sincerely,

_____
Rosemarie S. Andolino
Acting Commissioner
Department of Aviation

Table of Contents

List of Tables

List of Exhibits

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

I. Executive Summary

I. Executive Summary

The O'Hare Modernization Program (OMP) is a multi-year plan to reduce aircraft delay and enhance the capacity of the Airport. Construction began in 2005 and, to date, a new runway, an extension of an existing runway, and a new Airport Traffic Control Tower (ATCT) have been completed and are in use. Construction continues on the remaining element of OMP Phase 1, Runway 10C-28C.

The City is now preparing to begin the next phase of the OMP, OMP Completion Phase. The OMP Completion Phase includes construction of two runways, a runway extension, a western terminal including western ground access and people mover, and a Completion Phase noise program. The World Gateway Program (WGP), a separate capital development program included on the approved Airport Layout Plan (ALP), included taxiway improvement projects which are also necessary for the operation of the OMP Completion Phase runways[1]. This grant application is for funding for the OMP Completion Phase runway projects and WGP taxiway improvement projects (LOI Projects).

1.1 Description of the OMP

Implementation of the OMP will reduce delays and enhance capacity by modernizing the airfield configuration. O'Hare's existing layout of converging runways will be reconfigured into a predominantly parallel runway system typical of modern, large-hub airports. These parallel runways will allow operation of a combination of arrival and departure runways at the Airport, providing balanced and flexible capacity in all weather conditions.

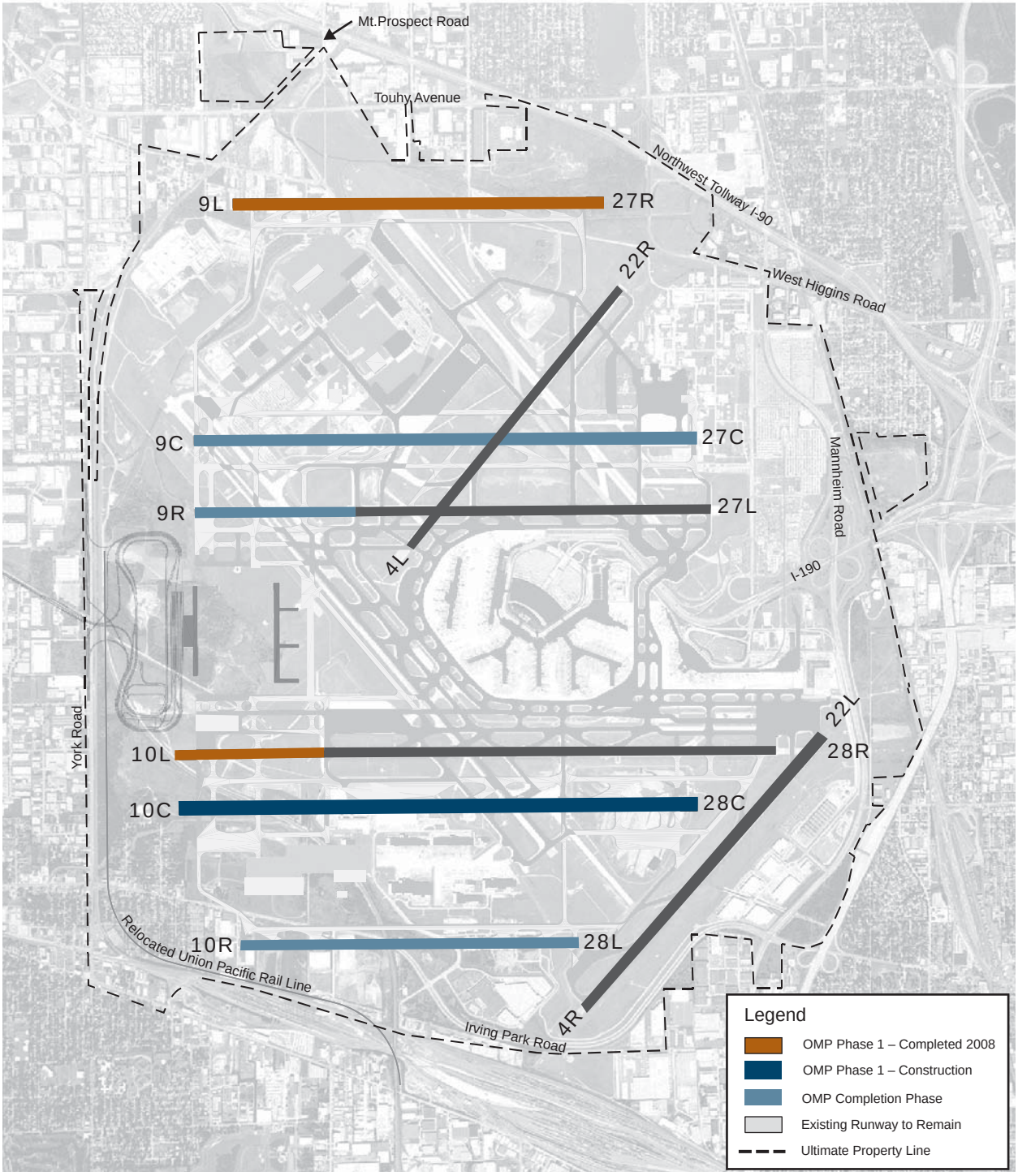
1.2 LOI Projects

The City is requesting LOI funding for the following projects:

- OMP Completion Phase Airfield
    - Runway 9C-27C
    - Runway 10R-28L
    - Extension of Runway 9R-27L - Include projects associated with the Extension of Runway 9R-27L and the Runway 27L threshold relocation (to solve existing Runway Safety Area deficiencies).
- WGP taxiway improvements

The OMP airfield projects are shown in **Exhibit I-1**.

[1] WGP taxiway improvements include Taxiway LL, a component proposed as an airfield improvement before the City proposed the OMP. Originally characterized as an extension of Taxiway N, the project was subsequently identified in the overall Master Plan and on the ALP approved by the FAA on September 30, 2005. The associated cost estimate for constructing Taxiway LL was outside the scope of the cost estimate for the OMP, but the cost of taxiway LL was included in the overall cost estimate associated with the Master Plan.



Source: O'Hare Airport Layout Plan (Sept. 2005)
Prepared by: Ricondo & Associates, Inc.

Exhibit I-1

north

O'Hare Modernization Program
Runway Configuration

1.3 Benefit Cost Analysis

A Benefit-Cost Analysis demonstrates whether the present value of a project's benefits exceed the present value of its costs by calculating the ratio of the discounted benefits divided by the discounted costs. The FAA does not use the benefit-cost ratio for ranking projects to assess how AIP discretionary grants are to be allocated. The primary purpose of this BCA is to present the Net Present Value, assessing the ongoing value of the investment over time, and benefit-cost ratio of the Proposed Action, which consists of the LOI Projects and the OMP Completion Phase noise program. The results are shown in **Table I-1**.

Table I-1

Benefit-Cost Ratio and Net Present Value (2008 dollars) Aircraft and Passenger Local Travel Time Benefits Only

	Present Value Benefits (billions)	Present Value Costs (billions)	Net Present Value (billions) [1]	Benefit-Cost Ratio
Proposed Action	$4.0	$2.4	$1.6	1.68

Note:
1 Total may not add due to rounding.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Various sensitivity analyses are also presented to show the benefit-cost if project benefits, costs, or timing differ from those assumed in the primary analysis. In accordance with FAA guidance, this analysis and the sensitivity analyses do not attempt to quantify or consider all benefits associated with the project. They illustrate that the aircraft travel time savings alone are sufficient to produce benefits that in all cases exceed project costs. Thus, the benefit-cost ratios and NPVs presented here are based on underestimated benefits and would be expected to be higher under a full accounting of project benefits. The values are presented in **Table I-2** and tabular information detailing the calculation of the BCR and NPV are included in **Appendix F**.

Table I-2

Benefit-Cost Ratios and Net Present Values (2008 dollars) - Sensitivity Analyses
Aircraft and Passenger Local Travel Time Benefits Only

Sensitivity Analysis	Evaluation End Year	Present Value Benefits (billions)	Present Value Costs (billions)	Net Present Value[1] (billions)	Benefit-Cost Ratio
Increase capital costs by 25 percent	2034	$4.0	$2.9	$1.1	1.37
Decrease benefits by 25 percent	2034	$3.0	$2.4	$0.6	1.26
Increase capital costs by 25% and decrease benefits by 25%	2034	$3.0	$2.9	$0.07	1.03
Constrained passengers growth at operations limit	2034	$3.9	$2.4	$1.6	1.66
Delay construction schedule by 5 years	2039	$4.1	$1.7	$2.4	2.45
2002 TAF as Base for Constrained Forecast	2034	$6.5	$2.4	$4.2	2.77

Note:
1 Totals may not add due to rounding.

Source : Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

The City is seeking an LOI for $500 million in AIP discretionary funds for the LOI Projects. **Table I-3** presents the LOI Project expenditures in 2008 dollars and **Table I-4** presents the proposed LOI reimbursement schedule.

Table I-3

Cash Flows for LOI Projects (2008 dollars)

Calendar Year	LOI Projects Expenditures (millions)[1]
2008	3.3
2009	68.4
2010	432.6
2011	898.9
2012	780.4
2013	341.8
2014	121.8
Total [2]	$2,647.1

Notes:
1 Expenditures are shown in calendar years as originally planned by the City in 2008 dollars. The timing of expenditures is subject to change.
2 Total may not add due to rounding.

Source: O'Hare Partners.
Prepared by: Ricondo & Associates, Inc.

Table I-4

Proposed LOI Reimbursement Schedule

Federal Fiscal Year	Proposed LOI Reimbursement ($ millions)
2010	50.0
2011	50.0
2012	50.0
2013	50.0
2014	50.0
2015	50.0
2016	50.0
2017	50.0
2018	50.0
2019	50.0
Total	$500.0

Source: City of Chicago, Department of Aviation.
Prepared by: Ricondo & Associates, Inc.

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

II. Introduction

II. Introduction

The OMP is a multi-year plan to reduce aircraft delay and enhance the capacity of the Airport. The first phase of the OMP, OMP Phase 1, began construction in 2005. To date, a new runway, an extension of an existing runway, and a new Airport Traffic Control Tower (ATCT) have been completed as part of OMP Phase 1 and are now in use. Construction continues on the remaining element of OMP Phase 1, Runway 10C-28C. The City is now preparing to begin the next phase of the OMP, OMP Completion Phase. The OMP Completion Phase includes construction of two runways, a runway extension, a western terminal including western ground access and people mover, and a Completion Phase noise program. The World Gateway Program (WGP), a separate capital development program included on the approved Airport Layout Plan (ALP), included taxiway improvement projects which are also necessary for the operation of the OMP Completion Phase runways. This grant application is for funding for the "LOI Projects" comprised of the OMP Completion Phase runway projects and WGP taxiway improvement projects.

The following runway projects are included as part of the full OMP airfield development, along with the associated proposed supporting airfield infrastructure:

OMP Phase 1 – Completed in 2008

- New Runway 9L-27R
- Extension of Future Runway 10L-28R (Existing Runway 10-28)

OMP Phase 1 – Under Construction

- Future Runway 10C-28C (Relocation of Existing Runway 18-36)

OMP Completion Phase Airfield Projects

- Extension of Runway 9R-27L (Previously Runway 9L-27R); includes the relocation of the Runway 27L threshold
- Future Runway 9C-27C (Relocation of Existing Runway 14L-32R)
- Future Runway 10R-28L (Relocation of Existing Runway 14R-32L)

On November 21, 2005, the FAA issued an LOI (AGL-06-01) for OMP Phase 1 for $337.2 million to be paid over 15 years. The $337.2 million consisted of $300 million of discretionary funds and $37.2 million of entitlement funds. The current status of the LOI disbursement is described in Section V of this application.

Consistent with statutory requirements for the use of LOI grants, the OMP will enhance system-wide airport capacity. The FEIS defines the purpose and need of the OMP as follows:

- Address the projected needs of the Chicago region by reducing delays at O'Hare, and thereby enhancing capacity of the National Airspace System.
- Ensure that existing and future terminal facilities and supporting infrastructure (access, landside, and related ancillary facilities) can efficiently accommodate airport users. (EIS 2-22)

Additional benefits of the OMP include:

- Providing flexible opportunities for increasing terminal and landside capacity
- Creating opportunities for enhanced competition among air carriers
- Enhancing the ability of the Airport to accommodate new large aircraft (NLA)

- Mitigating noise impacts.

In addition, the extension of Runway 9R-27L in OMP Completion Phase also includes relocation of the Runway 27L threshold to provide a full-length Runway Safety Area (RSA) on that runway.

2.1 Background

Aircraft delay historically has been a major issue at the Airport. The City and others have undertaken many studies over the past two decades aimed at identifying solutions to the increasing delay problem. These studies, such as the *1991* and *2002 Delay Task Force Studies*, and the *Capacity Needs in the National Airspace System 2007-2025*, have been conducted to investigate opportunities for runway development to mitigate escalating delays. While these studies concluded that several options were available to mitigate existing delays, few options studied prior to the OMP provided long-term capacity growth consistent with projected future demand.

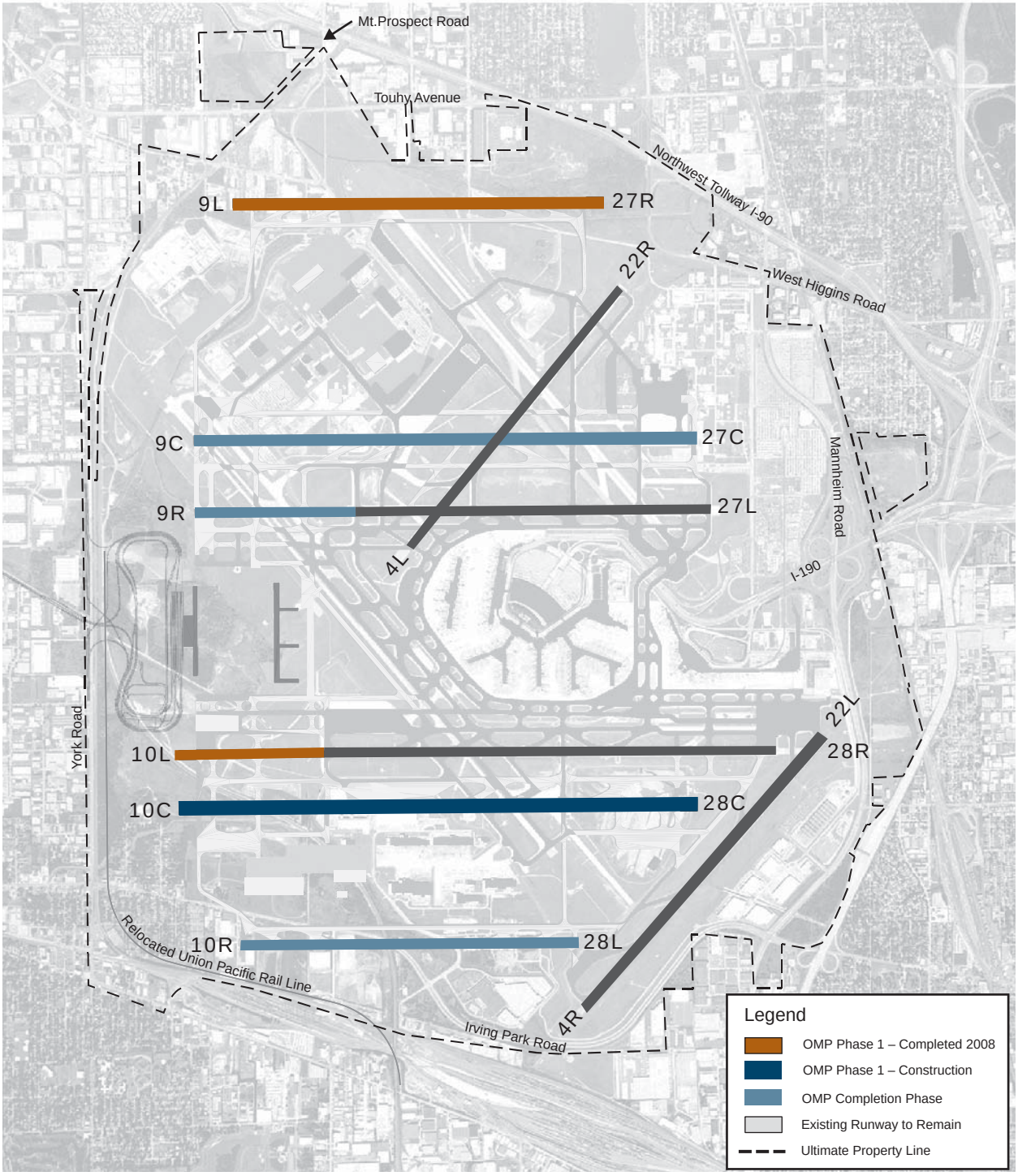
In response to the national interest in airport capacity and delay in Chicago, the U.S. Senate Committee on Commerce, Science and Transportation held a field hearing in Chicago on June 15, 2001, on *Air Traffic Congestion and Capacity in the Chicago, Illinois Region and Its Effects on the National Air Traffic System*. Testimony was provided by proponents of O'Hare expansion, proponents of a third airport in the Peotone area, and opponents of O'Hare expansion. Although the Senate Committee did not take specific actions, it made clear its desire that local and state officials act soon on the issue of aviation capacity in Chicago or face the possibility of federal intervention.

In response to the Committee's challenge, the City presented its OMP proposal for the future of O'Hare on June 29, 2001. The OMP proposal provided for the addition of one new runway, relocation of three runways, and extension of two existing runways, resulting in an airfield configuration with six runways in the east-west direction shown in **Exhibit II-1**. As in the exhibit, this document identifies the proposed runways by their proposed ultimate designations. Additional development is also proposed as part of the OMP, including constructing new taxiways, relocating certain buildings, constructing new Airport Traffic Control Towers, developing new terminal facilities on the west side of the Airport, and providing the associated ground transportation access for these western facilities.

Subsequent to the City's proposal of the OMP, the State of Illinois held hearings on the City's proposed plan in the communities surrounding O'Hare. In December 2001, the City and the State agreed on the future OMP proposed development concept. On May 31, 2003, the Illinois General Assembly approved the O'Hare Modernization Act (Illinois Public Act 93-0450) and the Governor signed it into law on August 6, 2003. The O'Hare Modernization Act was intended to expedite and facilitate the OMP.

The OMP has business, community, and airline support. Airline support for the OMP has been reflected in a letter included in **Appendix B**.

The projects included in this LOI request were subject of federal review as part of the EIS for the O'Hare Modernization Program and ALP approval. The EIS Record of Decision and ALP approval were received in September 2005.



Source: O'Hare Airport Layout Plan (Sept. 2005)
Prepared by: Ricondo & Associates, Inc.

Exhibit II-1

north

O'Hare Modernization Program
Runway Configuration

2.2 Outline of Application

In FAA Order 5100.38C and its amended requirements in Program Guidance Letter 07-03, the FAA outlined major criteria that it will use to evaluate LOI applications, including a proposed project's (1) capacity or delay impact on airport and overall system capacity, (2) benefits and costs, and (3) financing and timing. These sections that follow in this LOI request discuss these criteria in depth.

- *Section III:* Existing Role and Activity Forecast. The section illustrates the importance of the Airport's role in the NAS. Historical and forecast aviation activity and current airfield limitations at the Airport are identified.
- *Section IV*: The O'Hare Modernization Program. This section summarizes the OMP purpose and need and expected impact at the Airport was well as system capacity benefits. Descriptions of the OMP and LOI Projects, cost estimates, and implementation schedule are provided.
- *Section V*: Benefit-Cost Analysis (BCA). This section summarizes the BCA methodology and results. The BCA was performed in accordance with the procedures outlined in the FAA's Benefit-Cost Analysis Guidance document, December 15, 1999 (the BCA Guidance).
- *Section VI*: Financial Plan. The LOI request must demonstrate a sound financial representation of the relevant capital development program. The financial plan will place the request for LOI funds in the context of the total cost of the project and highlight the local financial commitment.

The Record of Decision on the EIS and ALP approval were received in September 2005 prior to the OMP Phase 1 LOI award.

Supporting documentation is provided in the following appendices:

- *Appendix A*: LOI for AIP funding AGL-06-01.
- *Appendix B*: Airline Support. Letter to the Editor of the Chicago Tribune Nov. 24, 2008 from United Airlines and American Airlines.
- *Appendix C*: Memo describing the creation of the constrained enplanement forecast.
- *Appendix D*: Gate Operating Limits.
- *Appendix E*: Results from EIS simulation analysis used in the BCA.
- *Appendix F*: BCA Tables
- *Appendix G*: Financial tables required by FAA Program Guidance Letter 07-03.
- Reference Document DVD
  - *FAA's Analysis and Review of Chicago's Application of Letter of Intent AGL 06-01 (A&R)*
  - *Final Environmental Impact Statement (EIS)*
  - *FAA Record of Decision (ROD)*
  - *O'Hare Master Plan (Master Plan)*
  - *O'Hare International Airport Airport Layout Plan (ALP)*
  - *Bureau of Transportation Statistics Tables*
  - *Economic Studies*
  - *FAA Final Agency Decision for PFC 06-19-C-00-ORD (FAD 06-19)*
  - *FAA Final Agency Decision for PFC 08-21-C-00-ORD (FAD 08-21)*

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

III. System Role

III. Existing Role and Activity Forecast

The following sections discuss the specific nature of airline operations at the Airport and historical, current, and forecast aviation activity.

3.1 Role of the Airport

The Airport, located approximately 18 miles northwest of downtown Chicago, has been the primary commercial airport serving the Chicago Region[2] since 1962. The current airfield configuration consists of seven main runways that are configured in three sets of parallel runways (three east-west runways, two northwest-southeast runways, and two northeast-southwest runways), and a single north/south runway (Runway 18/36) that is currently closed to operations.

Based on statistics from Airports Council International (ACI), the Airport ranked second worldwide in total operations and total passengers in 2007[3] (see **Exhibit III-1A**). Year-to-date November 2008 data from ACI, the most recent data available, illustrates the Airport maintained it's ranking amongst airports worldwide in both total operations and total passengers (see **Exhibit III-1B**). The Airport has been ranked first worldwide in total operations in 40 of the last 46 years and first worldwide in total passengers in 36 of the last 46 years. By Federal Aviation Administration classification, the Airport is a "large hub" as it accounts for at least one percent of total U.S. enplaned passengers.

As the world's second busiest airport (behind Atlanta's Hartsfield Jackson), O'Hare has a strong international presence, with 131 international daily departures. Based on Official Airline Guide data for December 2008, O'Hare was ranked the fourth busiest U.S. international gateway (Miami International Airport, John F. Kennedy International Airport, and Los Angeles International Airport provide more international daily departures).

The Airport is an integral component of the NAS as evidenced by its high level of aviation activity. Based on preliminary City statistics for calendar year 2008, O'Hare had 881,566 total aircraft operations.

3.1.1 Transportation Hub

The Chicago Region's large population and economic base provide strong demand for local origin-destination (O&D) traffic at the Airport. The Chicago Region's strong economic base, centered on the nation's third-largest city, provides a significant O&D market of business and leisure travelers. The number of large businesses and organizations in the Chicago Region creates a significant demand for air transportation. In 2007, domestic O&D passengers accounted for 45.8 percent of enplaned passengers.

This O&D traffic base, coupled with Chicago's location near the center of the United States along heavily traveled east/west air routes, makes it a natural location for airline hubbing operations. O'Hare currently serves as a network hub for two large domestic airlines, United and American. As noted in the *January 2004 FAA Order Limiting Scheduled Operations*, O'Hare's location makes it "a logical connecting point for significant passenger flows across the United States."

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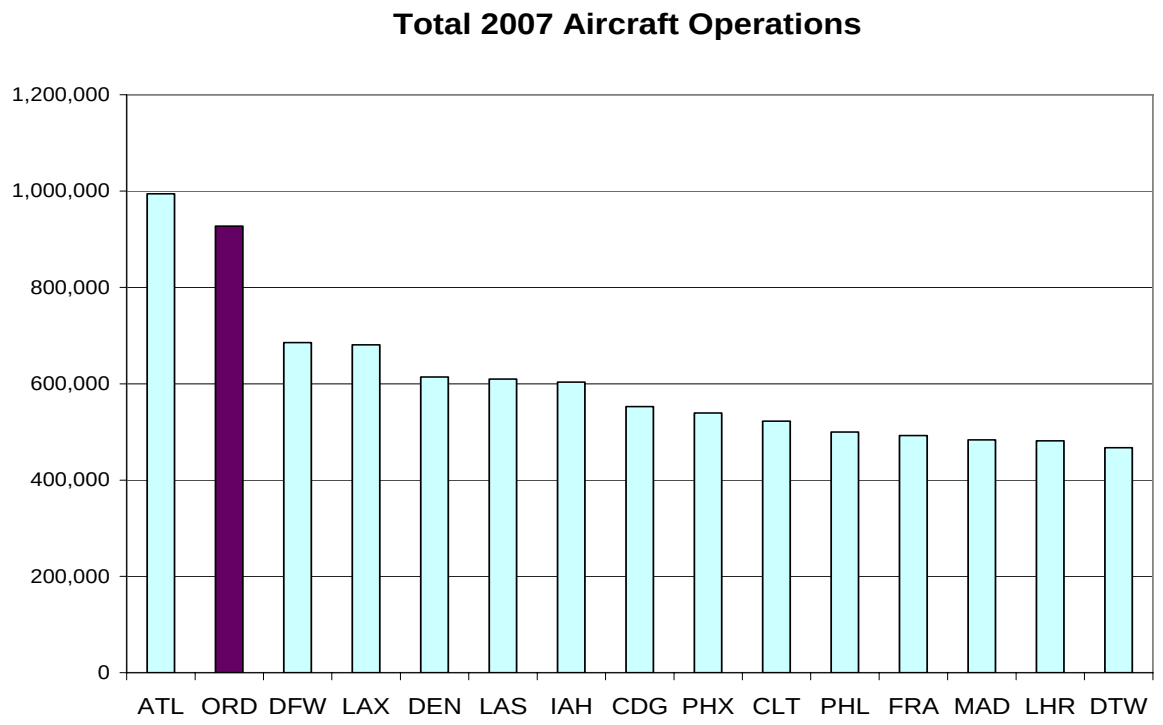
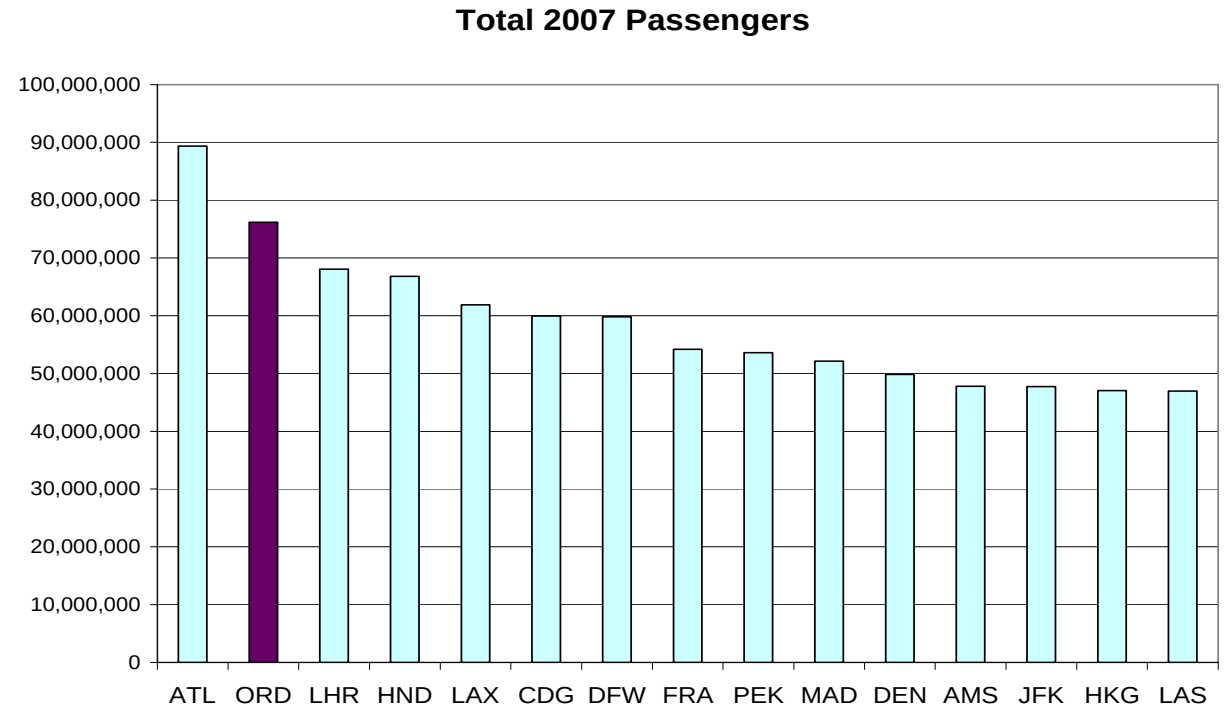
[2] Defined as the 13-county Chicago-Gary-Kenosha Consolidated Metropolitan Statistical Area (CMSA), which consists of the adjoining MSAs of Chicago, Gary, Kankakee, and Kenosha MSAs, which are adjoining.

[3] 2008 annual statistics were unavailable at the time of publishing.

Exhibit III-1A

Top 15 Worldwide Ranking of Activity - 2007

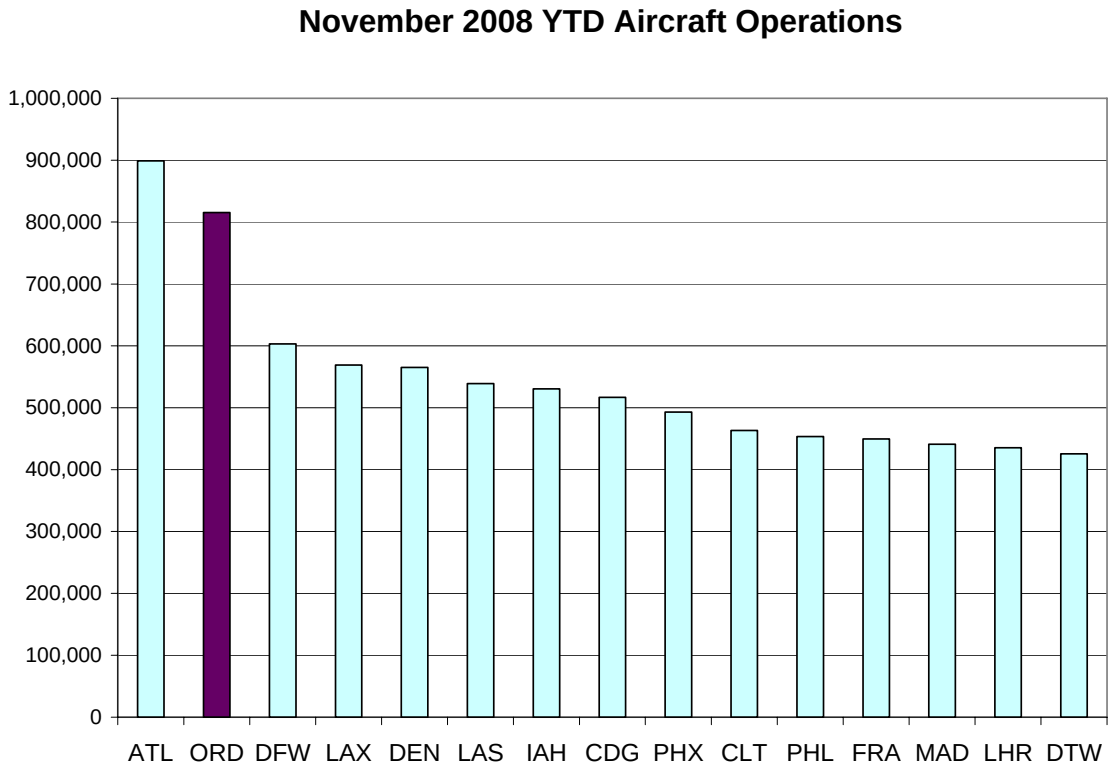


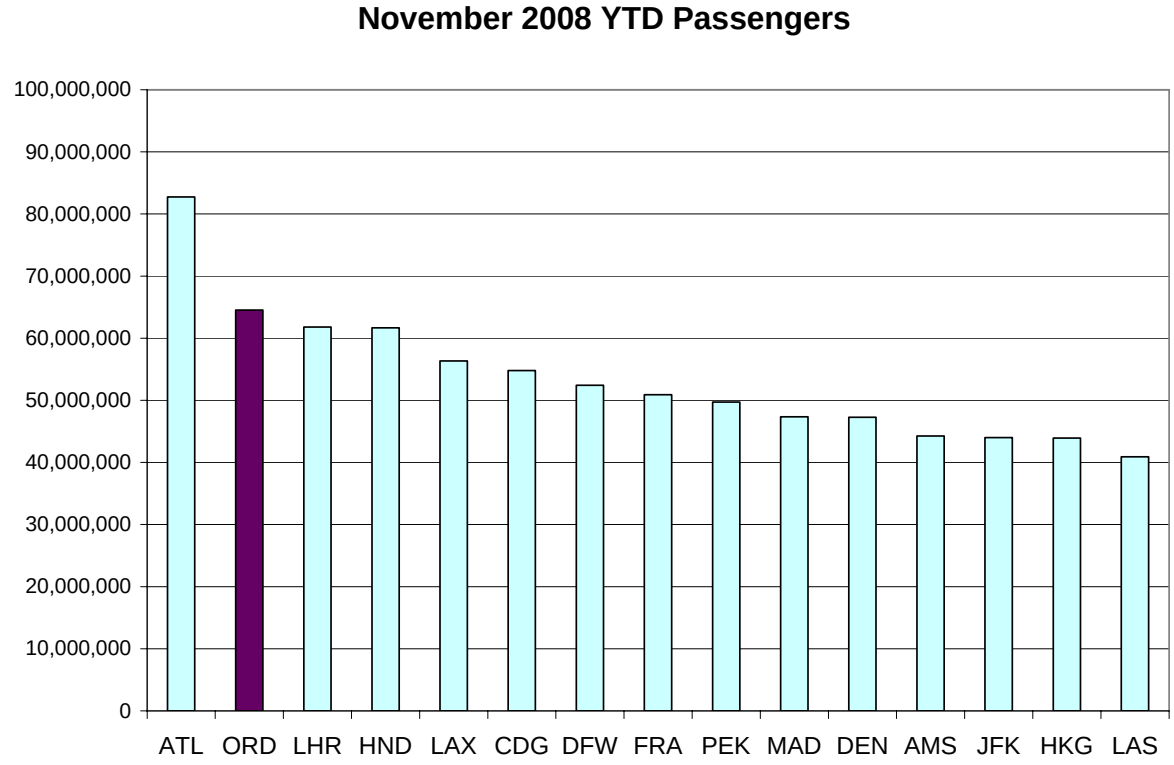


Source: Airports Council International.
Prepared by: Ricondo & Associates, Inc.

Exhibit III-1B

Top 15 Worldwide Ranking of Activity – November 2008 Year-To-Date





Source: Airports Council International.
Prepared by: Ricondo & Associates, Inc.

The Airport serves as an important O&D and connection market for United Airlines and American Airlines. For United, O'Hare is the largest hub, in terms of capacity, within its route network. In 2008, the Airport accounted for 18.2 percent of United's total scheduled seats, higher than any other airport in its network. For American, O'Hare is the second largest hub within its network, following Dallas/Fort Worth International Airport. The Airport accounted for 10.9 percent of American's total scheduled seats in 2008. The scheduled seat share for United and American combined is 82.7 percent of total scheduled seats at O'Hare for 2008.

3.1.2 Economic Benefit

The Airport is an important part of the NAS, and it significantly contributes to both regional and national economic growth. A July 2001 study by Booz•Allen & Hamilton, *Economic Impact of Chicago's Airports*, cites O'Hare's substantial economic benefit to the region in 2000:

- Contributed 400,000 to 480,000 jobs to the Greater Chicago Region.[4] The Airport generated between 15 and 20 percent of the employment in its immediate vicinity.
- Included 30,000 airline personnel based at O'Hare; 130,000 persons employed by the Airport and its tenants; 170,000 persons employed in tourism and visitor services; and 100,000 to 180,000 persons employed in access-sensitive businesses (such as corporate headquarters, research and development facilities, manufacturing) whose locations require proximity to an airport. The proximity itself promotes further business.
- Contributed $34 billion to $41 billion in annual economic activity to the Greater Chicago Region.

Subsequent to the study prepared by Booz Allen & Hamilton, several other organizations analyzed the job creation and economic generating benefits of the OMP. These studies varied in the methodologies utilized and the size of the study area, but each study found the economic benefits of the OMP to be substantial. These other sources for such economic data include:

- *FAA EIS, Section 5.5 Secondary (Included) Impacts, 2005*
- *Airline Traffic and Urban Economic Development,* Jan Brueckner, Department of Economic and Institute of Government and Public Affairs, University of Illinois at Urbana-Champaign, August 2002.
- *West O'Hare Corridor Economic Development Study,* DuPage County Department of Economic Development and Planning, October 2006.

3.1.3 Air Service

The Airport has had a strong and stable base of air carriers. In 2008, the Airport had scheduled passenger service provided by 23 U.S. flag air carriers, scheduled and nonscheduled service by 29 foreign flag carriers, and non-scheduled service by 5 airlines, as shown in **Table III-1**. In addition, 30 all-cargo carriers provided cargo service at the Airport. Of the nation's 17 major passenger air carriers, 14 serve the Airport.

[4] In the Booz•Allen report, the Greater Chicago Region comprises five economic regions around O'Hare: Chicago Downtown; O'Hare Vicinity Area, including the Northern and Western Suburbs and first set of townships in Lake and Kane counties; Midway Vicinity, including the suburbs centered around Midway Airport; Northern Outer Suburbs, including the first set of townships along the lake shore north of Chicago, McHenry, Lake, Kane, and DuPage counties; Southern Suburbs, including Will County, and a portion of Cook County not already included in the Chicago Downtown or Midway Vicinity.

Table III-1

Airlines Serving O'Hare – 2008

Scheduled U.S. Carriers (23)	Foreign Flag Carriers (29)	Other/Nonscheduled Carriers (5)	All-Cargo Carriers (30)
Air Wisconsin (US Airways Express)	Aer Lingus	Gold Transportation	Aerounion
Alaska	Aeromexico	Miami Air	Air China
American	Air Canada	Pace	Air New Zealand
American Eagle	Air France	Ryan International	Air Trans international (BAX Global)
Atlantic Southeast (Delta Connection)	Air India	U.S.A. 3000	Airborne Express
Chautauqua	Air Jamaica		ANA & JP Express
Comair (Delta Connection)	Air One		Atlas Air
Continental	Alitalia		Cargoitalia
Continental Express	All Nippon Airways		Cargolux
Delta	Asiana		Cathay Pacific
Freedom (Delta Connection)	Austrian		China Airlines
Go Jet (United Express)	British Airways		China Cargo
JetBlue	British Midland		China Eastern
Mesa	Cayman Airways		China Southern
Northwest	Cross/Swiss		DHL Airways
Pinnacle (NW Airlink)	Iberia		EVA Airways
Republic (US Airways Express)	Japan		Evergreen
Shuttle America (Delta Connection & United Express)	Jazz Air		Federal Express
SkyWest (United Express)	KLM Royal Dutch		Kalitta
Spirit	Korean		Korean Air Cargo
Trans State (United Express)	LACSA		Lufthansa Cargo
United	LOT Polish		Martin Air Holland
US Airways	Lufthansa		Nippon
	Mexicana		Polar
	Royal Jordanian		Qantas
	Scadinavian		Shanghai Cargo
	Taca International		Singapore Cargo
	Turkish		Southern Air
	Virgin Atlantic		United Parcel Service
			World

Source: City of Chicago, Department of Aviation.
Prepared by: Ricondo & Associates, Inc.

In December 2008, nonstop service was provided to 129 domestic cities with a total of 6,740 weekly departing flights.[4] **Exhibit III-2** illustrates these nonstop domestic markets. Each of the Airport's top 25 domestic O&D markets was served with nonstop service. As shown on **Table III-2**, the New York market was provided with the most service with 419 weekly nonstop departing flights during this period. During the same period, nonstop service was provided to 51 international cities with a total of 880 weekly departing flights, as shown on **Table III-3** and illustrated in **Exhibit III-3.** Outside of North America, the London market was provided with the most service with 69 weekly nonstop departing flights during this period. This December 2008 time period is reflective of current market service and traffic levels at the Airport.

3.2 Aviation Activity

3.2.1 Historical Growth

Table III-4 presents aircraft operations at the Airport between 1995 and 2008. Until 2004, the Airport's activity was relatively steady, much of this due to the High Density Rule. The High Density Rule had been the means by which the FAA managed congestion and delays at O'Hare by limiting the number of aircraft operations allowed at the Airport. For example, starting in 2000, total aircraft operations at the Airport increased 0.3 percent in 2001, 1.2 percent in 2002, 0.6 percent in 2003, and 6.7 percent in 2004. The 2004 peak in total operations at the Airport followed the completion of the phase-out of the High Density Rule in July 1, 2002. In 2004, the FAA reimposed limits on the number of aircraft operations allowed at the Airport given the corresponding increases in congestion and delays.

The most recent FAA limits on aircraft operations expired in October 2008 in anticipation of the commissioning of the first new runway at O'Hare on November 20, 2008, as part of OMP Phase 1. From 2007 to 2008, aircraft operations decreased 4.9 percent as most airlines cut capacity due to the rapid acceleration in fuel prices and a slowing national economy. Between 2000 and 2004 aircraft operations increased at an average annual rate of 2.2 percent, which compares with an average rate of -2.1 percent for the United States as a whole. Between 2004 and 2007, aircraft operations decreased at an average annual rate of 2.2 percent which compares with an average declining rate of 1.1 percent for the United States as a whole.

Table III-5 presents historical enplanements (domestic and international) for the Airport from 1995 through 2008. As shown, enplanements at the Airport increased from approximately 32.9 million enplanements in 1995 to just over 34.0 million in 2008. This increase represents a compounded annual growth rate of 0.3 percent during this period. Due in large part to labor troubles at United, enplanements decreased 0.7 percent in 2000 from 1999 levels. Enplanements at the Airport decreased 6.7 percent in 2001 from 2000 levels, and an additional 1.2 percent in 2002 due primarily to the events of September 11, 2001 and the national economic slowdown. These three years of decreasing activity caused enplanements to decline from about 35.9 million in 1999 to 32.9 million in 2002.

[4] Source: *Official Airline Guide* - December 13, 2008 through December 19, 2008.

Source: *Official Airline Guide, Inc.,* (December 13 - 19, 2008).
Prepared by: Ricondo & Associates, Inc.

Exhibit III-2

north

Chicago-O'Hare's Nonstop Domestic Markets

S://Graphics Library/Misc Maps/non-stop domestic flights.ai

Table III-2

Top 25 Domestic Nonstop Passenger Markets

Rank	Market	Scheduled Weekly Nonstop Departing Flights[1]
1	New York/Newark	419
2	Washington	269
3	Minneapolis/St. Paul	184
4	Dallas/Ft. Worth	180
5	Atlanta	149
6	Detroit	141
7	St. Louis	137
8	Philadelphia	136
9	Boston	130
10	Cincinnati	129
11	Los Angeles	126
12	Charlotte	125
13	Cleveland	110
14	Indianapolis	106
15	Houston	105
16	San Francisco	102
17	Columbus	100
18	Denver	98
19	Phoenix	92
20	Des Moines	90
21	Madison	86
22t	Seattle	85
22t	Cedar Rapids/Iowa City	85
24t	Kansas City	82
24t	Las Vegas	82
24t	Nashville	82
	Other Markets	3,310
	Total	6,740

Note:
1 For the week of December 13 - 19, 2008.

Source: Official Airline Guides, Inc.
Prepared by: Ricondo & Associates, Inc.

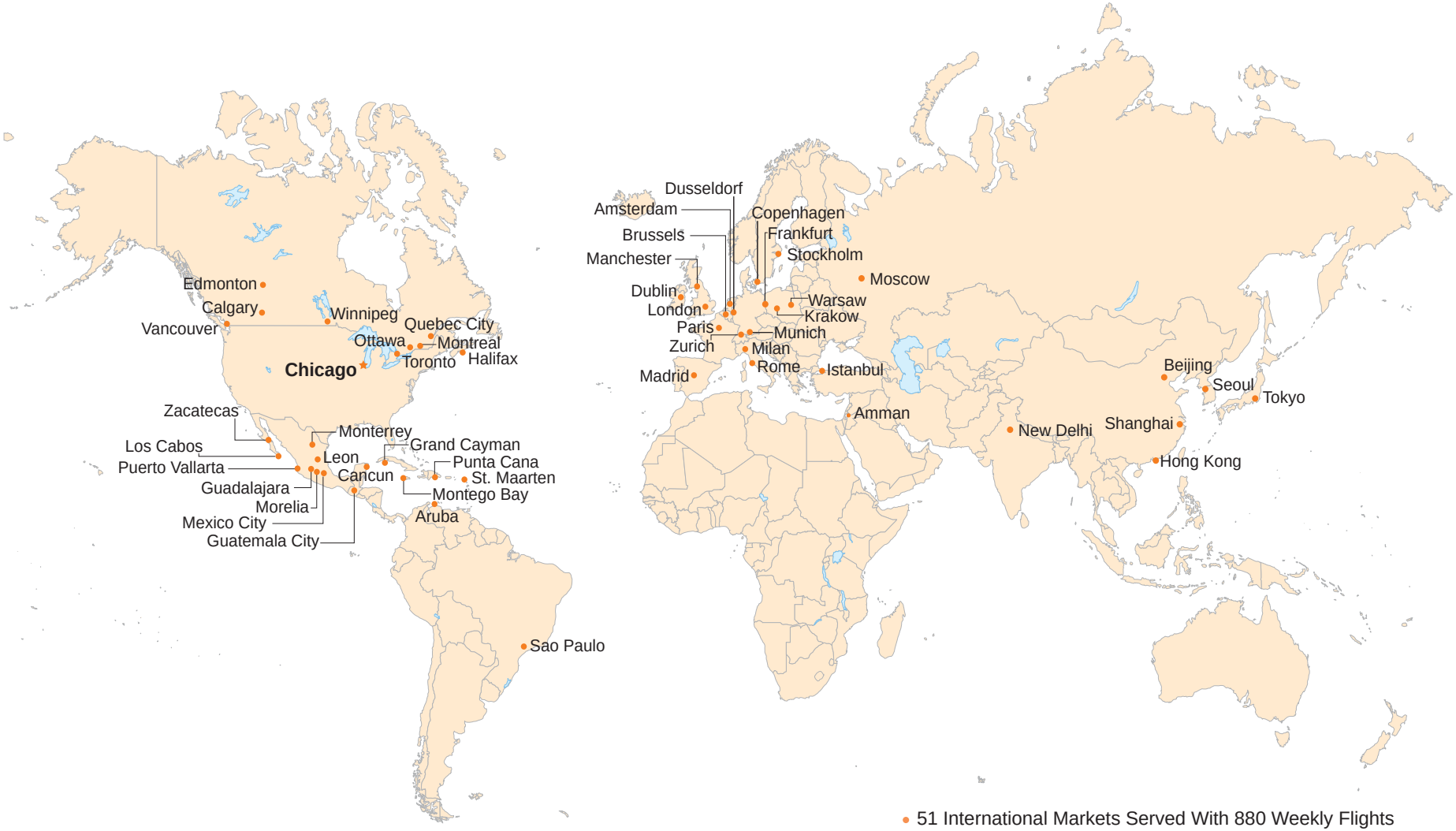
Table III-3

Top International Nonstop Passenger Markets

Rank	City	Country	Scheduled Weekly Nonstop Departing Flights[1]
1	Toronto	Canada	139
2	Montreal	Canada	89
3	London	United Kingdom	69
4	Ottawa	Canada	54
5	Mexico City	Mexico	38
6	Frankfurt	Germany	35
7	Winnipeg	Canada	34
8	Cancun	Mexico	30
9	Tokyo	Japan	28
10	Calgary	Canada	27
11t	Vancouver	Canada	21
11t	Edmonton	Canada	21
13t	Paris	France	19
13t	Guadalajara	Mexico	19
15	Puerto Vallarta	Mexico	16
16t	Shanghai	China	14
16t	Dublin	Ireland	14
16t	Munich	Germany	14
16t	Amsterdam	Netherlands	14
20	Morelia	Mexico	13
21	Manchester	United Kingdom	12
22	Seoul	Korea	10
23	Los Cabos	Mexico	9
24	Montego Bay	Jamaica	8
25t	Beijing	China	7
25t	Brussels	Belgium	7
25t	Delhi	India	7
25t	Halifax	Canada	7
25t	Hong Kong	China	7
25t	Madrid	Spain	7
25t	Milan	Italy	7
25t	Monterrey	Mexico	7
25t	Quebec City	Canada	7
25t	Sao Paulo	Brazil	7
25t	Warsaw	Poland	7
25t	Zurich	Switzerland	7
	Other Markets		49
	Total		880

Note:
1 For the week of December 13 - 19, 2008.

Source: Official Airline Guides Inc.,.
Prepared by: Ricondo & Associates, Inc.



Source: *Official Airline Guide, Inc.,* (December 15 - 19, 2008).
Prepared by: Ricondo & Associates, Inc.

Exhibit III-3

north

S://Graphics Library/Misc Maps/non-stop international flights2.ai

Chicago-O'Hare's Nonstop International Markets

Table III-4

Historical Aircraft Operations (1995-2008)

Year	Total Aircraft Operations[1]
1995	900,279
1996	909,593
1997	883,761
1998	896,110
1999	896,228
2000	908,989
2001	911,917
2002	922,817
2003	928,691
2004	992,427
2005	972,248
2006	958,643
2007	926,973
2008 [2]	881,566

Notes:
1 Includes general aviation, helicopter, and other miscellaneous operations.
2 2008 aircraft operations are preliminary data and subject to change.

Source: City of Chicago, Department of Aviation.
Prepared by: Ricondo & Associates, Inc

Table III-5

Historical Enplanements (1995-2008)

Year	Enplanements
1995	32,861,460
1996	34,067,885
1997	34,774,114
1998	35,758,810
1999	35,946,964
2000	35,700,525
2001	33,310,203
2002	32,918,936
2003	34,406,667
2004	37,464,632
2005	37,970,886
2006	37,784,336
2007	37,779,576
2008 [1]	34,024,964

Note:
1 2008 enplanements are preliminary data and subject to change.

Source: City of Chicago, Department of Aviation.
Prepared by: Ricondo & Associates, Inc.

By 2004, demand returned and enplanements exceeded pre-September 11, 2001, levels reaching 37.5 million, an 8.9 percent increase over 2003 enplanements. To respond to this growth in enplanements and corresponding growth in, the FAA and the major airlines serving the Airport (United and American) agreed in early 2004 to voluntarily limit scheduled domestic and Canadian arrivals at the Airport as a temporary measure to reduce aircraft delays. The FAA later issued an order implementing the voluntary flight reductions; that order was later amended to reduce further the number of operations, to include other carriers, and to extend its duration. Ultimately, the FAA issued the now October 2008-expired rule to limit aircraft operations at the Airport to mitigate congestion and delays.

From 2004, enplanements increased 1.4 percent to peak at approximately 38.0 million in 2005. Enplanements remained flat at 37.8 million in 2006 and 2007, a decrease of 0.5 percent from 2005. For O'Hare's two main airlines, United decreased 2.4 million seats in 2005 from 2004 levels and decreased an additional 1.0 million seats in 2006 from 2005 levels. Departing seats for American decreased 1.0 million seats in 2005 and 2006. As mentioned earlier, due to the rapid acceleration in fuel prices and a slowing national economy many of the major airlines reduced capacity at the Airport as at most airports across the nation. As a result, 2008 enplanements decreased 9.9 percent from 2007.

United and its regional affiliates had a combined 46.1 percent share of Airport enplaned passengers in 2008. United mainline operations provide nonstop service from the Airport to 51 domestic markets and 14 international markets. United's affiliates that operate as United Express; Chautauqua Airlines, GoJet Airlines, Mesa Airlines, Shuttle America, SkyWest Airlines, and Trans States Airlines provide nonstop service to 75 domestic markets and 8 international markets from the Airport.

American and its subsidiary American Eagle had a combined 36.6 percent share of Airport enplaned passengers in 2008. American mainline operations provide nonstop service to 41 domestic markets and 12 international markets. American Eagle provides nonstop service to 58 domestic markets and 3 international markets.

In 2008 American, United, and their affiliates reduced seat capacity at the Airport. American and its regional affiliates decreased seats 6.2 percent in 2008 to approximately 16.8 million compared with 17.9 million available in 2007. During that same period, United along with its regional affiliates decreased seats 7.0 percent to approximately 21.0 million available in 2008 down from 22.6 million in 2007.

3.2.2 Forecast Growth

Future aviation demand at the Airport is based on forecasts developed by the FAA including projected total enplaned passengers and operations from the 2005 O'Hare Environmental Impact Statement, which is based on the 2002 Terminal Area Forecast (TAF), and the 2008 TAF, the most recent forecast produced by the FAA. **Table III-6** presents a comparison of these two forecasts.

The activity listed in the table is in calendar years (CY), the year ending December 31. Although the FAA prepares its TAFs using data based on the Federal Fiscal Year (FY), 12 months ending September 30, it was converted to a calendar year basis for the EIS and Phase 1 BCA. For the same comparative purposes, the 2008 TAF projections were also converted from fiscal year to calendar year for this BCA. The calendar year figures for the 2008 TAF are the summation of two components: April through December activity in the preceding fiscal year period; and January through March activity in the succeeding fiscal year period.

Table III-6

O'Hare International Airport EIS Forecast & 2008 FAA Terminal Area Forecasts (Calendar Year)

	Total Enplanements		Total Operations	
Calendar Year	EIS [1/]	2008 TAF [2/]	EIS [1/]	2008 TAF [2/]
2002	31,710,512	-	922,787	-
2003	32,609,000	-	960,500	-
2004	33,633,730	-	976,544	-
2005	34,696,477	-	992,855	-
2006	35,798,962	-	1,009,439	-
2007	36,943,000	-	1,026,300	-
2008	38,027,251	34,133,225	1,041,635	883,427
2009	39,149,000	32,152,853	1,057,200	828,608
2010	40,280,622	32,289,079	1,072,706	825,659
2011	41,450,619	33,058,401	1,088,438	838,443
2012	42,660,538	34,468,473	1,104,402	866,996
2013	43,912,000	35,840,005	1,120,600	895,522
2014	45,119,418	37,145,601	1,134,910	922,645
2015	46,367,491	38,289,326	1,149,402	946,654
2016	47,657,820	39,350,607	1,164,080	969,176
2017	48,992,074	40,492,701	1,178,945	993,766
2018	50,372,000	41,585,837	1,194,000	1,017,468
Compounded Annual Growth Rate				
2008 - 2009	2.9%	(5.8%)	1.5%	(6.2%)
2009 - 2010	2.9%	0.4%	1.5%	(0.4%)
2009 - 2015	2.9%	3.0%	1.4%	2.2%
2009 - 2018	2.8%	2.9%	1.4%	2.3%

Notes:

1 Represents FAA 2002 TAF projections converted to calendar years by Leigh Fisher Associates [Third Party Consultant] and Ricondo & Associates, Inc.

2 Represents FAA TAF projections converted to calendar years by Ricondo & Associates, Inc.

Source: FAA, O'Hare Modernization Draft Environmental Impact Statement, January 2005; 2002 & 2008 Terminal Area Forecasts
Prepared by: Ricondo & Associates, Inc., February 2009

In terms of absolute numbers, the 2008 TAF projects fewer aircraft operations and enplaned passengers than the EIS forecast throughout the forecast period. However, growth rates as indicated by the 2008 TAF beyond 2009 are comparable with or higher than the EIS forecast.

As shown in Table III-6, aircraft operations at the Airport in the EIS forecast are projected to increase from 1,057,200 in 2009 to 1,194,000 in 2018, at a compound average annual growth rate of 1.4 percent over the 9-year period. The number of enplanements projected by the EIS forecast increases from about 39.1 million in 2009 to 50.4 million in 2018, a 2.8 percent compound annual growth rate over the same 9-year period. The more recent 2008 TAF estimates airport operations will increase from 828,608 in 2009 to 1,017,468 in 2018. The number of enplaned passengers projected by the 2008 TAF increases from approximately 32.2 million in 2009 to 41.6 million in 2018, a 2.9 percent compound annual growth rate over the 9-year period.

Although the 2008 TAF calls for continued growth, the airline industry has faced significant challenges over recent years, including record high fuel prices, weakening economic conditions, and a weakening dollar. These significant challenges have caused several smaller carriers to declare

bankruptcy or cease passenger operations; larger major carriers have deferred deliveries of new aircraft and trimmed growth plans to sustain profitability. The result has been fewer enplaned passengers and operations than previously anticipated in the EIS Forecast. Worldwide economic conditions continue to stress the airline industry.

Air transportation demand is strongly influenced by the demographic and economic characteristics of an airport's O&D passenger market, those passengers beginning or ending their trips at the airport. As a result, the strength of the City's underlying economic base remains an important element of passenger demand. The Chicago Region has an economic base that will generate increased demand for air travel at the Airport during the forecast period.

3.2.3 FAA Caps on Operations at O'Hare

In early 2004 FAA issued an order implementing voluntary flight reductions by United and American effective no later than March 4, 2004. On April 21, 2004, FAA issued an amendment to the previous order requiring additional flight reductions by June 10, 2004. While the initial order focused on flight reductions by United and American. On August 18, 2004 FAA issued a comprehensive order limiting scheduled domestic and Canadian arrivals at the Airport effective November 1, 2004. Under this comprehensive order, scheduled domestic and Canadian arrivals at the Airport were limited to 88 per hour between 7:00 a.m. and 7:59 p.m. (and to 50 in any half hour) and to 98 scheduled arrivals between 8:00 p.m. and 8:59 p.m. This order was scheduled to expire on April 30, 2005, and was extended on three separate occasions by FAA to permit completion of a formal rule-making process on this subject.

The FAA adopted these regulations for the Airport to reduce persistent flight delays from over scheduling. As stated by the FAA in its final rule, the regulation was intended to be an interim measure only, and the FAA anticipated that the rule would yield to longer term solutions to traffic congestion at the Airport. Such solutions include plans by the City to modernize the Airport and reduce levels of delay, both in the mid term and long term.

On October 29, 2006, the FAA implemented a formal flight reduction rule at the Airport (with similar limitations in the number of total operations as were included in the previous order) which expired on October 31, 2008. The expiration date coincided with the originally scheduled opening date of Runway 9L-27R.

The FAA's TAF is based in part on historical trends; therefore, the 2008 O'Hare TAF projections are affected by such a constrained past. As the FAA states, "…if the airport historically functions under constrained conditions, the FAA forecast may reflect those constrains since they are embedded in historical data." (*Terminal Area Forecast Summary, Fiscal Years 2007-2025*, FAA, page 3).

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

IV. The O'Hare Modernization Program

IV. The O'Hare Modernization Program

This section presents (1) an overview of the OMP, including the program's purpose and benefits; (2) a description of proposed improvements; (3) its estimated capital costs and implementation schedule; (4) an identification of the OMP Completion Phase development for the LOI projects that constitute this LOI request, and (5) the delay reduction associated with the OMP.

4.1 Purpose and Benefits of the OMP

The OMP's purpose is to reduce current and projected delays at O'Hare and throughout the NAS and add incremental capacity for the Airport to accommodate demand. The OMP includes a reconfiguration of the airfield into a modern parallel runway system that will allow the Airport to operate more efficiently. O'Hare delays are a consequence of the Airport's converging runway configuration, which does not provide balanced capacity in varying conditions that call for Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) or between arrivals and departures. Currently, these limitations significantly impact the national system even in good weather during peak periods of the day, as recognized by the *January 2004 FAA Order* and the *August 2004 FAA Order* limiting scheduled operations during peak operating hours.

Consistent with statutory requirements for the use of LOI funds, the OMP will enhance system-wide airport capacity. The EIS defines the purpose and need of the proposed OMP development:

- Address the projected needs of the Chicago region by reducing delays at O'Hare, and thereby enhancing capacity of the NAS.
- Ensure that existing and future terminal facilities and supporting infrastructure (access, landside, and related ancillary facilities) can efficiently accommodate airport users.

Additional benefits of the OMP include:

- Providing flexible opportunities for increasing terminal and landside capacity;
- Creating opportunities for enhanced competition among air carriers;
- Enhancing the ability of the Airport to accommodate NLA; and
- Mitigating noise impacts.

4.2 Description of the OMP

Implementation of the OMP will reduce delays and enhance capacity by modernizing the airfield configuration. O'Hare's existing layout of converging runways will be reconfigured into a predominantly parallel runway system typical of modern, large-hub airports. These parallel runways will allow operation of a combination of arrival and departure runways at the Airport, providing balanced and flexible capacity in all weather conditions.

The OMP is being implemented in phases as a multi-year process entailing the reconfiguration of the runway layout; relocation of other existing facilities; construction of a new western terminal complex including supporting roadway and parking facilities; noise mitigation; and land acquisition. The major components of the OMP are described below, along with its supporting, or "enabling" projects. For example, various improvements are being implemented to relocate and expand existing utilities and infrastructure, including stormwater collection and detention, water supply lines, electrical systems, sanitary sewer systems, vehicle service roads, and perimeter fencing.

The runway projects of OMP Phase 1 and the OMP Completion Phase first shown in Exhibit II-1 (Section) are described here in Section 4.2.1 and Sections 4.2.2, respectively.

The Proposed Action includes those projects necessary to achieve the overall objective and generate the benefits that are calculated in the Benefit Cost Analysis (BCA) included in this application. The Proposed Action includes the LOI Projects in addition to the OMP Completion Phase Noise program.

4.2.1 OMP Phase 1

4.2.1.1 New Runway 9L-27R - Completed

New Runway 9L-27R, including associated taxiways and other supporting development, was commissioned November 20, 2008. This runway allows a third stream of arrivals in west flow, poor weather conditions and some west flow, good weather conditions. Before this new runway was constructed, this third stream was not available at O'Hare. The most significant impact of this runway is the reduction of aircraft delay during IMC conditions[5]. Constructing this runway depended on relocating and reconfiguring various facilities, roads, and waterways, and acquiring land near the northwest quadrant of the Airport. These enabling projects were associated with Runway 9L-27R:

- Acquisition of approximately 135 acres of land near the northwest quadrant of Airport property (existing facilities in this area have been demolished).
- Relocation of a portion of Willow-Higgins Creek and associated culvert development.
- Relocation of a major water main crossing the alignment of the proposed runway.
- Expansion of the northern stormwater detention facilities.
- Development of a new Airport Traffic Control Tower (ATCT) in the north airfield.
- Realignment of an Airport service/employee access roadway along Mt. Prospect Road, and relocation of the access point's guard post and security facilities.

4.2.1.2 Extension of Future Runway 10L-28R (Existing Runway 10-28) - Completed

Construction of a proposed 2,859-foot westward extension to existing Runway 10-28 (to be renamed Runway 10L-28R), associated taxiways, and other support facilities was completed 56 days ahead of schedule on September 25, 2008. The runway extension increased the available runway length to 13,000 feet. The Runway will be the longest at the Airport after existing Runway 14R-32L is shortened and ultimately decommissioned as part of the OMP. The relocation of navigational aids and runway approach light systems were the major enabling projects completed as part of this runway extension.

4.2.1.3 Future Runway 10C-28C (Relocation of Existing Runway 18-36)

Future Runway 10C-28C, associated taxiways, and required support facilities are under construction as part of OMP Phase 1. The following are the associated enabling projects required to construct this runway:

- Relocation of a segment of the Union Pacific Railroad line in the southwest corner of the Airport.
- Acquisition of 298 acres of land near the southwest quadrant of Airport property.
- Relocation of St. Johannes Cemetery.
- Reconfiguration of the South Detention Basin. Additional stormwater capacity will also be

[5] Instrument Meteorological Conditions (IMC) occur when the cloud ceiling is less than 3,000 feet above ground level and the visibility is less than 3 statue miles.

constructed in the existing detention basin west of Runway 14R-32L.

- Relocation of certain cargo facilities located in the south airfield.
- Rerouting of the Bensenville Ditch.

4.2.2 OMP Completion Phase

4.2.2.1 Extension of Runway 9R-27L (Previously Runway 9L-27R)

OMP Completion Phase includes a 3,594-foot westward extension of existing Runway 9L-27R (future Runway 9R-27L), including associated taxiways and other supporting airfield development. This extension will provide an ultimate runway length of 11,260 feet; and by relocating the Runway 27L threshold, it will provide a full-length Runway Safety Area (RSA) on that runway end.

4.2.2.2 Future Runway 9C-27C (Relocation of Existing Runway 14L-32R)

OMP Completion Phase includes the construction of future Runway 9C-27C with associated taxiways and other supporting airfield development. During this phase of construction, several facilities must be relocated. After the proposed Runway 9C-27C is commissioned, it is planned that Runway 14L-32R will be decommissioned. Associated enabling projects include:

- Relocation of maintenance facilities located in the northwest area of the Airport.
- Relocation of military/general aviation area facilities.
- Construction of a tunnel for the service road located in the northwest area of the Airport.
- Creation of new detention pond capacity.
- Relocation of the very high frequency omni-directional range/tactical air navigation facility.

4.2.2.3 Future Runway 10R-28L (Relocation of Existing Runway 14R-32L)

The OMP Completion Phase entails constructing the southernmost runway, future Runway 10R-28L, associated taxiways, and other supporting airfield development. Upon commissioning of the runway, it is planned that Runway 14R-32L will be decommissioned and partially converted to a taxiway. This development includes these associated projects:

- Construction of service road tunnels below proposed airfield pavement within the south airfield.
- Relocation of Irving Park Road.
- Construction of a south ATCT. The ultimate location and characteristics of this facility will be subject to ATCT line-of-sight requirements and will be established in coordination with the FAA.

4.2.2.4 Proposed West Terminal Complex & On-Airport Circulation

Two structures are collectively referred to as the West Terminal Complex: The West Terminal Building/Concourse and the West Satellite Concourse. The proposed West Terminal Building/Concourse comprise developing passenger terminal facilities and additional aircraft gate capacity to the west of Existing Runway 14R-32Ldeveloped as demand for gates dictates. This project also comprises the supporting ground access/landside facilities. An automated people mover (APM) station serving the West Terminal Building/Concourse is also planned, which will provide access to the proposed West Satellite Concourse and the existing terminal facilities. A planning study began in February 2009 to refine the terminal campus as defined in the Master Plan and shown on the Airport Layout Plan approved by the FAA on September 30, 2005.

4.2.3 Noise Mitigation

The City, in accordance with criteria established by the O'Hare Noise Compatibility Commission, plans to continue providing sound insulation of eligible schools and single-family, owner-occupied homes. As in previous noise mitigation program, sound insulation may include installation of heating and air conditioning systems, replacement of windows and exterior doors with sound insulating windows and doors, addition of insulation to exterior walls and ceilings, and addition of baffling devices to exterior vents. A noise mitigation program is on going for OMP Phase 1 and a continuation of that program exists with OMP Completion Phase.

4.3 Capital Costs and Implementation Schedule

The estimated capital cost of the Proposed Action is approximately $2.75 billion in 2008 dollars. This amount includes Runways 9C-27C, 10R-28L, the extension of Runway 9R-27L, WGP taxiway improvements, and OMP Completion Phase noise program. The costs are listed by component in the **Table IV-1**. The project costs are estimates provided by the Program Management Office, the same management for OMP Phase 1. Detailed cost estimates are included in **Appendix G** of this application, and the costs will continue to be refined as the design effort continues.

Table IV-1

Proposed Action Project Costs (in 2008 dollars)

Project	Cost (in thousands)
Runway 9C-27C	$1,469,688
Runway 10R-28L	$578,061
Runway 9R-27L Extension	$357,188
WGP Taxiway Improvements	$242,175
OMP Completion Phase Noise Program	$104,697
Total	$2,751,810

Source: Program Management Office, Feb. 2009.
Prepared by: Ricondo & Associates, Inc.

4.4 Proposed LOI Projects

The City is requesting LOI funding at this time for these LOI Projects:

- Runway 9C-27C - Associated runway enabling projects, generally including associated taxiway systems, navigational aids installation and upgrade, site utilities construction, and existing facilities relocation.
- Runway 10R-28L - Associated runway enabling projects, generally including associated taxiway systems, navigational aids installation and upgrade, site utilities construction, a new South Airport Traffic Control Tower, and existing facilities relocation.
- Extension of Runway 9R-27L - Associated runway enabling projects, generally including associated taxiway systems, navigational aids installation and upgrade, site utilities construction, and existing facilities relocation. Costs include projects associated with the Extension of Runway 9R-27L and the Runway 27L threshold relocation.
- WGP taxiway improvements - Associated enabling projects, generally including existing facilities relocation.

The OMP Completion Phase noise program that is part of the BCA included in this application is not, however, part of the LOI Projects for which the City is seeking AIP funding. Neither are the remaining components of the OMP Completion Phase, the western terminal complex and on-airport circulation, which the City intends to pursue as Airport activity necessitates.

The status of the OMP Phase 1 projects and the preliminary implementation schedule for the LOI Projects are listed in **Table IV-2** below.

Table IV-2

Preliminary Implementation Schedule

Major Airfield Projects	Commissioning Date	First Full Year of Operation
OMP Phase 1:		
Runway 9L-27R	Nov. 20, 2008	2009
Runway 10L-28R Extension	Sept. 25, 2008	2009
Runway 10C-28C	Nov. 2012	2013
OMP Completion Phase:		
Runway 9R-27L Extension	Nov. 2014	2015
Runway 9C-27C	Oct. 2014	2015
Runway 10R-28L	July 2013	2015
World Gateway Taxiway Improvements:	Dec. 2012	2013

Source: OMP Program Management Office, Feb 2009.
Prepared by: Ricondo & Associates, Inc.

4.5 OMP Delay Reduction

Even under the 2008 FAA TAF that forecasts growth at lower levels than anticipated in the 2005 EIS, the projected levels of activity are above those at which the Airport has suffered long-standing chronic delays. As witnessed in the on-going efforts by the FAA to reduce delays at the Airport, O'Hare has experienced major delays for many years, and without improvements to increase runway capacity, higher levels of delay can be expected in trying to accommodate the forecast demand.

The City, as owner and operator of O'Hare, proposed the OMP in order to modernize the Airport and provide improved service to local and connecting passengers, shippers, and airlines. As O'Hare is a major contributor to delays throughout the National Airspace System, these improvements will equally contribute to improved performance of its role in the national air transportation system.

The OMP was created by the City to solve O'Hare's chronic problems. The OMP's importance for reducing delays and the City's commitment are attested to in these related legal documents and government actions:

> Virtually all involved parties, from the competent committee in Congress, to the FAA, to the State of Illinois, to the City of Chicago, have made a compelling case that the OMP addresses a serious problem with national— indeed international— consequences. O'Hare is a vital transportation link for the Midwest region, for North America, and for the world. *St. John's United Church of Christ* v. *City of Chicago*, 502 F.3d 616, 634 (7th Cir. 2007).

The State of Illinois, by law, established the urgent need for the OMP:

> The reliability and efficiency of the State and national air transportation systems significantly depend on the efficiency of the Chicago O'Hare International Airport. O'Hare has an essential role in air transportation for the State of Illinois. The reliability and efficiency of air transportation for residents and businesses in Illinois and other States depend on efficient air traffic operation at O'Hare. . . . O'Hare cannot efficiently perform its role in the State and national air transportation systems unless it is reconfigured with multiple parallel runways. . . The O'Hare Modernization Program will enhance the economic welfare of the State of Illinois and its residents by creating thousands of jobs and business opportunities. . . . O'Hare provides, and will continue to provide, unique air transportation functions that cannot be replaced by any other airport in Illinois." 620 ILCS 65/5(1)-(4).

Although City was required by law to submit the ALP showing the OMP to the FAA for regulatory review and approval, the project is the City's project.

> The City designed the ALP . . . The City submitted the plan to the FAA to retain O'Hare's eligibility for federal funding. Before the FAA, the City fought for approval of its plan. The City will provide the lion's share of the funding for the modernization project . . ." *Village of Bensenville* v. *FAA*, 457 F.3d 52, 65 (D.C.Cir. 2006).
>
> "Chicago designed the plan for the project; it submitted that plan to the FAA and fought for its approval. . . . Chicago is committed to completing the project . . ." St. John's United Church of Christ v. FAA, 520 F.3d 460, 463 (D.C.Cir. 2008).

Delay is a function of airport congestion and capacity. Capacity constraints exist at O'Hare, and these constraints adversely affect the efficiency of air transportation for the City, the State of Illinois, and the NAS. Increasing capacity at O'Hare will reduce current and anticipated congestion, thereby reducing delay.

As demonstrated by the thorough analysis in the Environmental Impact Statement for the OMP, the OMP reconfiguration that depends on completing the projects in this application will allow approximately 220,000 additional operations at O'Hare at 5.8 minutes of average annual delay. Based on the EIS analysis, approximately 130,000 of those additional operations are attributable to the Completion Phase projects covered by this application. Based on the EIS analysis, O'Hare will be able to accommodate an increase of 23 percent in traffic over the existing airfield with a reduction of 66 percent in average annual delays. The EIS analysis shows that the OMP produces the lowest average annual delay for future O'Hare operations of all the alternatives proposed for consideration. See the Record of Decision (ROD) pages 31-33 and discussion of EIS analysis of alternatives below.

These delay reduction findings are based on completion of all the airfield projects included in OMP Phase 1 and this application. Those findings also assume that the additional gates that are shown on the approved ALP will also be constructed. The City believes that delay reduction benefits shown in the EIS will occur with or without the additional gates because airlines will continue to provide capacity to handle passenger demand as it develops. To the extent that the capacity of contact gates at the Airport proves insufficient to accommodate all of the operations that airlines schedule, passengers will be accommodated at aircraft parking positions that are not in direct contact with the terminal, so-called "hard stand" positions, until gates can be built to catch up to passenger levels. Such passenger handling facilities are used today at the Airport and have been used at the Airport for many years. All of O'Hare's international arrivals were handled through hardstand facilities for

several years while new international gates were developed. Other airports commonly use such facilities. Therefore, the delay reduction and capacity levels described in the EIS are valid even if gate development lags behind airfield development.

As explained in more detail in Section 5.2, the BCA assumes that existing contact gates at the Airport could constrain total operations at the Airport, thereby limiting the calculated benefits of the airfield projects. This constraint is required in the BCA process as a conservative limit on calculating benefits. Even with that assumed constraint, the airfield projects in this Application have a favorable benefit/cost ratio exceeding 1.0. If the City's assumption, based on experience at the Airport and at airports elsewhere, is correct and airline operations grow to meet passenger demand regardless of the availability of contact gates, the delay would increase and the benefits of these airfield projects would be significantly larger and the corresponding benefit/cost ratio equally more favorable.

The FAA selected the City's proposed OMP as its preferred alternative for reconfiguration of O'Hare, consistent with its statutory authorities, including its mandate to support airport development necessary to provide a safe, efficient and integrated system of public-use airports. 49 U.S.C. § 47101(a)(7). As the FAA Interim Administrator said, "[I]t's imperative that Chicago continue full steam ahead with its modernization program. I can't underscore that enough. The modernization program is the answer to growing capacity and heading delays and congestion off at the pass." Speech by Robert A. Sturgell, June 16, 2008 (available at www.faa.gov/news/-speeches/news_story.cfm?newsId=10239).

The OMP (and therefore the specific projects included in this Application) is eligible for AIP funding because it is an additional facility that increases the safety, usefulness, and usability of the Airport. The projects which are the subject of this Application complete the airfield portion of the overall development program

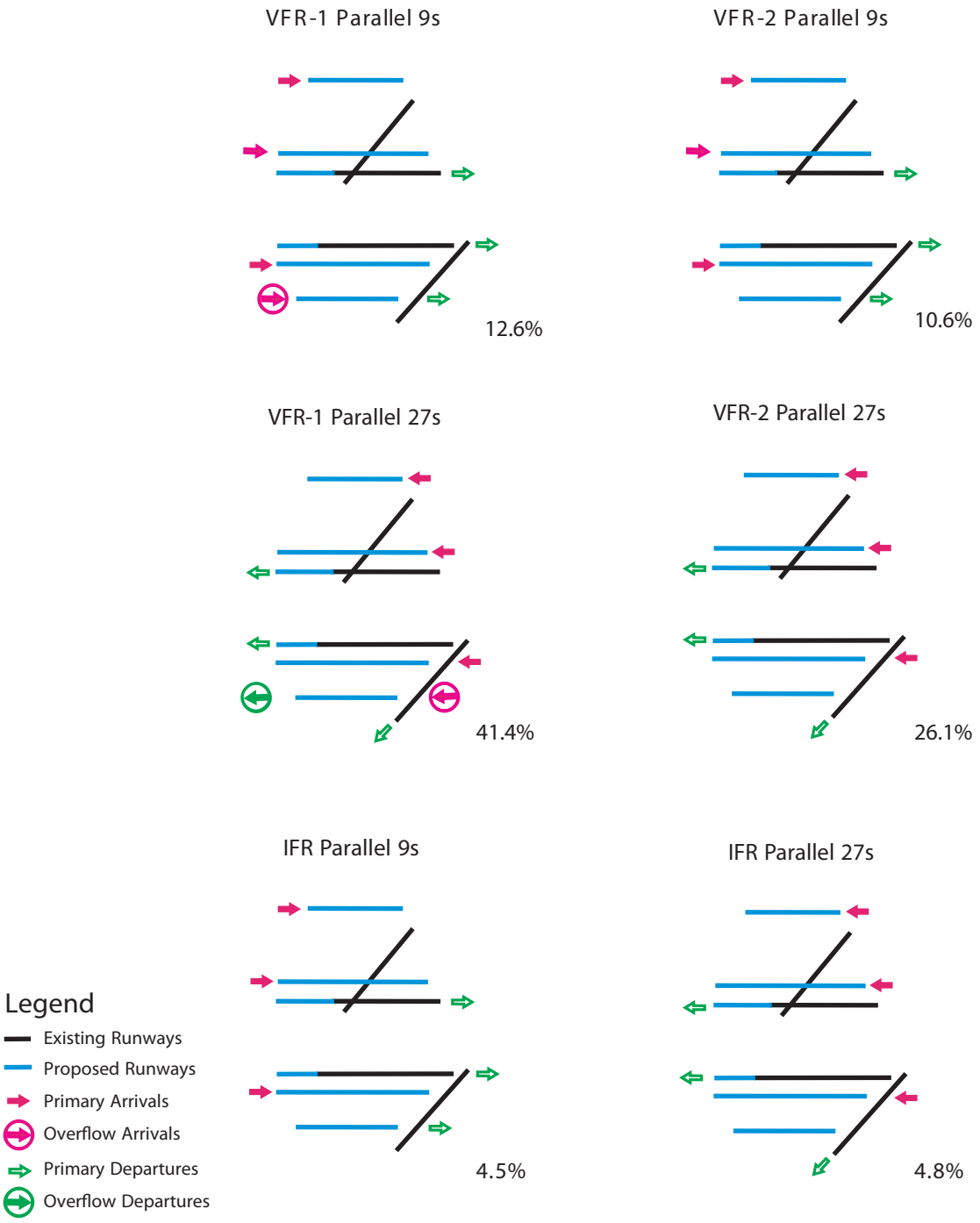
The benefits of the OMP result from six parallel east-west runways with sufficient separations to allow multiple independent arrival streams in both good and bad weather. This configuration allows the airport to function on an east-west flow basis. The parallel runway configuration eliminates most runway intersections so runway dependencies are reduced and delays are reduced. This delay-reducing benefit increases the capacity of the Airport and in turn, carries over to the national air transportation system.

Each runway is a necessary part of that overall airfield redesign. **Exhibit IV-1** shows the operating configurations for the full OMP.

Each of the elements to be developed plays a specific role in the overall development program and is justified on the basis of their contributions to reducing delay.

> *Runway 9C-27C.* This runway is one of the six parallel runways that will allow the Airport to function on an east-west flow basis, thereby enhancing capacity of the Airport and the national air transportation system and reducing delay by eliminating most runway intersections. It will be one of four arrival runways used for simultaneous quadruple arrivals. It will provide sufficient landing distance for all aircraft operating at the Airport. This runway also provides Aircraft Design Group (ADG) VI capabilities on the north airfield. Most of the ADG-VI traffic simulated for the EIS, primarily international arrivals, arrived and departed over navigational fixes served by runways on the north airfield. Providing ADG-VI capability on the north airfield with Runway 9C-27C provides more efficient airfield and airspace operations. The OMP is designed to balance the north and south airfields. Without Runway 9C-27C, the departure capability of the north airfield would be substantially less. Balancing the airfield is necessary to achieve the OMP's benefits of

enhancing the capacity of the airport and the national air transportation system and delay reduction.



Source: EIS
Prepared by: Ricondo & Associates, Inc.

Exhibit IV-1

OMP Operating Configurations and EIS Percent Utilization

Runway 9R-27L Extension. This existing runway is one of the six parallel runways that will allow the Airport to function on an east-west flow basis, thereby enhancing the capacity of the Airport and the national air transportation system and reducing delay by eliminating most runway intersections. This runway provides departure capability for all operations simulated for the EIS. As a result of this extension, departures from this runway will be able to depart from an intersection allowing aircraft arriving on Runway 9L-27R or Runway 9C-27C to taxi behind 9R-27L departures, minimizing runway crossings for those operations. With the runway extension, the threshold on the east end of the runway (27L end) will be relocated which will allow for compliance with Runway Safety Area standards not currently accommodated by the existing airfield.

Runway 10R-28L. This runway is one of the six parallel runways that allow the Airport to function on an east-west flow basis, thereby enhancing the capacity of the Airport and the national air transportation system and reducing delay. It is located with sufficient spacing from the next-closest runway to provide independent arrival capacity under FAA standards. The EIS evaluated an alternative that included all of the OMP runways except Runway 10R-28L – Alternative D. The TAAM simulation results in the EIS estimated average annual delay in 2018 at 10.5 minutes per operation for Alternative D. The delay reduction achieved without this runway is considerably less than the delay reduction achieved with the full OMP, including this runway. See ROD 28; EIS E-72. Only with this runway can O'Hare provide four independent arrival streams in good weather, with the resulting benefits to enhancement of capacity of the Airport and the national air transportation system and delay reduction. Only this runway provides the potential, should the technology and procedures be approved by the FAA, of immediately implementing four independent arrival streams during all weather conditions. As a result, this runway preserves the potential to produce even greater enhancement of capacity of the Airport and national air transportation system and delay reduction benefits than the EIS and ROD estimated for the total OMP. See EIS 3-58.

WGP Taxiway Improvements. This taxiway provides operational flexibility in a congested part of the airfield. It allows multiple departure queues for Runways 28R and 28C, thereby relieving congestion of departing aircraft. This taxiway allows taxiway flows in both directions north of Runway 10L-28R at all times, thereby providing ground controllers with flexibility to move aircraft without delay or conflict through this congested area. By improving the efficiency of the Airport, this project enhances the capacity of the airport and the national air transportation system.

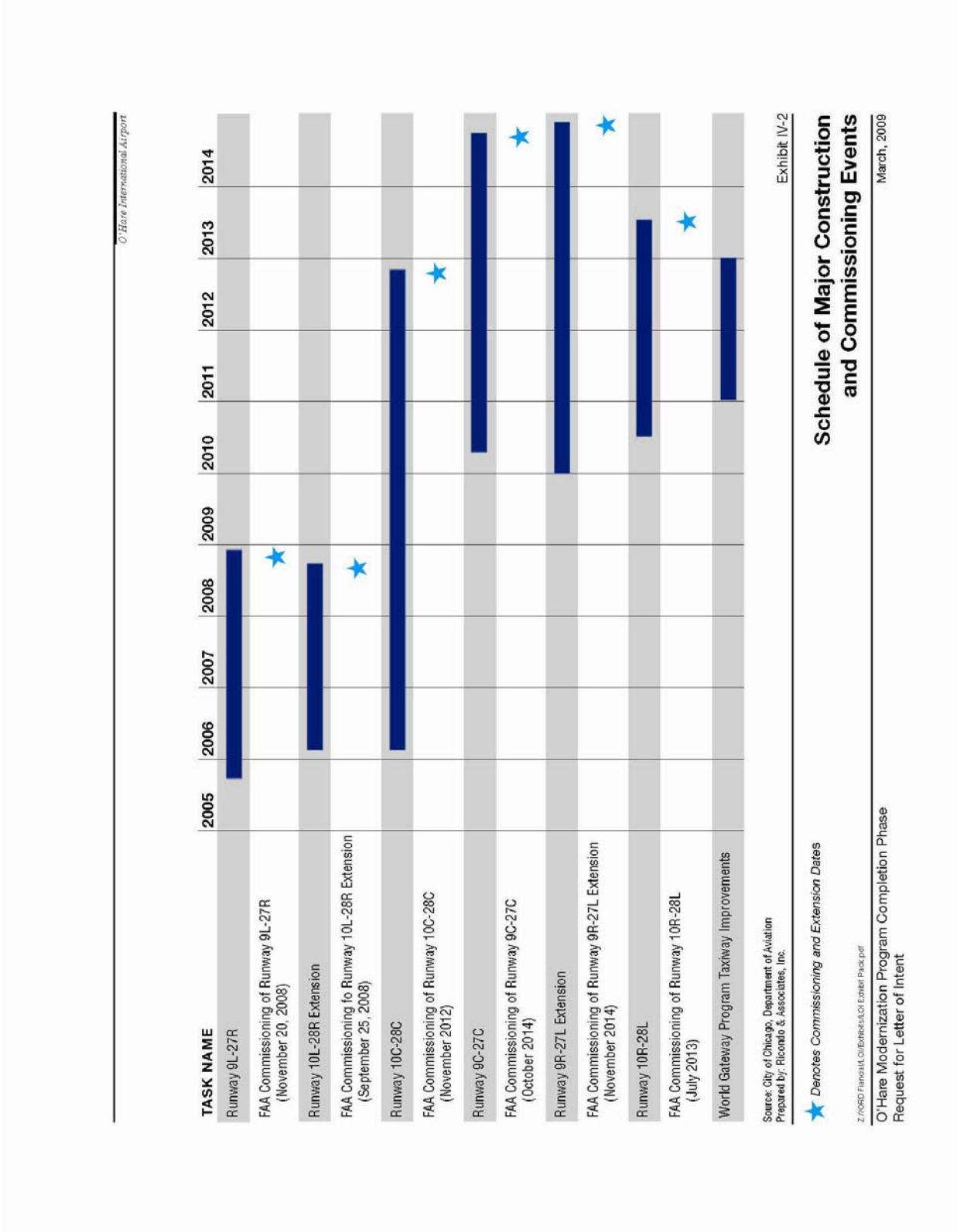
If the projects included in this application are not built and the OMP is not completed, the result would be that existing inefficiencies (e.g., aircraft and passenger delay) at O'Hare and in the NAS would continue to occur, and would increase. According to Bureau of Transportation Statistics data, O'Hare is among the most delayed airports in the United States for both on-time arrival and on-time departure performance. For 2008, O'Hare ranked 30th out of 32 major airports in on-time arrival performance, and 32nd out of 32 major airports in on-time departure performance (the 32nd airport is the one with the worst delay). For calendar year 2007, O'Hare ranked 29th out of 32 major airports in arrival performance, and 32nd out of 32 major airports in departure performance. This recent experience is consistent with the long-term experience of severe arrival and departure delays at O'Hare spanning many years. (Bureau of Transportation Statistics, Rankings of Major Airport On-Time Arrival and Departure Performance, Tables 4 and 6). This poor performance occurs even when the FAA has imposed "Congestion and Delay Reduction" rules at O'Hare (14 CFR Part 93, Subpart B, §§ 93.21 – 93.32) (Congestion Rules). Copies of the BTS report pages are included in the reference DVD. Delays at O'Hare adversely affect local, regional and national air transportation systems.

This data is recent evidence of historical inefficiencies at O'Hare, as shown by the FAA's data on historical aircraft delay at O'Hare in the EIS. "By November 2003, O'Hare had the worst on-time performance of any major airport" (70 FR 15521 (March 25, 2005) (reprinted at EIS A-196)). The EIS provides detailed data on "Historical Delay at O'Hare." (EIS A-35 – A45).

"Delays at O'Hare have a direct impact on the entire NAS, in part because approximately 51 percent of the total passengers traveling through O'Hare currently connect to and from other airports. . . . In light of the significant role that O'Hare plays for connecting traffic, this level of delay clearly impacts many other airports and propagates further delays and inefficiencies throughout the NAS." EIS 2-23. These inefficiencies identified in the EIS exist and would continue to exist if the airfield projects included in this Application are not pursued.

Exhibit IV-2

Schedule of Major Construction and Commissioning Events



Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

V. Benefit-Cost Analysis Summary

V. Benefit-Cost Analysis Summary

In 1994, the FAA implemented its Policy Regarding Revision of Selection Criteria for Discretionary Airport Improvement Program Grant Awards and Policy for Letter of Intent Approvals under the Airport Improvement Program. The law providing for AIP grants requires the FAA to "consider… the benefit and cost of the project." 49 USC 47115(d)(1)(B)

A Benefit-Cost Analysis demonstrates whether the present value of its benefits exceeds the present value of its costs by calculating the ratio of the discounted benefits divided by the discounted costs. The FAA does not use the benefit-cost ratio for ranking projects to assess how AIP discretionary grants are to be allocated. The primary purpose of this BCA is to present the Net Present Value, assessing the ongoing value of the investment over time, and benefit-cost ratio of the Proposed Action, which consists of the LOI Projects and the OMP Completion Phase noise program.

Various sensitivity analyses are also presented to show the benefit-cost if project benefits, costs, or timing differ from those assumed in the primary analysis. In accordance with FAA guidance, this analysis and the sensitivity analyses do not attempt to quantify or consider all benefits associated with the project. They illustrate that the aircraft travel time savings alone are sufficient to produce benefits that in all cases exceed project costs. Thus, the benefit-cost ratios and NPVs presented here are based on underestimated benefits and would be expected to be higher under a full accounting of project benefits. To facilitate review of this material, this document divides the discussion into these six sections:

- BCA Methodology
- Aviation Activity Forecasts
- Project Costs
- Project Benefits
- Benefit-Cost Comparison
- Non-Quantified Benefits

5.1 BCA Methodology

The following assumptions and methodology used to prepare the BCA are in accordance with the FAA's *Benefit-Cost Analysis Guidance* dated December 15, 1999 (the *BCA Guidance*); the *Economic Values for Evaluation of FAA Investment and Regulatory Decisions, A Guide*, dated October 2007; and FAA-APO-03-1, *Treatment of Values of Passenger Time in Economic Analysis,* dated March 2003 (the *APO Bulletin*). The methodology for the BCA process is outlined in the *BCA Guidance* and generally consists of the following ten steps:

- *Establish the Objectives*: As stated by the EIS, the proposed federal action, which is the subject of the EIS, encompasses the following purposes:
  - Address the projected needs of the Chicago region by reducing delays at O'Hare, and thereby enhancing the capacity of the NAS.
  - Ensure that existing and future terminal facilities and supporting infrastructure (access, landside, and related ancillary facilities) can efficiently accommodate airport users.

  Proposed Action projects are the final step for implementing the OMP airfield.
- *Formulate Assumptions:* Assumptions about future conditions at the Airport must be clearly explained and documented because they form the framework against which the alternatives

are to be evaluated. Additional discussion of the forecasts is provided in Section 5.2 of this document.

- *Identify the Base Case:* The Base Case is a reference point from which incremental benefits and costs can be quantified. OMP Phase 1 airfield is the initial step in implementation of the OMP. Two of the three runway elements have been completed and the final element, Runway 10C-28C is under construction. OMP Phase 1 airfield is the base case for this analysis. The Airport's ongoing Capital Improvement Program (CIP), which would occur regardless of the proposed LOI Projects' implementation, is included in the Base Case.
- *Identify and Screen Alternatives*: As part of the EIS analysis, alternatives to the proposed plan were developed, analyzed, and considered. As stated in the EIS, "Given the clear superiority of Alternative C (City's OMP) in terms of the average annual delay reduction, the FAA has identified Alternative C, the Sponsor's proposed O'Hare Modernization Program, as the Preferred Alternative. This identification of Alternative C as the Preferred Alternative fully satisfies all of the FAA's environmental obligations associated with consideration of the proposed OMP." Given this previous assessment of alternatives, the City believes that the OMP is the best development option and, therefore, alternatives are not again analyzed in this BCA.
- *Define Evaluation Period*: Consistent with the BCA Guidance, the evaluation period assumed for this BCA is 20 years after the completion of construction. The LOI Projects will be complete at the end of 2014. Therefore, the BCA evaluation period ends in 2034.
- *Determine Costs:* Costs must be identified, quantified, and evaluated in total dollar amounts and for each year of a project's life. Typical costs include initial investments, such as planning and construction of the main project as well as any enabling projects, and recurring investments, such as operation and maintenance (O&M) costs. LOI Project costs are discussed in Section 5.3 of this document.
- *Determine Benefits:* Typical benefits include reduced delays, the ability to accommodate more efficient aircraft and/or larger aircraft, safer and more secure air travel, and reduced environmental impacts.

There are several different ways to prepare a BCA. The Phase 1 BCA used two distinct methodologies -- one using a delay savings-based analysis and the other using the FAA-supplied consumer surplus methodology. The latter, which was appropriate for Phase 1 for valuing the additional capacity, produced a higher BC ratio than an analysis based on delay savings, although both methods satisfied the FAA's pass/fail test of having a positive ratio -- a ratio exceeding 1.0. The delay savings methodology produces lower benefit cost ratios because it takes into account fewer benefits.

The BCA for the Completion Phase included in this document uses the delay savings methodology, which is appropriate now because some of the Phase 1 projects have improved airport capacity. However, to the extent that the City is correct that gate capacity imposes no practical limit on operations (see Section 5.2 for further discussion), valuation of the additional capacity provided by the Completion Phase airfield would produce a higher ratio than the analysis relied on in this application.

For purposes of this BCA, only local delay savings in travel times for aircraft and passengers are considered in detail. A simplified quantification of system-wide delay savings resulting from O'Hare's role as a major transportation hub is also presented. Other benefits of the LOI Projects, including greater schedule predictability, ability to accommodate larger aircraft, and

safety improvements are not considered in this analysis because monetary quantification of these other benefits is complex, although these benefits are real and valuable. This approach underestimates the overall benefits of the project and has the effect of reducing the benefit-cost ratio. The specific project benefits, including those that have not been quantified, are shown in **Table V-1**.

Table V-1

Inventory of Benefits Quantified and Not Quantified in the BCA

Typical Benefit	Benefits Quantified in BCA	Benefits Not Quantified in BCA
• Reduced aircraft, passenger, and cargo delay during normal airport operations	x	
• Greater schedule predictability including (1) aircraft operator able to make more efficient use of equipment and personnel and (2) passenger able to take later flight and arrive at destination on time		x
• Improved efficiency of traffic flows (reduced vectoring and taxiing distances)	x	
• Airport's ability to accommodate faster, larger, and/or more efficient aircraft		x
• Bringing pre-existing infrastructure into compliance with FAA safety and security standards		x
• Safety improvements		X
• Salvage value of projects included in LOI projects		
• Reduced downstream delay		X

Source (Typical Benefits): FAA, *BCA Guidance;* (Assessed Benefits): Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

- *Compare Benefits and Costs:* Most airport investments require resources at the outset of a project in return for an annual flow of benefits over the long-term future. Because the costs are incurred up front, and the benefits are returned over a longer time period, an analysis recognizing the time value of money must be conducted to appropriately compare the benefits and costs of alternatives to inform ultimately select the preferred alternative for development. In the BCA, discounted benefits and costs are used to accurately compare project scenarios by their NPVs and benefit-cost ratios. Section 5.5 presents the comparison of benefits and costs.
- *Conduct Sensitivity Analysis:* Sensitivity analyses are conducted to assess the ability of the project to meet the BCA requirements under alternative assumptions regarding cost and schedule.

5.2 Aviation Activity Forecasts

The 2002 TAF was used as the basis for the OMP EIS analysis. The 2002 TAF, which presents aircraft operations and enplaned passengers by user category at the Airport through the year 2020, was prepared by FAA assuming the absence of any constraints to growth in activity at the Airport.

The 2008 TAF is the most current FAA forecast available and is the forecast used for this BCA. The operations and enplanements are lower in the 2008 TAF than comparable years in the 2002 TAF. For example, the operations and enplaned passengers projected for 2015 decreased 16.2 percent and 17.1 percent, respectively, from the 2002 TAF to the 2008 TAF. The analysis period for the BCA extends through 2034, nine years beyond period covered in the 2008 TAF. For the purpose of this BCA, the FAA has provided an extrapolation of the forecast through 2034, the end of the 20-year analysis period.

A constrained forecast was developed for use in the BCA based on the availability of contact terminal gate facilities at the Airport. Since new terminal facilities are not currently under construction, even though they are provided for in the OMP, the analysis conservatively assumes that operations would stop growing when the capacity of the existing gates and some modest amount of remote hardstanding was reached. Based on gate assignment modeling of the future schedules of activity, The FAA defined this limit as approximately 1,150,000 annual operations. **Appendix D** reviews the simulation modeling schedules used in the EIS to confirm this limit.

The City believes that gate capacity is not a constraint on operations at the Airport and that additional passenger handling capacity would be developed even in the absence of new terminals by the reconfiguration of existing terminals and more extensive use of hardstand operations. Hardstand operations are common at airports, are currently used at O'Hare, and were used extensively at O'Hare for several years for international service. While the City does not think that hardstand service is ideal, it is confident that airlines would use hardstands to serve demand for any period during which terminal capacity is developed to catch up to demand. This benefit-cost analysis, however, assumes that the absence of new terminals constrains operations. As a result, the benefits included in this analysis are less than they would be if the City's assumption were used because the number of operations, and therefore the benefits of delay reduction, are less. If the City is correct in assuming that operations would continue to grow even if terminal capacity does not grow, delay would increase and the benefits of delay reduction would increase without an increase in project cost. The resulting benefit-cost ratio would be more positive – higher – than shown in this analysis. This analysis assumes that no new terminals are constructed at the time the airfield projects included in this Application are constructed.

The constrained forecast assumes that load factors and aircraft seat sizes would respond to the constrained operational capacity and allow enplanements to continue to grow beyond this point, but at a rate lower than the 2008 TAF. The memo in **Appendix C** presents the methodology used to develop the constrained enplanement forecast. A sensitivity BCA was performed to determine the influence of the assumptions made in the constrained enplanement forecast. When passenger growth was stopped at the same time that operations were capped, the impact on the BCR was a decrease was 0.02. Therefore, the assumptions included in the constrained enplanement forecast have minimal influence on the BCR.

Table V-2 presents the operations and enplanements in the EIS forecast, 2008 TAF, and constrained forecast. The annual information in Table IV-2 is shown on a calendar year basis.

Table V-2

O'Hare International Airport EIS Forecast, 2008 FAA Terminal Area Forecasts (Calendar Year), and Constrained Forecast

	Total Operations			Total Enplanements		
Calendar Year	EIS	2008 TAF	Constrained	EIS	2008 TAF	Constrained
2002	922,787			31,710,512		
2003	960,500			32,609,000		
2004	976,544			33,633,730		
2005	992,855			34,696,477		
2006	1,009,439			35,798,962		
2007	1,026,300			36,943,000		
2008	1,041,635	883,427	883,427	38,027,251	34,133,225	34,133,225
2009	1,057,200	828,608	828,608	39,149,000	32,152,853	32,152,853
2010	1,072,706	825,659	825,659	40,280,622	32,289,079	32,289,079
2011	1,088,438	838,443	838,443	41,450,619	33,058,401	33,058,401
2012	1,104,402	866,996	866,996	42,660,538	34,468,473	34,468,473
2013	1,120,600	895,522	895,522	43,912,000	35,840,005	35,840,005
2014	1,134,910	922,645	922,645	45,119,418	37,145,601	37,145,601
2015	1,149,402	946,654	946,654	46,367,491	38,289,326	38,289,326
2016	1,164,080	969,176	969,176	47,657,820	39,350,607	39,350,607
2017	1,178,945	993,766	993,766	48,992,074	40,492,701	40,492,701
2018	1,194,000	1,017,468	1,017,468	50,372,000	41,585,837	41,585,837
2019		1,041,116	1,041,116		42,712,939	42,712,939
2020		1,064,593	1,064,593		43,861,043	43,861,043
2021		1,088,058	1,088,058		45,008,108	45,008,108
2022		1,112,451	1,112,451		46,183,656	46,183,656
2023		1,136,833	1,136,833		47,368,715	47,368,715
2024		1,161,700	1,150,000		48,590,782	48,565,452
2025		1,182,375	1,150,000		49,644,509	49,197,081
2026		1,191,552	1,150,000		50,196,506	49,832,577
2027		1,212,884	1,150,000		51,251,470	50,471,940
2028		1,234,216	1,150,000		52,306,433	51,115,169
2029		1,255,548	1,150,000		53,361,397	51,762,265
2030		1,276,879	1,150,000		54,416,361	52,413,227
2031		1,298,211	1,150,000		55,471,325	53,068,056
2032		1,319,543	1,150,000		56,526,289	53,726,752
2033		1,340,875	1,150,000		57,581,252	54,389,314
2034		1,362,206	1,150,000		58,636,216	55,055,743

Sources: (Forecast): FAA, O'Hare Modernization Environmental Impact Statement, Sept. 2005; (Extrapolation): Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-1 and **Exhibit V-2** graphically depict the EIS forecast, 2008 TAF, and constrained forecast of annual operations and annual enplanements, respectively. The decrease in forecast activity between the EIS forecast and the 2008 TAF is readily apparent, as is the impact of the assumed gate capacity constraints.

5.3 Project Costs

To provide the basis for the BCA and NPV calculations, costs associated with the project must be quantified to the extent possible. Quantifiable costs to be considered should consist of capital investment and incremental O&M costs. Only those costs that are attributable to a project being undertaken are to be considered. In other words, costs that would be incurred regardless of whether or not a project is undertaken should not be considered.

Table V-3 lists project elements and their capital investment costs. Included in these costs are necessary supporting facilities (taxiways, lighting, utilities, etc.), planning, design, program administration, construction, and contingency. Table IV-3 presents these costs in 2008 constant dollars. The capital investment costs of the Proposed Action is estimated to be approximately $2.75 billion in 2008 constant dollars.

In addition to capital investment costs, estimated incremental O&M costs are included for the evaluation period. Incremental O&M costs for additional runway pavement were estimated at the unit rate for budgeted 2009 Airfield Area O&M expenses. The annual incremental O&M costs for LOI Projects are shown in **Table V-4** in 2008 dollars.

5.4 Project Benefits

Because the OMP, and OMP Completion Phase Airfield in particular, consists largely of airfield capacity improvements in the form of new, relocated, and/or extended runways, aircraft operational delay savings constitute the primary benefits to be considered. Delay savings can be measured as time saved as a result of avoided delay (i.e., the difference in travel time between any scenario and the Base Case), and can be applied to aircraft operations as well as passengers.

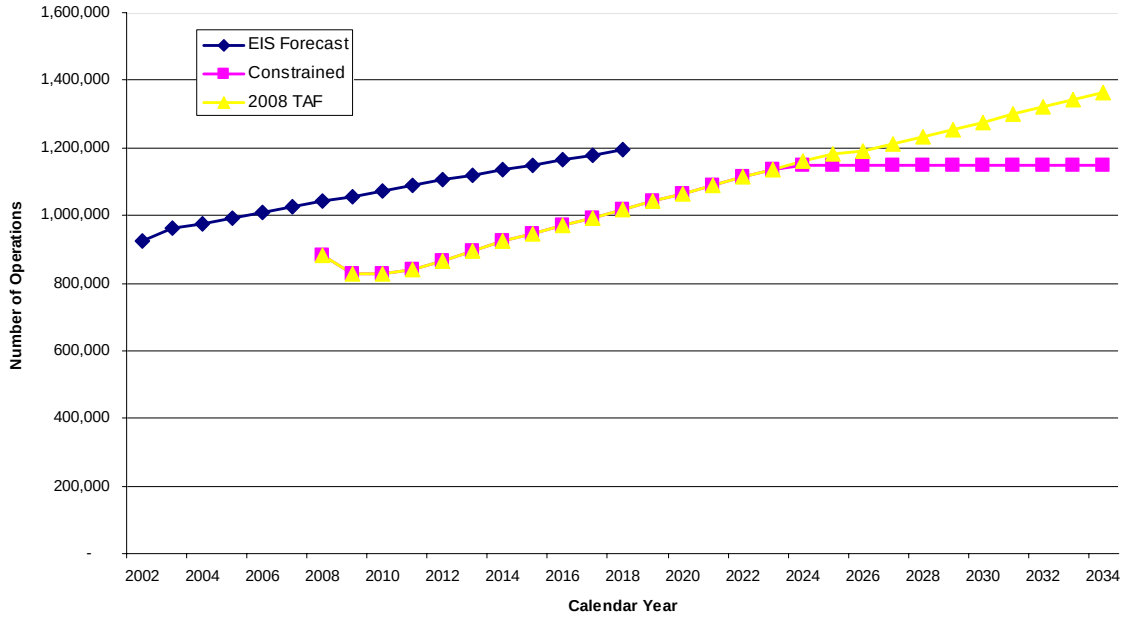
5.4.1 Simulation Modeling

In the analyses undertaken as part of OMP planning and the EIS, operational delay and travel times were assessed for the OMP Phase 1 and the OMP Total Airfield[6]. These assessments were undertaken using the *Total Airspace and Airport Modeler* (TAAM), developed by Preston Aviation Solutions, a Boeing Company. TAAM is a fast-time gate-to-gate simulator of airport and airspace operations that facilitates decision-making, planning, and analysis. TAAM has been used in the United States for airfield and airspace assessments by the FAA, the National Airspace Redesign team, American Airlines, Continental Airlines, Delta Air Lines, and Boeing Air Traffic Management, among others.

[6] OMP Total Airfield refers to the overall airfield configuration at the end of the OMP Completion Phase. The OMP Completion Phase includes the extension of Runway 9R-27L, new Runway 9C-27C, and new Runway 10R-28L.

Exhibit V-1

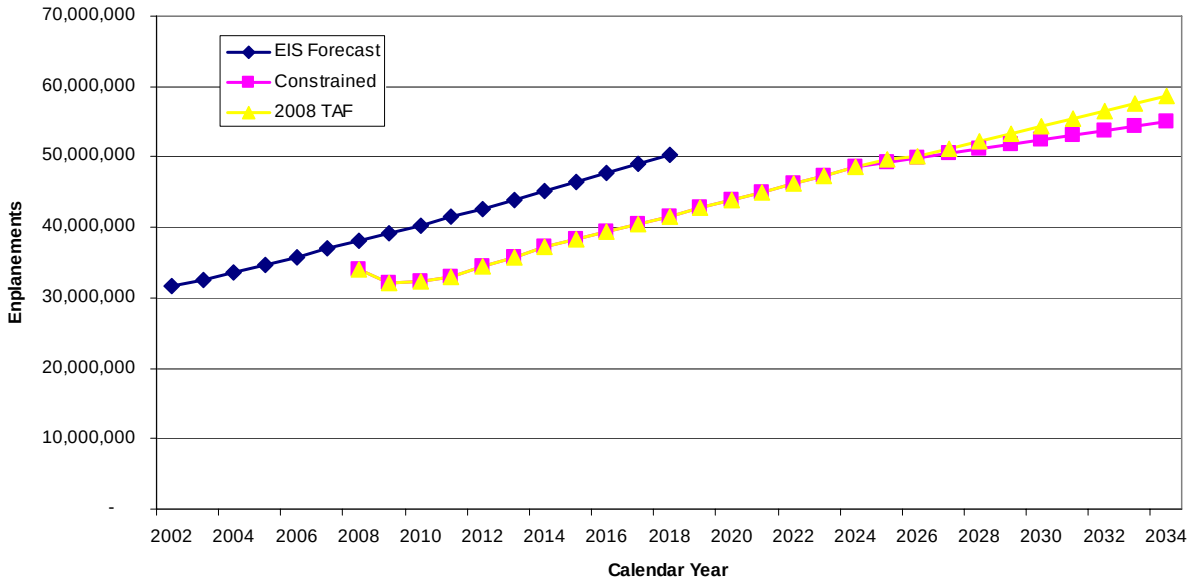
FAA Terminal Area Forecast Comparisons for O'Hare International Airport – Total Operations



Source: FAA, 2002 and 2009.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-2

FAA Terminal Area Forecast Comparisons for O'Hare International Airport – Enplaned Passengers



Source: FAA, 2002 and 2009; Ricondo & Associates, Inc., Feb. 2009.
Prepared by: Ricondo & Associates, Inc.

Table V-3

Project Capital Costs (in thousands of 2008 dollars)

	Total	2008	2009	2010	2011	2012	2013	2014
Runway 9C-27C	$1,469,688	$818	$40,135	$312,298	$512,290	$288,528	$222,391	$93,229
Runway 9R Extension[1]	$357,188	$818	$11,011	$35,159	$64,240	$171,768	$66,594	$22,013
Runway 10R-28L	$578,061	$818	$15,954	$79,156	$239,034	$169,330	$67,193	$6,576
Subtotal Airfield	$2,404,937	$2,454	$67,101	$426,612	$815,564	$629,626	$341,762	$121,818
OMP Completion Phase Noise Program	$104,697				$27,024	$28,705	$25,757	$23,212
World Gateway Taxiway Improvements	$242,175	$818	$1,273	$5,993	$83,286	$183,306		
Total Capital Cost	$2,751,810	$3,272	$68,373	$432,605	$925,874	$809,137	$367,519	$145,030

Note:
[1] Includes Runway 27L threshold relocation

Sources: OMP Program Management Office, Feb. 2009.
Prepared by: Ricondo & Associates, Inc.

Table V-4

Incremental Project Recurring Operation and Maintenance Costs (in thousands of 2008 dollars)

Calendar Year	Incremental O&M Cost [1]
2007	$0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	7,500
2014	11,400
2015	24,300
2016	24,300
2017	24,300
2018	24,300
2019	24,300
2020	24,300
2021	24,300
2022	24,300
2023	24,300
2024	24,300
2025	24,300
2026	24,300
2027	24,300
2028	24,300
2029	24,300
2030	24,300
2031	24,300
2032	24,300
2033	24,300
2034	24,300
Total	$505,700

Note:
1 Rounded to nearest $100,000.

Source: Ricondo & Associates, Inc. , Feb. 2009.
Prepared by: Ricondo & Associates, Inc.

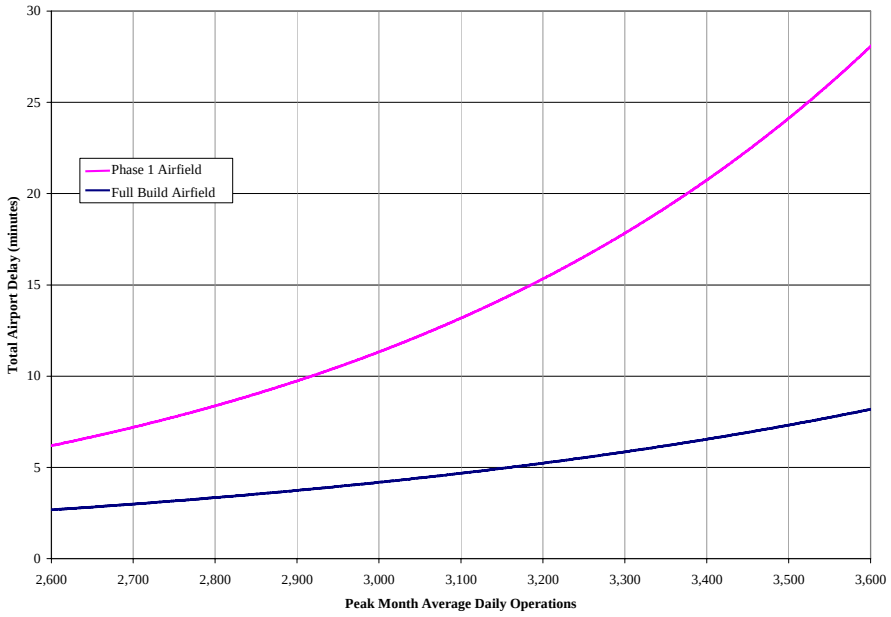
The FAA and its EIS consultant, known as the third party contractor (TPC), actively involved in the TAAM simulation analysis of the OMP. As documented in the EIS:

> "An unprecedented series of TAAM simulation analyses were conducted by the City of Chicago's Consultant Team (CCT) with direction, oversight, review and approval by the FAA and the TPC. The FAA and TPC participated in an intensive, nine-month review process during the simulation effort. The objective of this process was to ensure that TAAM input assumptions, modeling methodologies, and output data conformed to the industry best practices in modeling and accurately reflected air traffic control rules and procedures. In total, FAA invested over 2,000 hours reviewing assumptions, draft results, animations, and final results. The FAA review was conducted by an Air Traffic Work Group, which consisted of FAA Management and National Air Traffic Controller Association (NATCA) representatives from O'Hare Tower, the Chicago Terminal Radar Approach Control Facility (TRACON), and the Chicago Center (ZAU); FAA Airports Division; and the FAA's TPC." [7]

The results of the TAAM modeling for the unconstrained forecasts are presented for the OMP Phase 1 and OMP Total Airfield on **Exhibit V-5**. The simulation analysis performed in support of the EIS modeled airfield and airspace operations at various levels of demand consistent with specific EIS forecast years. The results of these modeling efforts remain valid for the specific levels of activity modeled. However, the years in which those levels are reached has changed as a result of the new forecasts of activity in the current TAF. As a result, the analysis originally representative of activity in 2007, 2009, and 2013 is, under the 2008 TAF, representative of the years 2018, 2020, and 2022, respectively. The BCA recognizes and uses the revised timing of these results, and therefore the years in which particular levels of delay-reduction benefit will be realized.

Exhibit V-5

Total Airport Delay (in minutes)



Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

[7] Source: FAA, *O'Hare Modernization Draft Environmental Impact Statement*, January 2005.

As shown on Exhibit IV-5, the simulation modeling showed that delays increase exponentially under the OMP Phase 1 as demand approaches capacity. Theoretically, delays can continue to increase to unrealistically high levels as demand exceeds capacity for more and more hours of the day. However, these excessively high levels of delay may not be experienced, as the airlines and passengers may change their behavior to avoid these delays. In response to increasing delays, airlines might increase average aircraft size to accommodate forecast demand, shift connecting passenger traffic through other hub airports, re-schedule flights, or take other actions.

The FAA in its *BCA Guidance* recognizes the limitations on delay growth, and suggests the need to modify demand growth when delays exceed 15 minutes per operation and that demand should be capped at approximately 20 minutes of delay per operation.

As previously discussed, the FAA requested that this BCA consider a constrained forecast of activity based on the assumption that new terminal capacity will not be constructed at the same time as the airfield projects included in this application. Based on an analysis of existing gate facility capabilities, it was estimated that total operations would be constrained at approximately 1,150,000 annual operations, or 3,151 annual average day operations, approximately 6 percent more operations than the 2,968 peak number of daily operations actually handled by the Airport July 1, 2004 as reported by FAA in its OPSNET database. Using the demand-delay relationships defined through the EIS simulation modeling efforts and depicted in Exhibit IV-5, the capped operations result in average aircraft delays at the Airport under the OMP Phase 1 Airfield of approximately 14.2 minutes per aircraft, which is lower than the 15 minutes per aircraft threshold outlined in the *BCA Guidance*. This same constrained forecast would be used to assess the delay benefits under the OMP Total Airfield. While the OMP Total Airfield is capable of accommodating the unconstrained forecast activity, as demonstrated by the FAA's simulations illustrated in Exhibit IV-5, the constrained forecast provides a conservative estimate of benefits based on the conservative assumption that gate capacity will limit demand.

5.4.2 Simulation Results

As discussed earlier, simulation modeling using TAAM was performed to provide quantitative information on the performance of the OMP-Total Airfield Projects relative to the OMP Phase 1 Airfield. The simulations results used in this BCA are based on those originally prepared for the FAA EIS analysis. The methodologies and assumptions used in the simulation modeling have been documented in numerous data packages developed and published by the FAA in support of the EIS process.

Delay and travel time statistical results from the simulation analyses are presented in **Table V-5** for the OMP Phase 1 Airfield, and OMP-Total Airfield. Delay, as presented in the table, is the difference between unimpeded travel time and total travel time. Travel time is the time from gate departure at the origin airport to gate arrival at the destination airport. **Exhibit V-6, Exhibit V-7,** and **Exhibit V-8** graphically present average delay per operation, average unimpeded travel time per operation, and average travel time per operation, for the OMP Phase 1 Airfield and the OMP Total - Airfield.

Delay was calculated for each year in the BCA analysis by using the delay exponential equations developed from the EIS simulations. Exhibit IV-6 shows the average delay per operation for the constrained forecast.

Table V-5

Simulation Modeling Results (in minutes)

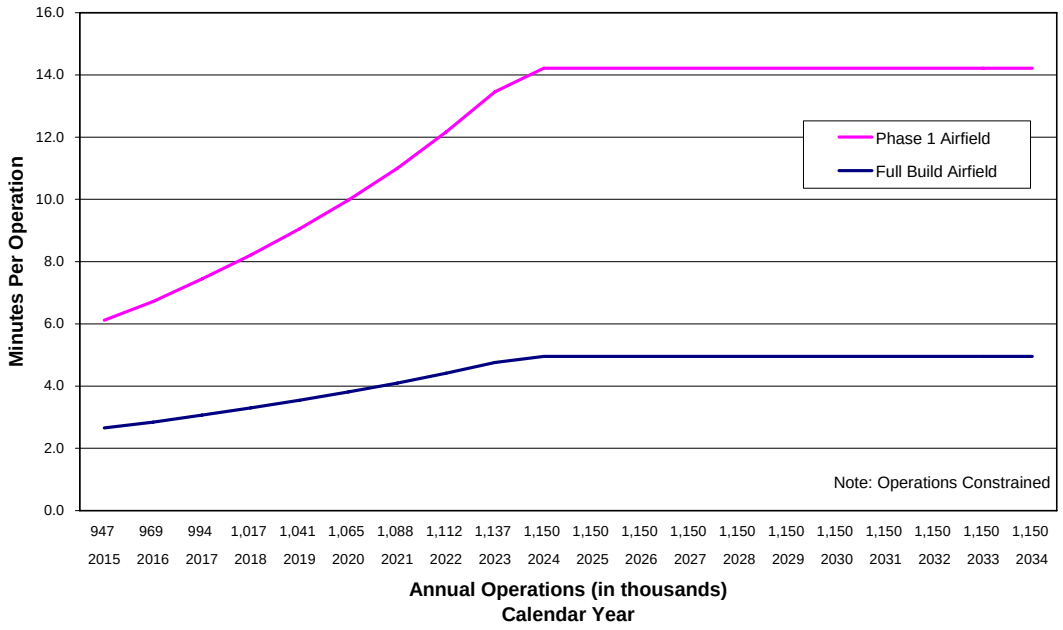
Scenario	Annual Operations	Average Total Travel Time per Operation	Average Unimpeded Travel Time	Average Delay per Operation [1]
OMP Phase 1 Airfield				
	1,026,300	141.2	131.3	9.9
	1,057,200	146.6	135.8	10.8
	1,120,600	155.6	140.8	14.8
OMP Full Build Airfield				
	1,057,200	142.7	138.4	4.3
	1,120,600	148.3	143.0	5.2
	1,194,000	154.8	148.7	6.1

Note:
1 Totals may not add due to rounding.

Source: FAA EIS, 2005.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-6

Average Delay per Operation (in minutes) – Constrained Forecast

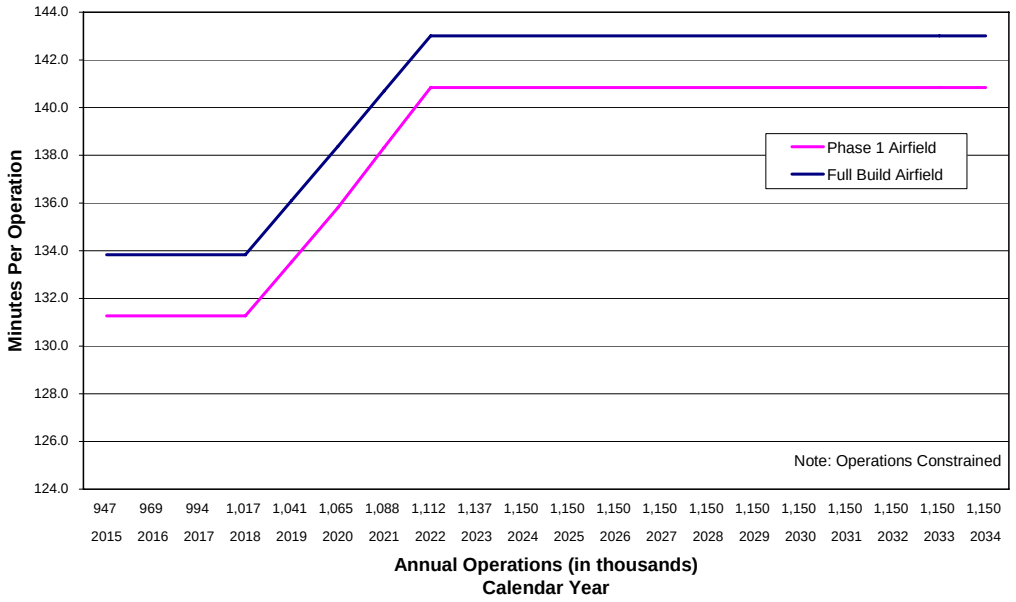


Calendar year of occurrence based on 2008 TAF.

Source: EIS TAAM Simulations, 2004; Ricondo & Associates, Inc., February 2009.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-7

Average Unimpeded Travel Time (in minutes) per Operation – Constrained Forecast

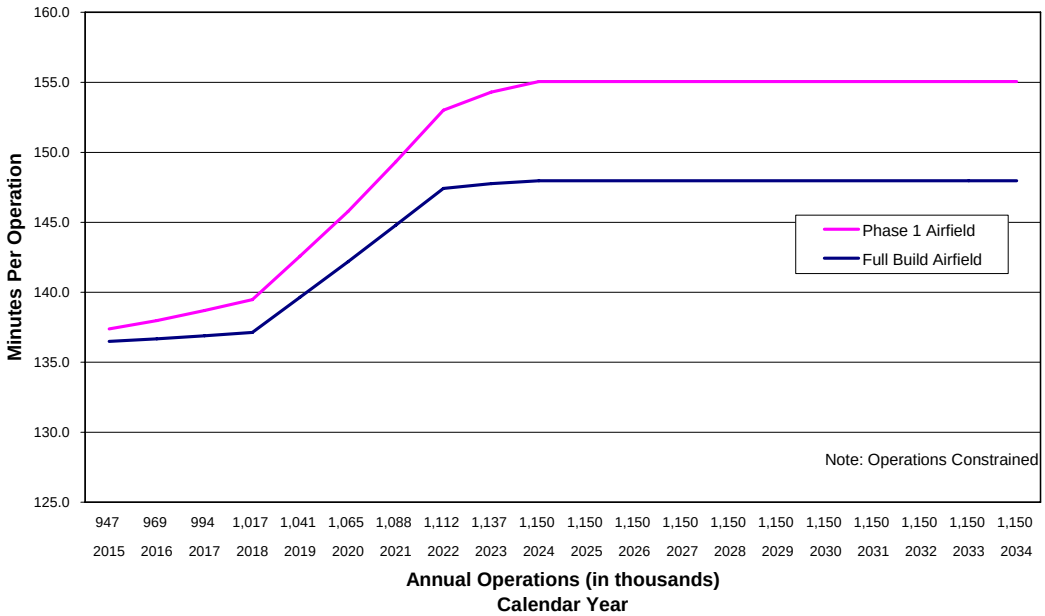


Calendar year of occurrence based on 2008 TAF.

Source: EIS TAAM Simulations, 2004; Ricondo & Associates, Inc., February 2009.
Prepared by: Ricondo & Associates, Inc.

Exhibit V-8

Average Travel Time (in minutes) per Operation – Constrained Forecast



Notes: Calendar year of occurrence based on 2008 TAF.
Travel time benefits illustrated are based on the constrained forecast and do not consider benefits associated with growth in demand beyond 1,150,000 annual operations.

Source: EIS TAAM Simulations, 2004; Ricondo & Associates, Inc., February 2009.
Prepared by: Ricondo & Associates, Inc.

Unimpeded travel time was determined by matching the EIS simulated demand levels to the closest calendar year in the constrained forecast. Exhibit IV-7 shows the average unimpeded travel time for the constrained forecast. For periods before and after the simulated demand levels, the unimpeded travel time from the lowest and highest simulated demand level respectively was held constant. The difference between the OMP Phase 1 and OMP Total Airfield unimpeded travel time accounts for the increase in taxi times associated with the expansion of the airfield.

As shown, the differences in average delay between OMP Phase 1 Airfield and OMP Total Airfield are greater than the differences between the average travel times in any given year. This results because the proposed plan increases unimpeded travel times due in part to the increase in taxi distance associated with the new runways. Therefore, this BCA uses the differences in total travel times to calculate benefits in order to ensure that these benefits are understated.

The EIS simulation data used to determine the constrained forecast travel times are shown in tabular form in **Appendix X**.

5.5 Benefit - Cost Comparison

The comparison of benefits and costs involves the calculation of NPVs and benefit-cost ratios (BCRs) based on recognition of the time value of money in discounting the benefits and costs. Additionally, time savings must be converted into monetary values based on appropriate assumptions regarding the value of passenger time and aircraft operating costs.

As noted previously, this BCA considers only delay savings in travel times for aircraft and passengers. Table V-1 summarizes other benefits not considered in this BCA, which if considered, would further increase the value of the economic benefits attributed to the project(s). The analyses performed in this section provide the benefit-cost comparison for the Proposed Action projects. The following points outline relevant assumptions associated with the quantification of these benefits and **Table V-6** summarizes the assumptions.

- *Base Year.* Project benefits were evaluated using 2008 as the base year because the most recent OMP cost estimates are in 2008 dollars. Project benefits and costs are stated in 2008 dollars in the year of accrual/expenditure, and benefits and costs are discounted 7 percent per year in accordance with the *BCA Guidance* to calculate present value.
- *Aircraft Operating Costs.* Variable aircraft operating costs consist of costs for crew, fuel and oil, taxes, and maintenance. Each aircraft model has a unique operating cost. These costs are provided on U.S. Department of Transportation Form 41.[8] To develop an aggregate variable aircraft operating cost for O'Hare, a weighted average of the operating costs for aircraft types in the fleet mix serving O'Hare in each of the simulation years was calculated. Values for years not simulated were linearly interpolated or extrapolated.

[8] The time period for data used was 12 months ending September 30, 2008.

- *Downstream Delay Benefits.* Because delays at a particular airport can propagate throughout the NAS, downstream delay savings should also be considered as a benefit as permitted by the BCA Guidance.[10] However, an effective methodology for quantifying these delay benefits is not readily available, and, while various methods are discussed in academic literature and research, none have been proven accurate in all applications and endorsed by FAA for use in BCA. For the purposes of this BCA, a simplified methodology developed by Massachusetts Institute of Technology's Lincoln Laboratory is presented for consideration, but is not included in the baseline analysis. This study suggests that downstream delay can reach 80 percent of the local delay levels.
- *Salvage Value*. As set forth in the BCA Guidance, salvage value of the project may be considered. Salvage value can vary significantly depending on the conceptual methodology used to define it. If defined as a residual value, the cost can be calculated as the originally project cost, less the cost to bring the project back to "new" condition at the end of the analysis period. Under this definition, several components of a project could be considered in the salvage value including land costs, facility relocation costs, and earthwork and drainage improvements. These costs are significant components of the OMP CP Airfield, but to provide a conservative analysis, salvage value is not considered in the BCA.
- *Sunk Costs.* As set forth in the BCA Guidance, sunk costs of the project should be excluded from the BCA. Through 2008, approximately $3 million has been spent on airfield planning and design for the LOI Projects. Therefore, this amount is considered a sunk cost in the BCA.
- *Evaluation Period*. The evaluation period is the time period over which project benefits and costs are calculated. As recommended in the BCA Guidance, the evaluation period extends for 20 years after completion of construction.

5.5.1 Project Analysis

Based on the information presented in Table V-5, and information on costs and travel time benefits presented in prior sections of this document, the benefit-cost ratio and NPV were derived for the Proposed Action projects. These values are presented in **Table V-7**. **Appendix F** presents tabular information detailing the calculation of the BCR and NPV.

[10] In the *BCA Guidance*, FAA states "Simulation modeling of delay at the study airport does not capture the effect of 'follow-on' delays e.g., delays that results at other airports as a result of delays originating due to congestion at the subject airport. Whereas FAA attempts to consider systemwide delay impacts in its capacity analyses, it has been unable to develop a robust simulation methodology for measuring these impacts … However, in the case of projects with major average delay reductions (5 minutes or more), the analyst may attempt to quantify follow-on effects. FAA will consider follow-on delay reduction estimates developed from any methodology that is well documented. An example of a potentially usable methodology is one developed by Lincoln Laboratory."

Table V-7

Benefit-Cost Ratio and Net Present Value (2008 dollars) Aircraft and Passenger Local Travel Time Benefits Only

	Present Value Benefits (billions)	Present Value Costs (billions)	Net Present Value (billions) [1]	Benefit-Cost Ratio
Proposed Action	$4.0	$2.4	$1.6	1.68

Note:
1 Total may not add due to rounding.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

5.5.2 Sensitivity Analyses

Because of the risks involved in infrastructure development and the number of assumptions regarding future conditions that occur in benefit-cost analysis, the analysis should be evaluated for its sensitivity to certain basic parameters to confirm its economic viability. For this BCA, the following sensitivity analyses were conducted. These assumptions were used only to demonstrate the continued economic justification for the Proposed Action under varying cost and benefit assumptions and are not anticipated changes to the analysis assumptions.

- Increase capital investment cost 25 percent
- Decrease benefits savings 25 percent
- Increase capital cost investment 25 percent and decrease benefit savings 25 percent
- Delay construction schedule by 5 years
- Constrain passenger growth at gate constraint.
- 2002 TAF as base for constrained operations

The results of these sensitivity analyses are shown in **Table V-8**.

Table V-8

Benefit-Cost Ratios and Net Present Values (2008 dollars) - Sensitivity Analyses
Aircraft and Passenger Local Travel Time Benefits Only

Sensitivity Analysis	Evaluation End Year	Present Value Benefits (billions)	Present Value Costs (billions)	Net Present Value[1] (billions)	Benefit-Cost Ratio
Increase capital costs by 25 percent	2034	$4.0	$2.9	$1.1	1.37
Decrease benefits by 25 percent	2034	$3.0	$2.4	$0.6	1.26
Increase capital costs by 25% and decrease benefits by 25%	2034	$3.0	$2.9	$0.07	1.03
Constrained passengers growth at operations limit	2034	$3.9	$2.4	$1.6	1.66
Delay construction schedule by 5 years	2039	$4.1	$1.7	$2.4	2.45
2002 TAF as Base for Constrained Forecast	2034	$6.5	$2.4	$4.2	2.77

Note:
1 Totals may not add due to rounding.

Source : Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

These sensitivity analyses show Proposed Action benefit-cost ratio over a wide range of variations in its basic variables. In all cases, the BCR exceeds 1.0, and the NPV is larger than the FAA threshold.

This analysis does not attempt to quantify or consider all benefits associated with the benefit-cost ratios and NPVs presented here are based on underestimated benefits and would be expected to be higher if a full accounting of project benefits were performed.

5.5.3 Non-Quantified Benefits

In addition to the local delay savings in travel times for aircraft and passengers quantified in the BCA, other significant non-quantified benefits of the OMP Completion Phase exist. The following benefits will also be provided by the OMP Completion Phase.

- Greater schedule predictability including (1) aircraft operator able to make more efficient use of equipment and personnel and (2) passenger able to take later flight and arrive at destination on time
- Airport's ability to accommodate faster, larger, and/or more efficient aircraft
- Bringing pre-existing infrastructure into compliance with FAA safety and security standards. The provision of a full safety area for Runway 9L-27R is a significant example of this benefit.
- Safety improvements
- Reduced downstream delay. Studies have estimated that downstream delay can total 80 percent or more of the delay experienced locally, which would equal approximately $3.2 billion in Present Value Benefits in the base case analysis.

Table V-6

Assumptions for Quantified Project Benefits

Fleet Mix in Constrained Schedule	Aircraft Variable Operating Cost (in 2008 dollars) Cost per Hour	Cost per Minute
2007	3,952	65.86
2009	3,936	65.60
2013	3,859	64.32
Value of Passenger Time (in 2000 dollars not escalated)	$32.10	$0.54

Discount Rate	7 percent
Salvage Value	$0
Sunk Costs	$3 million
Evaluation Period	20 years after construction completion

OMP-Full Build Airfield Projects	Evaluation Period Start Year	End Year
Future Runway 9C-27C	2015	2034
Runway 9R Extension	2015	2034
Runway 10R-28L	2015	2034

Sources: (Aircraft Operating Cost): U.S. DOT, *Form 41*, fourth quarter of calendar year 2007 through third quarter of 2008; (Value of Passenger Time): FAA-APO-03-1, *Treatment of Values of Passenger Time in Economic Analysis*, March 2003 and percentages of business and leisure travelers, Landrum & Brown, *In-Flight Survey*, 1997; (Discount Rate): FAA, *BCA Guidance*, December 15, 1999.
Prepared by: Ricondo & Associates, Inc.

- *Passenger Value of Time.* As set forth in the BCA Guidance, a blended rate accounting for the value of O'Hare's personal and business travelers' time may be used. The value of passenger time is set forth in the APO Bulletin, and the specified value is $40.10 per hour for business travelers and $23.30 for personal travelers.[9] Results of the In-Flight Air Survey in 1997 by Landrum & Brown indicated that business travel was the main purpose of the trip 52.4 percent of the time and personal travel 47.6 percent of the time. Based on this passenger distribution, the weighted average passenger cost for O'Hare is $32.10 per hour or $0.54 per minute.

[9] The *APO Bulletin* provides passenger value of time in 2000 dollars and states that the values may not be adjusted for inflation.

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

VI. Financial Plan

Table VI-1

AIP LOI Grant No. AGL-06-01 Schedule

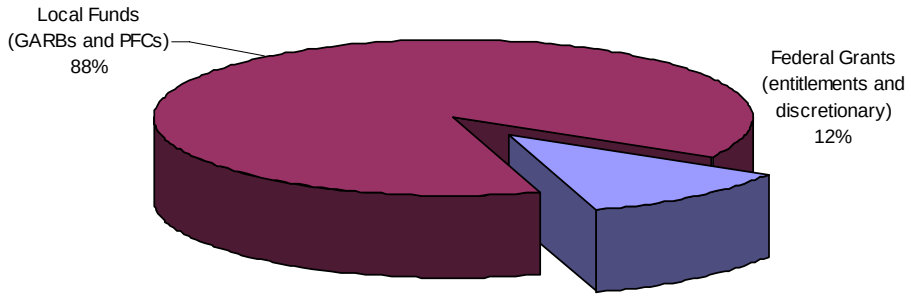
Year	Project	Entitlement	Discretionary	Annual Total
2006	Runway 9L-27R Construction	$9,300,000	$20,000,000	$29,300,000
2007	Runway 9L-27R Construction	8,400,000	20,000,000	28,400,000
2008	Runway 9L-27R Construction	6,500,000	20,000,000	26,500,000
2009	Runway 9L-27R Construction	6,500,000	20,000,000	26,500,000
2010	Runway 9L-27R Construction	6,500,000	7,800,000	14,300,000
2010	Runway 10L Extension Construction		12,200,000	12,200,000
2011	Runway 10L Extension Construction		20,000,000	20,000,000
2012	Runway 10L Extension Construction		17,800,000	17,800,000
2012	Runway 10C-28C Construction		2,200,000	2,200,000
2013	Runway 10C-28C Construction		20,000,000	20,000,000
2014	Runway 10C-28C Construction		20,000,000	20,000,000
2015	Runway 10C-28C Construction		20,000,000	20,000,000
2016	Runway 10C-28C Construction		20,000,000	20,000,000
2017	Runway 10C-28C Construction		20,000,000	20,000,000
2018	Runway 10C-28C Construction		20,000,000	20,000,000
2019	Runway 10C-28C Construction		20,000,000	20,000,000
2020	Runway 10C-28C Construction		20,000,000	20,000,000
	Total	$37,200,000	$300,000,000	$337,200,000
Total By Component				
	Runway 9L-27R Construction	$37,200,000	$87,800,000	$125,000,000
	Runway 10L Extension Construction	$0	$50,000,000	$50,000,000
	Runway 10C-28C Construction	$0	$162,200,000	$162,200,000
	Total	$37,200,000	$300,000,000	$337,200,000

Source: FAA,; City of Chicago department of Aviation.
Prepared by: Ricondo & Associates

As shown on **Exhibit VI-1**, approximately 88 percent of funding sources for OMP Phase 1 (including the Noise Program) are local funds including GARBs, pay-as-you-go PFCs, and PFC double-barrel bonds. The airlines serving the Airport have formally granted MII approvals for the issuance of GARBs and double barrel PFC bonds as part of the financing plan. Funding sources for the remaining 12 percent are assumed in the financing plan to be a combination of AIP entitlement and discretionary grants. The financing plan required a minimum $300 million LOI commitment by the FAA as a condition to the airline funding commitment. In addition, the City committed as part of this LOI request approximately $37.2 million in entitlement grants to fund a portion of the construction of the OMP Phase 1 Airfield Projects. As part of the plan of finance, the City has actually committed approximately $55 million in entitlement grants, approximately $17.8 million more than what was included in the LOI.

Exhibit VI-1

OMP Phase 1 Airfield Projects Local Funds and Federal Grants [1]



Note:

1 Includes Noise Program.

Source: Fullerton & Friar, Inc.
Prepared by: Ricondo & Associates, Inc.

6.1.2 OMP Phase 1 Additional Federal Funds

Between 2006 and 2007 the City received $26 million in discretionary grants for noise mitigation programs and expects to apply for additional grants for noise mitigation. That amount is shown in the tables in this Chapter. Subsequent to those grants, the City received further grants for noise mitigation related to the OMP totaling $36 million.

The FAA has announced that more than $42 million of the cost of the new FAA North Airport Traffic Control Tower will be paid by the FAA under a separate agreement. These federal funds are in addition to AIP entitlement grants and discretionary grants expected under the OMP Phase 1 LOI and for noise mitigation.

6.2 Proposed Action

The estimated cost of the Proposed Action is approximately $2.75 billion in 2008 dollars. This includes construction, design, contingency and program administration costs for Runways 9C-27C, 10R-28L, and the extension of Runway 9R-27L, OMP Completion Phase noise program, and World Gateway Program taxiway improvements. Of the $2.75 billion, the LOI Projects consist of approximately $2.65 billion[11].

Funding sources for the LOI Projects include federal grants-in-aid under the AIP, PFCs (pay-as-you-go and leveraged), and General Airport Revenue Bonds (GARBs). **Table VI-2** lists the funding sources for the Proposed Action projects. The actual amount of funding available from these sources will depend on a number of factors, including future levels of aviation activity and federal reauthorizations.

[11] The financial tables in the Appendix G show the LOI Projects

Table VI-2

Proposed Action Sources of Funds (in 2008 dollars) [1]

Sources of Funds ($ millions)				
		FAA AIP Grants		
PFCs (PAYG and Bond Funds)	GARBs	Entitlement [4]	Discretionary	Total
$1,001	$1,251.0	N/A	$500.0	$2,751.8

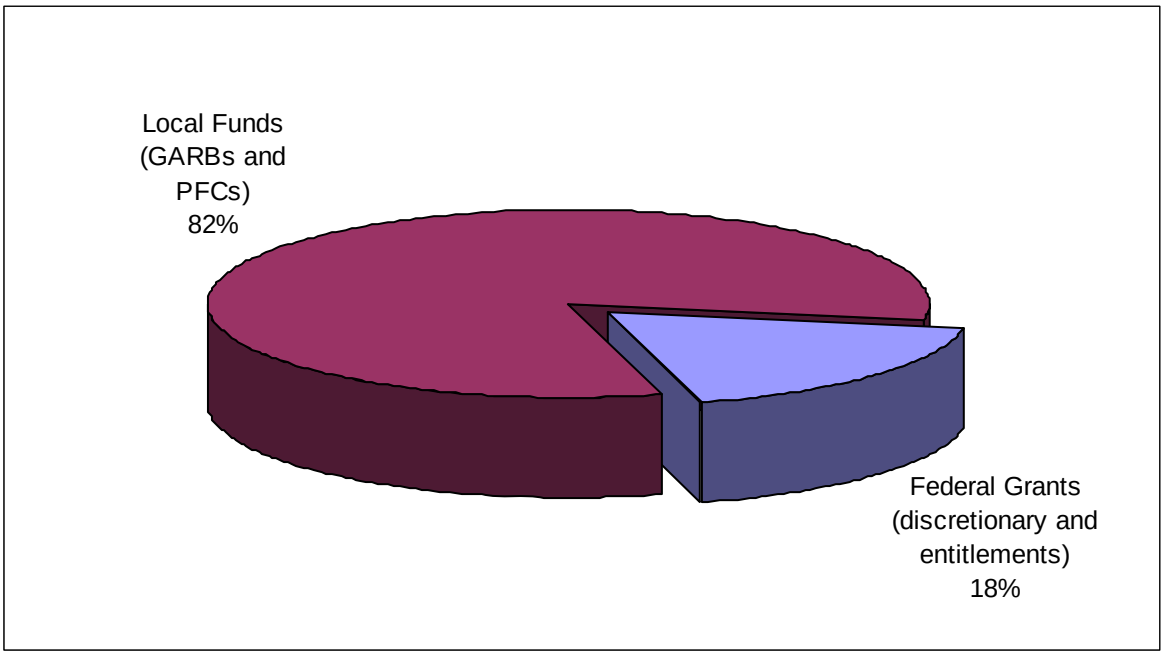
Notes:
1 Includes OMP Completion Phase Noise Program
2 Assumes entitlements are forfeited due to increase in PFC collection. Should entitlements remain available, they will be use for airfield preservation.

Source: Fullerton & Friar, Inc.
Prepared by: Ricondo & Associates, Inc.

As shown on **Exhibit VI-2**, approximately 82 percent of funding sources for the Proposed Action are local funds including GARBs, pay-as-you-go PFCs, and PFC bonds. Funding sources for the remaining 18 percent are assumed in the financing plan to be AIP discretionary grants totaling $500 million.

Exhibit VI-2

LOI Projects Local Funds and Federal Grants [1]



Note:

1 Includes Noise Program.

Source: Fullerton & Friar, Inc.
Prepared by: Ricondo & Associates, Inc.

6.3 Sources of OMP Airfield Projects Funding

6.3.1 FAA Airport Improvement Program Grants

The Airport and Airway Improvement Act of 1982 authorizes funding for the AIP from the Airport and Airway Trust Fund for airport development, airport planning, and noise compatibility planning and programs. The Airport and Airway Trust Fund is funded through several aviation user taxes on airfares, air freight, and aviation gasoline. On December 12, 2003, President Bush signed into law FAA reauthorization legislation known as Vision 100 – Century of Flight Authorization Act of 2003. Under the reauthorization, the AIP was extended four federal fiscal years to September 30, 2007. The funding levels for AIP investment are $3.4 billion in the first year, increasing by $100 million per year in each subsequent year. The AIP has continued through a series of short-term FAA legislative extensions while congress attempts to pass the FAA Reauthorization Act. The most recent of which is the FAA Extension Act signed in September 2008. This bill provides, among other things, an annualized amount of $3.9 billion in contract authority for the Airport Improvement Program. The FAA Reauthorization Act (H.R. 915) was reintroduced to members of the U.S. House of Representatives Subcommittee on Aviation on February 11, 2009. As of February 19, 2009, the bill has not been reintroduced in the Senate. H.R. 951 continues the annualized $3.9 billion for the AIP in 2009, with an annual $100 million increase through 2012.

The City is seeking an LOI for $500 million in AIP discretionary funds for the LOI Projects[12]. Discussion about LOI grants at other airports follows in Section 6.5.

6.3.2 Passenger Facility Charges

The PFC program is authorized by 49 USC §40117, originally enacted in 1990 and amended in 2000. It authorizes the FAA to allow airports to impose fees on passengers to finance airport development projects and planning, as defined in the law. The fee may be imposed at the levels of $1, $2, $3, $4, or $4.50 per eligible enplaned passenger. "No contract or agreement between an air carrier or foreign air carrier and a public agency may impair the authority of the public agency to impose a PFC or impair use of the PFC revenue." § 40117(f). The Use Agreements authorize the City to pay for capital expenditures from PFCs without airline approval. Use Agreement § 8.01(a)(iv). PFC revenues may be used on a pay-as-you-go basis or leveraged to support the issuance of PFC-backed bonds. PFC Bonds can be issued either as stand-alone or double-barrel bonds, which are backed by both a pledge of PFCs and general airport revenues. The City has outstanding approximately $725.7 million of First and Second Lien PFC stand-alone bonds and approximately $500 million of double-barrel bonds. The City plans to issue either additional stand-alone and double-barrel PFC bonds in the future to finance project costs.

On September 1, 1993, the City imposed a PFC of $3.00 per enplaned passenger, which was increased to $4.50 per enplaned passenger on April 1, 2001. As of September 30, 2008 the City had authority to impose approximately $4.5 billion in PFCs and use approximately $4.5 billion in PFC revenues at the Airport. Consistent with requirements, PFC funds are used to support projects that (1) preserve or enhance the capacity, safety, or security of the NAS; (2) reduce noise or mitigate noise effects; or (3) furnish opportunities for enhanced competition between or among air carriers.

The City has received approval to impose and use $177.6 million of PFC's for the design for OMP Completion Phase airfield projects. The City intends to file future PFC applications for the construction of OMP Completion Phase airfield projects.

[12] The City's plan of finance for OMP Completion Phase does not include entitlement grants as a source of funding because it is assumed that with an increase in the PFC collection level, entitlements will not be available. This is consistent with the pending FAA Reauthorization bill.

The City is prepared to contribute $1.005 billion of PFC funds towards the OMP Completion Phase. The current economic conditions and recent passenger decreases at the Airport could result in a PFC capacity projection for the Airport that could potentially be less than the $1.005 billion commitment. In that event, the outstanding amount will be funded from other local sources, most likely with revenue bonds. Alternatively, there are also several other potential changes in assumptions that could result in a higher PFC capacity, including: an increase in the PFC level beyond the projected amount, a reduction in the required debt service coverage assumptions for PFC-backed bonds, decreases in the assumed bond interest rates, and increases in enplanement activity. Any change or combination of such changes would impact the PFC capacity at the Airport.

The law imposes no limit on the duration of PFC collections, or on the final year in which authorized PFCs are expected to expire. The FAD for PFC application 06-19-C-00-ORD lists 24 airports authorized to collect PFCs beyond 2024, including Bentonville, Arkansas (2040), Miami, Florida (2037), Chicago Midway (2038), Detroit, Michigan (2032), Raleigh-Durham, North Carolina (2032), Harrisburg, Pennsylvania (2034), Dallas/Ft. Worth, Texas (2034), and Clarksburg, West Virginia (2054). FAD 06-19 67-68. The FAA estimates the current O'Hare PFC collection expiration date to be May 1, 2026.

6.3.3 General Airport Revenue Bonds

6.3.3.1 Nature of GARBs

GARBs are bonds issued by the City and secured solely by airport revenues. They are a traditional method of financing airport development. They are limited obligations of the City "and neither the faith and credit nor the taxing power of the State of Illinois, the City or any other political subdivision of the State of Illinois will be pledged to the payment of the principal of or interest on" any GARBs[13]. (2008 Official Statement 5). As of January 1, 2008, the City had approximately $4.3 billion of GARBs outstanding, with maturities extending to 2038. The City issued GARBs totaling $779,915,000 in January, 2008, of which $530 million are secured by both airport revenues and passenger facility charges (see below).

6.3.3.2 Use Agreements and GARBs

The Use Agreements give airlines that have signed them (Airline Parties) control over the issuance of certain GARBs. If the City intends to charge the Airline Parties for GARB debt service during the term of the Use Agreement, the Airline Parties have certain approval rights. The Use Agreements terminate on May 11, 2018. GARBs issued now with all of their debt service payable after that date are not subject to Airline Party approval. The Airline Parties have no rights under the Use Agreements, or otherwise, to approve or control capital development at the airport. Their right is limited to approval of certain GARBs.

The City is currently in discussions with airlines about a plan of finance for the LOI Projects. The City intends to use GARBs to fund a substantial share of LOI Project costs, supplemented by AIP, PFC, and third party financing. The City may implement a funding plan that does not require airline approval, based on the issuance of GARBs on which principal and interest are paid after the Use Agreements terminate in 2018.

[13] In addition to GARBs, the City has issued bonds secured in whole or in part by PFCs, and special facility revenue bonds secured solely by amounts received from specific private parties under special facility financing agreements. Special facility revenue bonds, which are not secured by general airport revenues, are commonly used to finance facilities such as cargo buildings, hangars, and terminal buildings that are used by designated carriers, and are secured solely by payments made by those carriers.

GARBs are routinely sold by airports nationwide that do not have long-term airline agreements. A long-term airline agreement is not required for the sale of GARBs. Existing GARBs already successfully issued by the City have large amounts of principal and interest scheduled to be paid in the years after the Use Agreements terminate. These GARBs have maturities extending far beyond May 11, 2018. Some maturities of Series 2005C and 2005D bonds are 2035; Series 2006B and 2006D bonds, 2037; Series 2008A bonds, 2034, Series 2008C bonds, 2023 and Series 2008D bonds, 2038. The bond market and the investors in the bonds were fully aware that the Use Agreements would terminate long before the GARBs mature. By buying these bonds they accepted the credit of O'Hare based on their assessment of the airport's future creditworthiness, rather than on the airlines commitments under the Use Agreement. (2008 Official Statement 38-39)

6.3.3.3 GARB Interest Rates

To date, the City's GARBs for OMP have been issued at the interest rates shown in **Table VI-3**.

Table VI-3

GARB Interest Rates

Bond Series	Actual Terms of Sale
2003 ABC	5.789%
2003 DEF	5.099%
2004 A-H	4.861%
2005 ABCD	4.703%
2006 ABCD	4.778%
2008 ABCD	4.604%

Note: No bonds were issued in 2007

Source: Fullerton & Friar, 2008.
Prepared by: Ricondo & Associates, Inc.

These actual rates are lower than the interest rate assumptions in the financing plan in the O'Hare Master Plan, which assumed GARB interest rates of 6 percent (except for 2003, which was 5.50 percent). Master Plan Appendix D, p. D-1. These Master Plan assumptions were used by the FAA's contractor, John F. Brown Company, in its June 27, 2005 independent analysis of the financial feasibility of OMP Phase 1. A&R Attachment A, p. 6. The FAA concluded: "The Financial Assistance Division of APP also reviewed the City's financing plan and, in conjunction with the John F. Brown Study, has determined . . . that the Phase 1 OMP is financially feasible." A&R, p. 7.

When the City and Airline Parties agreed on OMP Phase 1 funding, the City projected the annual GARB debt service cost, based on assumed interest rates taking into consideration: (1) then-current actual interest rates, (2) the possibility of fluctuations in interest costs given the period of time over which the bonds would be issued, and (3) the assumption that a combination of fixed rate and variable rate bonds would be issued to fund the projects. The City assumed that 85 percent of the bonds would be issued at a fixed rate of 6.25 percent and that 15 percent of the bonds would be issued at a variable rate of 4 percent, resulting in a 5.91 percent blended rate assumption for the interest cost of the OMP Phase1 debt. All but approximately $400 million of the planned OMP Phase 1 GARBs have been issued, all of them at a true interest cost lower than the 5.91 percent blended rate assumed in the projection. The City estimates that the total debt service savings to the

overall cost of the OMP resulting from these savings on interest payments over the life of the GARBs exceeds $500 million.[14]

6.3.3.4 GARB Ratings

GARBs are independently rated by three rating agencies, which publish their opinions on the creditworthiness of the bonds. OMP Phase 1 2008 GARBs received positive ratings by Moody's, S&P and Fitch, which assigned "Aaa," "AAA" and "AAA," respectively, to the 2008 GARBs on the understanding that bond insurance would cover the bonds. The three agencies also assigned underlying ratings of "A1," "A-" and "A," respectively, to each series of the 2008 bonds. An "underlying rating" refers to the creditworthiness of the GARBs, and therefore the airport, in the absence of bond insurance.

6.4 OMP Financial Feasibility

6.4.1 Project completion sources of funds

The City plans to pay for the projects included in this Application from the same sources used to finance OMP Phase 1. Aside from this LOI application, the City also plans to seek FAA approval to impose additional PFCs for runway construction. The PFC application is scheduled for filing this year. The applications for OMP Completion Phase construction will be similar in form and content to the applications approved for OMP Phase 1 runway costs in the LOI and FAD 06-19. Although the City is negotiating with O'Hare airlines on a funding agreement, as described above, the City has access to the GARB market in amounts sufficient to pay for the these projects without airline approval.

6.4.2 Financial Feasibility

In 2001, the City estimated OMP total cost at $6.6 billion (in 2001 dollars), defining the OMP for that purpose as the aggregate of the airfield projects, western terminal complex, people mover, and such program-wide requirements as wetlands and noise mitigation and land acquisition. This original estimate, escalated over time, was first verified, and then used by the FAA in the EIS as a reasonable estimate of the cost of the OMP.[15] After reviewing and adjusting this amount, the FAA estimated OMP cost at $7.52 billion in 2004 dollars (EIS Table 1-11).

Using this $7.52 billion estimate in review of the City's LOI Application for OMP Phase 1 Airfield Projects, the FAA determined that the OMP is financially feasible. It consulted John. F. Brown Company, a recognized airport finance expert. Brown also performed several sensitivity tests, including a 12-month delay in delivery of the program and an increase in costs by 15 percent, which did not change the FAA's determination of financial feasibility.

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[14] Based on the "Revenue Bond Index" published weekly by the Bond Buyer, the average rate on fixed rate 30 year tax-exempt revenue bonds over the last 20 years was 5.88 percent, with a peak on the first day of that period of 7.98 percent (September 8, 1988). The average for the last ten years was 5.23 percent, with a peak of 6.35 percent on January 20, 2000. The lowest interest rate for both periods was 4.38 percent on March 15, 2007. The rates on the City's O'Hare bonds over the same period have approximated the rates in the Bond Buyer index. The sales of OMP bonds to date for Phase 1 have resulted in savings when compared to the Master Plan assumptions due to having been sold at rates consistently below rates assumed in the Master Plan. Those interest cost savings on bonds already sold are not dependent on future interest rates. While the data generally supports the interest rate assumption in the Master Plan, the City makes no representation as to future interest rates on OMP bonds.

[15] See Crawford, Murphy & Tilly, Analysis of the 2004 O'Hare Master Plan Cost Estimated for the O'Hare Modernization Environmental Impact Statement.

The FAA's estimate would be $8.46 billion in 2007 dollars. The City currently estimates total OMP cost at $8.38 billion in 2007 dollars. The estimate includes actual costs for OMP Phase 1 work already performed or under contract (the current working estimate) and an updated estimate to complete the OMP using the same cost estimating process that has proved reliable for OMP Phase 1. Expressing both the City and the FAA's estimates in 2007 dollars, the City's estimate is $110 million less than the FAA's. The FAA found the OMP financially feasible in 2005, and it is still financially feasible today.

The FAA and their experts have significant experience in understanding the escalation of costs over time as large capital programs are implemented, and the relation of these escalated costs to costs in the broader economy. These conditions were part of expectations at the time of the feasibility determination. There is no reason to believe the construction cost escalation experienced since the FAA determined the program to be financially feasible has outpaced general inflationary forces to a level that would materially affect the FAA's original determination.

6.4.3 Additional factors affecting financial feasibility

As shown above, OMP costs are still estimated to be within the cost estimates assumed in the positive findings of financial viability by the FAA in 2005. Financial feasibility is also affected by reductions in the amounts to be paid by airlines and other airport users compared to their original expectations. To date, unexpected amounts from the FAA have been committed, reducing the financial cost to airlines and other airport users by that amount, including the FAA's assumption of substantial cost for the north airport traffic control tower, and grants for noise mitigation. The City believes that it is reasonable to expect additional grants for noise mitigation. The City intends to seek further FAA support for air traffic control facilities and equipment. The FAA has made no commitment to such additional funding.

The City has repeatedly sold GARBs at interest rates substantially below the rates assumed in the Master Plan and A&R financial feasibility analyses, most recently in early 2008. See Table F-2.1. The total reduced interest cost to be paid by the airlines and other O'Hare users on bonds sold to date is conservatively estimated at $500 million.

These unanticipated amounts make the OMP more affordable to airlines and airport users. The City believes that additional similar amounts of federal funding may be available as the program is developed.

6.5 AIP LOI Discretionary Grants at Other Airports

The City received an amount of $300 million of discretionary LOI grant funding for the OMP Phase 1 airfield projects which included two runways and a runway extension. The grant distribution was $125 million for each runway and $50 million for the runway extension. Upon review of historical LOI awards, 13 of 15 runway projects received greater than 20 percent federal participation. The LOI Projects included in this application total $2.75 billion and 20 percent of the total project is $550.4 million. With this in mind, the City is requesting LOI funding in the amount of $500.0 million. As discussed in Section 3, the OMP provides significant delay reduction at O'Hare and reduces delay and increases the efficiency of the NAS. Three specific examples of Airports who received federal funding well in excess of 20 percent are listed below:

- Lambert- St. Louis International –
  - *Federal Participation:* $145.0 million in LOI discretionary funds, $226.4 in total federal participation representing 23.0 percent of total project costs.

- *Project:* New parallel Runway 11-29 (9,001 x 150 feet) and associated infrastructure and improvements.

- Washington Dulles International
  - *Federal Participation:* $150.0 million in LOI discretionary funds, $200.2 in total federal participation representing 51.3 percent of total project costs.
  - *Project:* Future Runway 1L/19R (9,400 x 150 feet) and associated taxiway system and associated runway enabling projects, including environmental impact statement, wetland and stream mitigation, navigational aid installation, and site utilities construction, Phase 1.

- Seattle- Tacoma International - $184.6 million
  - *Federal Participation:* $184.6 million in LOI discretionary funds, $301.3 in total federal participation representing 26.7 percent of total project costs.
  - *Project:* New Parallel Runway 11-29 (8,500 x 150 feet) and related facilities including lighting, signage, relocation of navigational aids, taxiways, land acquisition, and wetland mitigation.

The projects above are similar to the OMP in runway construction but differ in the complexity and scope of a multiple runway and extension construction project such as the OMP. The additional requested LOI discretionary funding allocation per runway construction project is justified for the Airport given its importance to the National Airspace System and the complexity of the project.

6.6 Proposed Cash Flows for LOI Projects

Table VI-4 and **Table VI-5** show the estimated cash flow needs for the LOI Projects (runway projects only) during construction as originally planned by the City in 2008 dollars and the requested flow of funds from the FAA under the LOI for a 10-year timeframe, respectively. The timing of expenditures is subject to change. The funding needs of the LOI Projects during construction are far greater than the requested funding commitment from the FAA. As permitted, future federal funds will be used to reimburse past expenditures.

Table VI-4

Cash Flows for LOI Projects (2008 dollars)

Calendar Year	LOI Projects Expenditures (millions)[1]
2008	3.3
2009	68.4
2010	432.6
2011	898.9
2012	780.4
2013	341.8
2014	121.8
Total [2]	$2,647.1

Notes:
1 Expenditures are shown in calendar years as originally planned by the City in 2008 dollars. The timing of expenditures is subject to change.
2 Total may not add due to rounding.

Source: O'Hare Partners.
Prepared by: Ricondo & Associates, Inc.

Table VI-5

Proposed LOI Reimbursement Schedule

Federal Fiscal Year	Proposed LOI Reimbursement ($ millions)
2010	50.0
2011	50.0
2012	50.0
2013	50.0
2014	50.0
2015	50.0
2016	50.0
2017	50.0
2018	50.0
2019	50.0
Total	$500.0

Source: City of Chicago, Department of Aviation.
Prepared by: Ricondo & Associates, Inc.

6.7 LOI Benefits

Approval of this LOI request will advance FAA's policy goals and assist the City in minimizing the amount of debt necessary to fund the OMP.

6.7.1 Policy Goals

A favorable decision by the FAA on this LOI request will advance three important FAA policy goals. First, the completion of the project will reduce delays and enhance the capacity of the Airport and the NAS. Second, LOI Projects will receive significant local commitment with approximately 82 percent local funding. Third, completion of the project will allow compliance with FAA's Runway Safety Area standards by the FAA's nationwide target date of 2015.

6.7.2 Financial Implications

If an LOI request is not approved, an alternative method for funding the LOI Projects would be to issue additional GARBs to finance the construction costs previously identified as being funded with an LOI grant. Estimated debt service payments resulting from an additional $500 million GARB issuance would be, approximately, an additional $44.8 million annually to the bonds that will be issued. An additional $44.8 million in annual debt service would increase the landing fee at the Airport, imposing a financial burden on the air carriers providing service to the Airport. An LOI commitment will assist the City in moving forward with project construction based on the funding conditions in the agreement.

6.8 Financial Tables

According to the *Program Guidance Letter amending FAA Order 5100.38C* dated November 20, 2006, the FAA will determine the Sponsor's financial commitment in the analysis of the Airport's financial plan through 2019, the last year of the proposed LOI reimbursement schedule. **Appendix G** contains the FAA tables required by PGL 07-03. The tables depict the annual cash flows for the Proposed Action which includes the LOI Projects in addition to the OMP Completion Phase noise program. The other capital plans shown in the Appendix G tables include the remaining

cash flows for OMP Phase 1 and the City's 5-year Capital Improvement Program as of July 2008. The City is in the process of updating the 5-year CIP. The updated CIP can be provided at the FAA's request.

Appendix G also includes tables listing project costs for elements of the four LOI Projects. These costs are based on the same procedures and prepared by the same program management staff as cost estimates used for OMP Phase 1. The City has received bids or has commitments on more than 75 percent of the runway components of the current working estimate. As discussed in section 6.4.4, the current working estimate for OMP Phase 1 has proved reliable thus far. Therefore, it is reasonable to assume the LOI Project costs are reasonable. The costs included in this application are consistent with the costs included in the PFC application for OMP Completion Phase design approved by the FAA on February 26, 2009.

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendices

List of Appendices

Appendix A	LOI for AIP funding AGL-06-01
Appendix B	Airline Support. Letter to the Editor of the Chicago Tribune Nov. 24, 2008 from United Airlines and American Airlines
Appendix C	Memo describing the creation of the constrained enplanement forecast
Appendix D	Gate Operating Limits
Appendix E	Results from EIS simulation analysis used in the BCA
Appendix F	BCA Tables
Appendix G	Financial tables required by FAA Program Guidance Letter 07-03

Reference Document DVD

FAA's Analysis and Review of Chicago's Application of Letter of Intent AGL 06-01 (A&R)

Final Environmental Impact Statement (EIS)

FAA Record of Decision (ROD)

O'Hare Master Plan (Master Plan)

O'Hare International Airport Airport Layout Plan (ALP)

Bureau of Transportation Statistics Tables

Economic Studies

FAA Final Agency Decision for PFC 06-19-C-00-ORD (FAD 06-19)

FAA Final Agency Decision for PFC 08-21-C-00-ORD (FAD 08-21)

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix A

Appendix A

U.S. Department
of Transportation
**Federal Aviation
Administration**

Great Lakes Region
Illinois, Indiana, Michigan,
Minnesota, North Dakota,
Ohio, South Dakota,
Wisconsin

2300 East Devon Avenue
Des Plaines, Illinois 60018

November 21, 2005

Mr. John A. Roberson, Commissioner
Department of Aviation
Chicago O'Hare International Airport
P.O. Box 66142
Chicago, Illinois 60666

Rosemarie S. Andolino, Executive Director
O'Hare Modernization Program
8755 W. Higgins Road, Suite 700
Chicago, Illinois 60631

Chicago O'Hare International Airport
Letter of Intent No. AGL-06-01

I am pleased to inform you that in response to the City of Chicago's request for assistance under the Airport Improvement Program (AIP), as authorized by Title 49, United States Code, your request for a Letter of Intent (LOI) for the Chicago O'Hare International Airport has been approved.

Enclosed are the original and one copy of LOI No. AGL-06-01 for Chicago O'Hare International Airport (ORD) as issued by authority of the Administrator of the Federal Aviation Administration (FAA) on behalf of the United States of America.

The enclosed LOI No. AGL-06-01 sets forth the maximum Federal share of project costs included within the LOI project description and a schedule of payments over fifteen years commencing in fiscal year 2006. The terms of this LOI may be adjusted as outlined in the LOI if project progress, or FAA's obligation authority, is less than expected.

We look forward to continuing our working relationship toward the successful completion of this major system capacity enhancement project. Our office will work closely with you to answer any questions that you may have and to administer the funding provisions of the LOI. The FAA's analysis supporting this LOI together with attachments consisting of FAA memoranda, consultants' reports, and responses to comments may be accessed on the web at http://www.agl.faa.gov/OMP/LOI/LOI.htm.

Sincerely,

Philip M. Smithmeyer, Manager
Chicago Airports District Office

Enclosure

LETTER OF INTENT AGL-06-01
Chicago O'Hare International Airport
Chicago, Illinois

The Federal Aviation Administration (FAA) hereby announces its intention, effective this date, in accordance with the provisions of section 47110(e) of title 49, United States Code (Act), to obligate funds from current and future budget authority to issue grants to pay the City of Chicago (City) for the United States share of allowable costs at the Chicago O'Hare International Airport for the project described as follows:

> O'Hare Modernization Program – Phase 1 including new future Runway 9L-27R; extension of future Runway 10L-28R (existing Runway 9R-27L); future Runway 10C-28C; and associated runway enabling projects, including associated taxiway systems, navigation aids installation and upgrade, site utilities construction, and existing facilities relocation

as more fully described in the Sponsor's application for a Letter of Intent, dated February 15, 2005.

The maximum United States obligation pursuant to this Letter of Intent for the Project described above shall be an amount not to exceed $337,200,000.

Upon application by the City and in compliance with grant requirements, the FAA shall issue grants from current or future budget authority, as funds become available, according to the following schedule:

	Federal Funds		
Fiscal Year	Apportionment	Discretionary	Total
2006	$ 9,300,000	$ 20,000,000	$ 29,300,000
2007	$ 8,400,000	$ 20,000,000	$ 28,400,000
2008	$ 6,500,000	$ 20,000,000	$ 26,500,000
2009	$ 6,500,000	$ 20,000,000	$ 26,500,000
2010	$ 6,500,000	$ 20,000,000	$ 26,500,000
2011	$ 0	$ 20,000,000	$20,000,000
2012	$ 0	$ 20,000,000	$ 20,000,000
2013	$ 0	$ 20,000,000	$ 20,000,000
2014	$ 0	$ 20,000,000	$ 20,000,000
2015	$ 0	$ 20,000,000	$ 20,000,000
2016	$ 0	$ 20,000,000	$ 20,000,000
2017	$ 0	$ 20,000,000	$ 20,000,000
2018	$ 0	$ 20,000,000	$ 20,000,000
2019	$ 0	$ 20,000,000	$ 20,000,000
2020	$ 0	$ 20,000,000	$ 20,000,000
Total:	$37,200,000	$300,000,000	$337,200,000

It is expressly understood by the FAA and the City that the amounts set forth above under "apportionment" are estimated, and that the actual apportionment amounts will vary with the actual levels of passenger enplanements, total program level for the Airport Improvement Program and with any revision of the existing statutory formula for calculating such apportionments. Should the amount actually apportioned to the City in any fiscal year be less than the amount estimated above for such fiscal year, the amount listed above under "discretionary" for such fiscal year shall not be increased to supplement the lesser amount actually apportioned to the City. If, in any fiscal year, funds apportioned to a sponsor are greater than those listed in this Letter of Intent, the FAA, at its option, may adjust the payment schedule to increase the amount listed for apportionments with a corresponding reduction in the amount listed for discretionary funds.

The announcement of this intention shall not be deemed an obligation of the United States Government under section 1501 of Title 31, United States Code, nor shall this Letter of Intent be deemed an administrative commitment for funding. This Letter of Intent shall be regarded as an intention to obligate funds from current and future budget authority. No obligation or administrative commitment may be made pursuant to this Letter of Intent except as funds are provided in authorization and appropriation acts.

The FAA may, from time to time, following consultation with the City, amend this Letter of Intent to adjust the payment schedule or the maximum United States obligation specified above, or both. Such adjustment may be made by the Federal Aviation Administration Administrator when occasioned by changes in the actual allowable costs of the Project, in the actual time required to complete the Project, in actual or estimated future obligating authority, or otherwise, when determined at the Administrator's discretion to be in the best interests of the United States.

The FAA will give full consideration to the aggregate amount of future obligations and the payments scheduled under all outstanding Letters of Intent in formulating its annual budget requests. A statutory restriction on total obligating authority in a future fiscal year, however, may necessitate a reduction in funds to be apportioned for that year, pursuant to section 47115(g) of the Act, or in discretionary funds available for obligation under section 47115 of the Act, or both. This may result in a concurrent reduction in a payment scheduled under this Letter of Intent. In such event, the ratio of the discretionary fund component of a scheduled payment, as reduced, to such component prior to reduction, shall be not less than the ratio of discretionary funds newly available for obligation in the fiscal year in which such reduction occurs, to the total discretionary funds made available for obligation in the fiscal year in which this Letter of Intent was executed.

If, in any given year and for whatever reason (including such reasons as inability of sponsor to make sufficient progress for the project or a lapse in obligating authority under chapter 471 of the Act), a payment is deferred in whole or in part, any later reimbursement for the deferred amounts will be subject to negotiation between the parties, subject again to the availability of funds and statutory authority. No

amendment to this Letter of Intent shall impair the City's eligibility for future reimbursement of the United States share of allowable Project costs pursuant to section 47110(e) of the Act, as funds become available.

The City should understand that, having proceeded with the Project without the aid of funds under the Act, in order to receive reimbursement as specified in the schedule set forth above, it must comply with all statutory and administrative requirements that would be applicable to the Project were the Project carried out with funds made available under the Act. Failure to comply with all such requirements, or failure to proceed with the Project in a timely manner, may lead to revocation of this Letter of Intent.

Further, in the event of default on the part of the City, or any other action by the City which threatens the Federal investment in the Project, the FAA will pursue all remedies available in law or equity, including but not limited to the withholding of future financial assistance (provided that applicable hearing requirements are complied with) and termination or suspension of all or part of the violated grant agreement.

UNITED STATES OF AMERICA
FEDERAL AVIATION ADMINISTRATION

Manager, Chicago Airports District Office

NOVEMBER 21, 2005
Date

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix B

Chicago Tribune

November 24, 2008

O'Hare expansion

The Tribune's headline "Airlines: Stop O'Hare expansion; As a new runway opens, 6 top airlines break with City Hall and call further construction 'ill-conceived' and 'premature'" (Page 1, Nov. 20) is inaccurate and the article is misleading. The airlines have never told the city to "stop O'Hare expansion."

Additionally the airlines are not "breaking with City Hall."

The article is misleading because it takes out of context portions of a letter that was sent to federal officials last June regarding an application to use passenger facilities charges for planning purposes.

United Airlines and American Airlines have for years supported the runway project at O'Hare, and though in June we may have disagreed with the size of the city's Passenger Facility Charge application, we remain committed to working with the city to enhance and improve this world-class airport.

The article says the airlines have called for halting the next phase of the expansion project, which is not true.

The airlines have had very positive discussions with the city about the O'Hare Modernization Program and these talks continue. In the current economic environment, capital resources are scarce for all, and as we have discussed with the city, we need to make sure there is a sound business case as we make all investment decisions.

United Airlines and American Airlines are extremely pleased with the opening of the new runway at Chicago O'Hare on Thursday.

This is a momentous event for the City of Chicago and the airlines serving O'Hare and, importantly, for all our customers.

We congratulate the city on this great achievement.

-- Ajay Singh, vice president, Corporate Real Estate, United Airlines

-- Laura Einspanier, vice president, Corporate Real Estate, American Airlines

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix C

Appendix C

MEMORANDUM VIA-E-MAIL
Ricondo & Associates, Inc.

Date: February 13, 2009

To: Doug Trezise
Kristina Woodward

From: Malcolm Klein

Subject: CONSTRAINED ACTIVITY – O'HARE INTERNATIONAL AIRPORT

Table 3-3 provides constrained activity projections for O'Hare International Airport (ORD) for use in the upcoming BCA. Several points regarding these projections are discussed below:

1. The FAA prepared their most recent Terminal Area Forecast (TAF) for ORD in December 2008 (the 2008 TAF). These published forecasts were for federal fiscal years (FFY) 2008 through 2025, where the federal fiscal year ends September 30. The FAA subsequently extrapolated these forecasts to FFY 2035 for our use.
2. The 2008 TAF for total enplanements and operations were converted from FFY to calendar years (CY) 2008 through 2034 on a pro rata basis (e.g., CY 2008 = FFY 2008 x 75% + FFY 2009 x 25%).
3. Total operations are considered constrained at ORD when they reach 1,150,000 levels. As shown in Table 3.3, this constraint occurs in CY 2024 and held constant through CY 2034.
4. The FAA also provided detailed assumptions regarding unconstrained average seat and passenger load factors included in the 2008 TAF for ORD broken out by domestic air carriers, international air carriers, and commuters. To project ORD enplanements under the constrained scenario, the following changes to the FAA's assumed average seat and load factors during the constrained years were as follows:
    a. The annual increase in average seats for domestic air carriers was changed from 0.50 seats to 1.25 seats and the load factor peaked at 83.0 percent in 2034 compared to 81.2 percent in the 2008 TAF.
    b. The annual increase in average seats for international air carriers was changed from 0.25 seats to 0.50 seats and the load factor peaked at 80.0 percent in 2034 compared to 76.3 percent in the 2008 TAF.
    c. The annual increase in average seats for commuters was changed from 0.50 seats to 1.00 seats and the load factor peaked at 75.0 percent in 2034 compared to 71.1 percent in the 2008 TAF.

5. The relationship of “enplanements = departures x average seats x load factor” was applied to the changed assumptions to provide projections of enplanements for ORD under the constrained scenario. As shown in Table 3-3, total enplanements are projected to increase from 47.4 million in 2023 (the year prior to the constraint) to 55.1 million in 2034. This increase represents a compounded annual growth rate of 1.3 percent during this period, compared to 2.2 percent under the unconstrained scenario.

Table 3-3

Unconstrained and Constrained Forecasts - O'Hare International Airport

	UNCONSTRAINED		CONSTRAINED	
	Operations	Enplanements	Operations	Enplanements
2008	883,427	34,133,225	883,427	34,133,225
2009	828,608	32,152,853	828,608	32,152,853
2010	825,659	32,289,079	825,659	32,289,079
2011	838,443	33,058,401	838,443	33,058,401
2012	866,996	34,468,473	866,996	34,468,473
2013	895,522	35,840,005	895,522	35,840,005
2014	922,645	37,145,601	922,645	37,145,601
2015	946,654	38,289,326	946,654	38,289,326
2016	969,176	39,350,607	969,176	39,350,607
2017	993,766	40,492,701	993,766	40,492,701
2018	1,017,468	41,585,837	1,017,468	41,585,837
2019	1,041,116	42,712,939	1,041,116	42,712,939
2020	1,064,593	43,861,043	1,064,593	43,861,043
2021	1,088,058	45,008,108	1,088,058	45,008,108
2022	1,112,451	46,183,656	1,112,451	46,183,656
2023	1,136,833	47,368,715	1,136,833	47,368,715
2024	1,161,700	48,590,782	1,150,000	48,565,452
2025	1,187,169	49,855,260	1,150,000	49,197,081
2026	1,211,618	51,091,652	1,150,000	49,832,577
2027	1,236,546	52,351,526	1,150,000	50,471,940
2028	1,261,850	53,609,482	1,150,000	51,115,169
2029	1,288,122	54,903,910	1,150,000	51,762,265
2030	1,314,715	56,222,074	1,150,000	52,413,227
2031	1,340,985	57,536,647	1,150,000	53,068,056
2032	1,367,546	58,874,217	1,150,000	53,726,752
2033	1,393,587	60,201,294	1,150,000	54,389,314
2034	1,419,809	61,551,051	1,150,000	55,055,743
CAGR				
23 - 34	1.9%	2.2%	0.1%	1.3%

Sources: FAA Terminal Area Forecasts; Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., February 2009

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix D

Appendix D

Appendix D – Gate Operating Limits

During the EIS process, FAA established that 1,150,000 annual operations could be supported by the existing terminal gate facilities at the Airport. While the City believes that the number of gates at the Airport will not limit operations, and that carriers will reconfigure existing gates and/or utilize hardstand facilities if gate needs exceed current availability, for the purposes of utilizing conservative assumptions for the determination of benefits, a capping of operations due to gate limitations was included in the BCA.

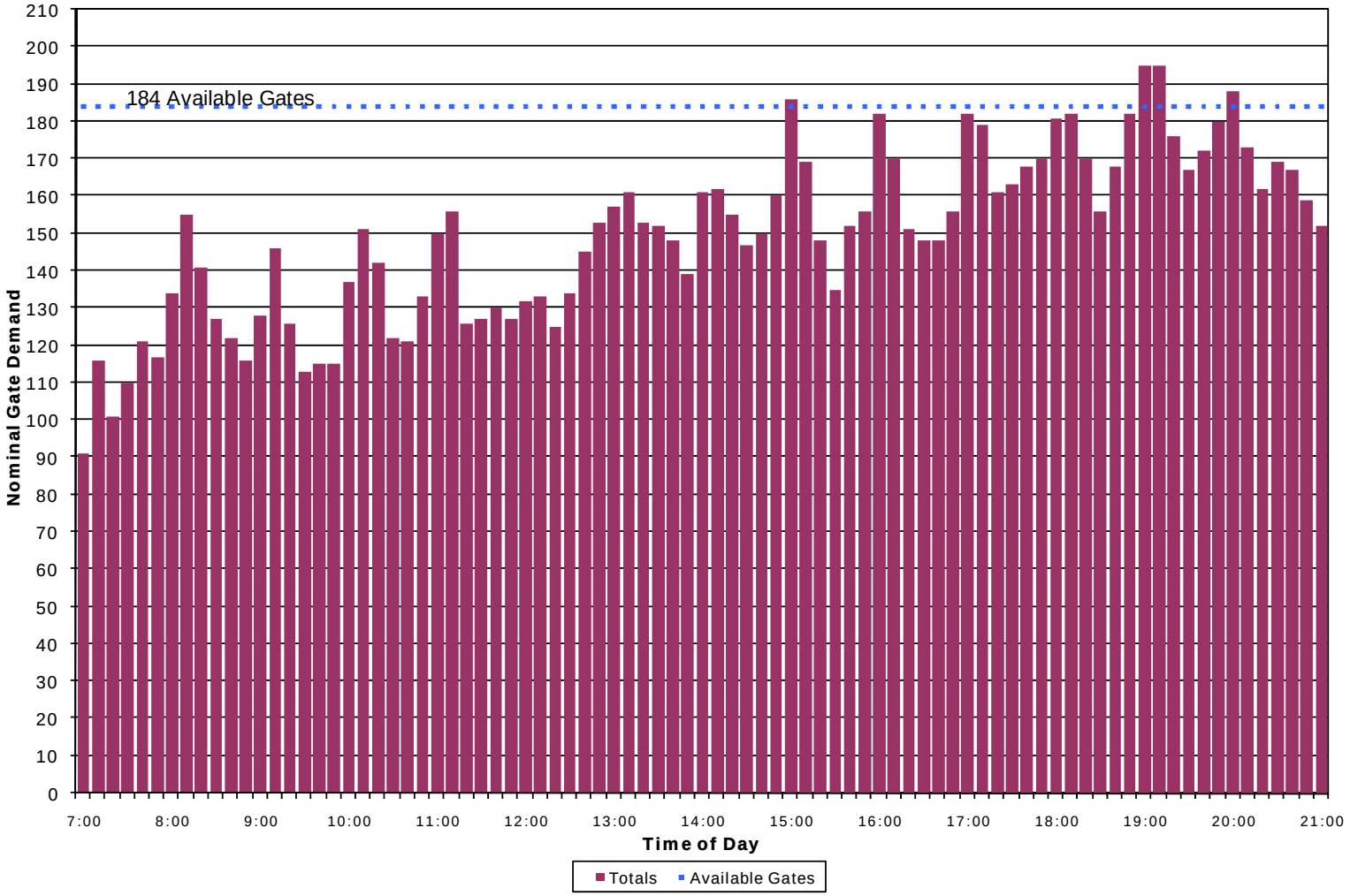
In order to assess the appropriateness of the level established by the FAA, the 2013 schedule utilized in the EIS simulation modeling was reviewed. The 2013 PMAD schedule included 3,169 daily operations, which equates to an annual demand of 1,120,600 aircraft movements. Utilizing this schedule, a running total of aircraft on the ground was developed based on ten minute intervals, and presented in comparison to current gates. The number of gates at the Airport fluctuates significantly as carrier's modify existing facilities and/or double park commuter aircraft to accommodate changes in service patterns. Documented existing gate counts range from 184 utilized in the simulation modeling, to 189 contact gates and 20 hardstand positions identified in the O'Hare Master Plan and EIS. **Exhibit D-1** presents the resulting gate demand profile in relation to a conservative accounting of 184 total gates at the Airport.

As shown, demand exceeds the current gate capacity in only four ten minute periods of the day, with peak gate requirements occurring in the late afternoon/early evening hours. Perhaps more importantly, the analysis demonstrates significant gate available during other periods during the day, suggesting the ability to accommodate traffic beyond that modeled.

Based on this analysis, it would appear that the existing facilities could accommodate more than the 1,120,600 annual operations represented by the schedule. Aside from the peak hours in the late afternoon, the analysis suggests significant gate availability. As such, the 1,150,000 annual operations established by the FAA as the limiting capacity of the terminal gate facilities seems reasonable, and is utilized as a conservative assumption in the BCA.

Exhibit D-1

3,169 Peak Month Average Day Operations with Existing Gates Aircraft on the Ground (10-minute period)



Source: EIS 2013 PMAD Schedule, 2004; Ricondo & Associates, Inc., 2009
Prepared by: Ricondo & Associates, Inc.

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix E

Table 1

Peak Month Average Day (PMAD) Conversion to Average Annual Day (ADD)

This table contains the peak month average day (PMAD) delays and travel times averaged over each experiment's multi-run

		Average Delay per Phase of Operation (minutes)					Average Delay per All Airport Operations (minutes)	Average Unimpeded Travel Times (minutes)						Average Time in Operational Phase (minutes)					
								Arrivals			Departures			Arrivals			Departures		
	Experiment	ORD Departure gate delay at ORD	ORD Arrival predeparture ground delay at origin	ORD Arrival ground delay at ORD	ORD Departure ground delay at ORD	ORD Arrival sequencing and vectoring air delay	Total Airport Delay	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total
PMAD	90	1.2	8.7	1.0	4.4	2.3	8.7	123.3	12.0	135.3	117.9	10.5	128.4	125.6	21.6	147.1	117.9	16.1	134.0
	91	2.1	8.8	1.6	10.4	4.5	13.7	123.4	11.2	134.6	117.7	12.3	130.0	127.9	21.5	149.4	117.7	24.8	142.5
	92	0.6	3.6	0.3	2.9	2.2	4.8	122.3	11.6	134.0	117.9	9.7	127.6	124.6	15.5	140.1	117.9	13.2	131.1
	93	6.4	21.3	0.5	14.8	8.3	25.6	123.2	11.4	134.6	118.0	12.3	130.3	131.5	33.2	164.7	118.0	33.5	151.5
	94	1.6	75.0	0.4	13.0	49.7	69.8	122.7	15.1	137.8	117.5	13.2	130.7	172.4	90.5	262.9	117.5	27.7	145.3
	Annualized	1.1	8.8	0.5	4.6	4.8	9.9	122.6	11.8	134.4	117.8	10.3	128.1	127.4	21.1	148.5	117.8	16.0	133.8
AAD	90	1.2	8.3	0.9	4.2	2.2	8.4	123.3	12.0	135.3	117.9	10.5	128.4	125.5	21.2	146.6	117.9	15.8	133.7
	91	2.0	8.4	1.5	10.0	4.3	13.1	123.4	11.2	134.6	117.7	12.3	130.0	127.7	21.1	148.8	117.7	24.3	142.0
	92	0.6	3.4	0.3	2.8	2.1	4.6	122.3	11.6	134.0	117.9	9.7	127.6	124.5	15.4	139.8	117.9	13.1	130.9
	93	6.1	20.4	0.5	14.2	7.9	24.6	123.2	11.4	134.6	118.0	12.3	130.3	131.2	32.3	163.5	118.0	32.6	150.6
	94	1.5	72.0	0.4	12.4	47.7	67.0	122.7	15.1	137.8	117.5	13.2	130.7	170.4	87.5	257.9	117.5	27.2	144.7
	Annualized	1.1	8.5	0.5	4.4	4.6	9.5	122.6	11.8	134.4	117.8	10.3	128.1	127.2	20.8	148.0	117.8	15.7	133.6

Source: OMP EIS TAAM Simulation Output Files
Prepared by: Ricondo & Associates, Inc.

Table 2

Peak Month Average Day (PMAD) Conversion to Average Annual Day (ADD)

This table contains the peak month average day (PMAD) delays and travel times averaged over each experiment's multi-run

		Average Delay per Phase of Operation (minutes)					Average Delay per All Airport Operations (minutes)	Average Unimpeded Travel Times (minutes)						Average Time in Operational Phase (minutes)					
								Arrivals			Departures			Arrivals			Departures		
	Experiment	ORD Departure gate delay at ORD	ORD Arrival predeparture ground delay at origin	ORD Arrival ground delay at ORD	ORD Departure ground delay at ORD	ORD Arrival sequencing and vectoring air delay	Total Airport Delay	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total
PMAD	38	0.7	9.3	1.0	5.4	2.6	9.4	127.9	11.8	139.6	122.4	10.7	133.1	130.4	22.0	152.5	122.4	16.8	139.2
	39	0.9	9.5	1.2	10.1	5.7	13.7	128.0	11.1	139.1	122.5	12.5	134.9	133.7	21.9	155.5	122.5	23.4	145.9
	41	0.5	3.9	0.4	3.2	2.4	5.2	126.9	11.5	138.4	122.4	9.8	132.2	129.3	15.7	145.0	122.4	13.5	135.9
	42	6.1	26.1	0.6	16.5	11.1	30.2	127.9	11.2	139.1	122.7	12.5	135.2	138.9	37.9	176.8	122.7	35.1	157.7
	43	1.5	82.0	0.4	16.0	51.7	75.8	127.3	14.8	142.2	122.2	13.4	135.6	179.1	97.2	276.3	122.2	30.9	153.1
	Annualized	0.9	9.7	0.5	5.2	5.2	10.8	127.2	11.6	138.8	122.4	10.4	132.8	132.4	21.9	154.3	122.4	16.4	138.8
AAD	38	0.6	8.9	0.9	5.2	2.5	9.1	127.9	11.8	139.6	122.4	10.7	133.1	130.3	21.6	151.9	122.4	16.6	138.9
	39	0.9	9.2	1.1	9.7	5.5	13.2	128.0	11.1	139.1	122.5	12.5	134.9	133.5	21.4	154.9	122.5	23.0	145.5
	41	0.5	3.7	0.4	3.1	2.3	5.0	126.9	11.5	138.4	122.4	9.8	132.2	129.2	15.5	144.8	122.4	13.4	135.7
	42	5.9	25.0	0.6	15.8	10.6	28.9	127.9	11.2	139.1	122.7	12.5	135.2	138.5	36.8	175.3	122.7	34.1	156.8
	43	1.4	78.7	0.4	15.3	49.6	72.7	127.3	14.8	142.2	122.2	13.4	135.6	177.0	93.9	270.9	122.2	30.2	152.4
	Annualized	0.8	9.3	0.5	5.0	5.0	10.3	127.2	11.6	138.8	122.4	10.4	132.8	132.2	21.5	153.7	122.4	16.2	138.5

Source: OMP EIS TAAM Simulation Output Files
Prepared by: Ricondo & Associates, Inc.

Table 3

Peak Month Average Day (PMAD) Conversion to Average Annual Day (ADD)

This table contains the peak month average day (PMAD) delays and travel times averaged over each experiment's multi-run

		Average Delay per Phase of Operation (minutes)					Average Delay per All Airport Operations (minutes)	Average Unimpeded Travel Times (minutes)						Average Time in Operational Phase (minutes)					
								Arrivals			Departures			Arrivals			Departures		
	Experiment	ORD Departure gate delay at ORD	ORD Arrival predeparture ground delay at origin	ORD Arrival ground delay at ORD	ORD Departure ground delay at ORD	ORD Arrival sequencing and vectoring air delay	Total Airport Delay	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total
PMAD	95	1.2	12.2	2.4	7.9	6.8	15.3	133.1	11.9	145.1	126.8	10.8	137.7	139.9	26.6	166.5	126.8	19.9	146.8
	96	1.7	12.5	1.4	14.7	15.0	22.6	133.2	11.4	144.6	126.6	13.6	140.2	148.2	25.3	173.5	126.6	29.9	156.5
	97	0.7	4.4	0.5	4.5	2.8	6.5	132.1	11.6	143.8	126.9	9.9	136.8	135.0	16.5	151.5	126.9	15.1	141.9
	98	5.3	39.6	0.6	23.3	23.6	46.2	132.8	12.1	144.9	127.2	13.3	140.4	156.4	52.2	208.6	127.2	41.9	169.1
	99	4.8	103.3	0.4	18.1	65.2	95.8	132.6	15.0	147.6	126.9	13.7	140.5	197.7	118.7	316.4	126.9	36.5	163.4
	Annualized	1.2	12.4	0.9	7.1	8.0	14.8	132.4	11.8	144.3	126.8	10.6	137.4	140.4	25.1	165.5	126.8	19.0	145.8
AAD	95	1.1	11.7	2.3	7.6	6.5	14.6	133.1	11.9	145.1	126.8	10.8	137.7	139.6	26.0	165.6	126.8	19.6	146.4
	96	1.6	12.0	1.3	14.1	14.4	21.7	133.2	11.4	144.6	126.6	13.6	140.2	147.6	24.7	172.3	126.6	29.3	155.8
	97	0.7	4.3	0.4	4.3	2.7	6.2	132.1	11.6	143.8	126.9	9.9	136.8	134.8	16.3	151.2	126.9	14.9	141.7
	98	5.1	38.0	0.6	22.4	22.7	44.3	132.8	12.1	144.9	127.2	13.3	140.4	155.4	50.6	206.1	127.2	40.7	167.9
	99	4.6	99.1	0.4	17.4	62.5	92.0	132.6	15.0	147.6	126.9	13.7	140.5	195.1	114.5	309.6	126.9	35.6	162.4
	Annualized	1.2	11.9	0.8	6.9	7.6	14.2	132.4	11.8	144.3	126.8	10.6	137.4	140.1	24.6	164.6	126.8	18.6	145.5

Source: OMP EIS TAAM Simulation Output Files
Prepared by: Ricondo & Associates, Inc.

Table 4

Peak Month Average Day (PMAD) Conversion to Average Annual Day (ADD)

This table contains the peak month average day (PMAD) delays and travel times averaged over each experiment's multi-run

		Average Delay per Phase of Operation (minutes)					Average Delay per All Airport Operations (minutes)	Average Unimpeded Travel Times (minutes)						Average Time in Operational Phase (minutes)					
								Arrivals			Departures			Arrivals			Departures		
	Experiment	ORD Departure gate delay at ORD	ORD Arrival predeparture ground delay at origin	ORD Arrival ground delay at ORD	ORD Departure ground delay at ORD	ORD Arrival sequencing and vectoring air delay	Total Airport Delay	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total
PMAD	84	0.7	0.0	0.3	2.8	2.8	3.3	127.9	14.3	142.2	122.6	10.9	133.5	130.6	14.7	145.3	122.6	14.4	137.0
	85	0.6	0.0	0.3	2.4	3.7	3.5	128.2	14.3	142.6	122.6	11.1	133.7	132.0	14.7	146.6	122.6	14.1	136.7
	86	0.6	0.1	0.6	2.9	3.5	3.8	127.5	15.4	142.9	122.8	11.0	133.8	131.0	16.1	147.1	122.8	14.5	137.3
	87	0.6	0.1	0.7	2.2	3.9	3.7	128.0	16.1	144.0	122.5	10.9	133.3	131.9	16.8	148.7	122.5	13.6	136.0
	88	0.4	9.4	0.4	5.7	7.8	11.9	127.9	13.8	141.6	121.7	11.4	133.1	135.7	23.6	159.3	121.7	17.5	139.2
	89	0.6	9.2	0.5	4.7	4.1	9.5	128.8	16.6	145.4	122.4	11.6	134.0	132.9	26.3	159.1	122.4	16.9	139.3
	Annualized	0.6	0.9	0.5	2.8	3.8	4.3	127.8	15.3	143.1	122.6	11.0	133.6	131.6	16.8	148.3	122.6	14.4	137.0
AAD	84	0.6	0.0	0.3	2.7	2.6	3.2	127.9	14.3	142.2	122.6	10.9	133.5	130.5	14.7	145.1	122.6	14.2	136.8
	85	0.6	0.0	0.3	2.3	3.6	3.4	128.2	14.3	142.6	122.6	11.1	133.7	131.8	14.7	146.5	122.6	14.0	136.5
	86	0.5	0.1	0.5	2.8	3.4	3.6	127.5	15.4	142.9	122.8	11.0	133.8	130.9	16.0	146.9	122.8	14.3	137.1
	87	0.5	0.1	0.7	2.1	3.7	3.5	128.0	16.1	144.0	122.5	10.9	133.3	131.7	16.8	148.5	122.5	13.5	135.9
	88	0.4	9.1	0.4	5.4	7.5	11.4	127.9	13.8	141.6	121.7	11.4	133.1	135.4	23.2	158.6	121.7	17.3	139.0
	89	0.5	8.8	0.5	4.5	3.9	9.2	128.8	16.6	145.4	122.4	11.6	134.0	132.7	25.9	158.6	122.4	16.6	139.1
	Annualized	0.5	0.9	0.5	2.7	3.6	4.1	127.8	15.3	143.1	122.6	11.0	133.6	131.4	16.7	148.1	122.6	14.3	136.9

Source: OMP EIS TAAM Simulation Output Files
Prepared by: Ricondo & Associates, Inc.

Table 5

Peak Month Average Day (PMAD) Conversion to Average Annual Day (ADD)

This table contains the peak month average day (PMAD) delays and travel times averaged over each experiment's multi-run

		Average Delay per Phase of Operation (minutes)					Average Delay per All Airport Operations (minutes)	Average Unimpeded Travel Times (minutes)						Average Time in Operational Phase (minutes)					
								Arrivals			Departures			Arrivals			Departures		
	Experiment	ORD Departure gate delay at ORD	ORD Arrival predeparture ground delay at origin	ORD Arrival ground delay at ORD	ORD Departure ground delay at ORD	ORD Arrival sequencing and vectoring air delay	Total Airport Delay	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total	Airborne	Ground	Total
PMAD	44	0.5	0.0	0.3	3.5	3.0	3.7	133.1	14.4	147.5	127.2	11.0	138.2	136.1	14.7	150.8	127.2	15.0	142.2
	45	0.5	0.0	0.4	2.9	4.7	4.2	133.4	14.3	147.7	127.2	11.2	138.4	138.1	14.7	152.8	127.2	14.5	141.7
	46	0.5	0.1	0.5	3.2	3.9	4.1	132.7	15.2	147.8	127.2	10.8	138.1	136.6	15.8	152.4	127.2	14.5	141.7
	47	0.5	0.1	0.6	2.5	4.9	4.2	133.1	15.4	148.5	127.0	10.6	137.5	138.0	16.0	154.0	127.0	13.5	140.5
	48	0.4	11.9	0.4	7.9	13.8	17.2	133.1	13.8	146.9	126.8	11.7	138.4	146.9	26.1	173.0	126.8	19.9	146.7
	49	0.4	15.0	0.7	7.8	8.1	16.0	133.5	16.6	150.2	126.7	11.6	138.2	141.6	32.3	174.0	126.7	19.8	146.5
	Annualized	0.5	1.3	0.5	3.4	4.8	5.2	133.0	15.0	148.0	127.1	10.9	138.0	137.7	16.9	154.6	127.1	14.8	141.9
AAD	44	0.5	0.0	0.3	3.3	2.9	3.5	133.1	14.4	147.5	127.2	11.0	138.2	136.0	14.7	150.7	127.2	14.8	142.0
	45	0.4	0.0	0.4	2.8	4.5	4.0	133.4	14.3	147.7	127.2	11.2	138.4	137.9	14.7	152.6	127.2	14.4	141.5
	46	0.4	0.1	0.5	3.1	3.7	3.9	132.7	15.2	147.8	127.2	10.8	138.1	136.4	15.8	152.2	127.2	14.3	141.6
	47	0.5	0.1	0.5	2.4	4.7	4.1	133.1	15.4	148.5	127.0	10.6	137.5	137.8	16.0	153.8	127.0	13.4	140.4
	48	0.3	11.5	0.4	7.6	13.2	16.5	133.1	13.8	146.9	126.8	11.7	138.4	146.3	25.6	171.9	126.8	19.6	146.4
	49	0.4	14.4	0.7	7.5	7.8	15.4	133.5	16.6	150.2	126.7	11.6	138.2	141.3	31.7	173.0	126.7	19.5	146.1
	Annualized	0.5	1.3	0.5	3.3	4.6	5.0	133.0	15.0	148.0	127.1	10.9	138.0	137.6	16.8	154.3	127.1	14.6	141.7

Source: OMP EIS TAAM Simulation Output Files
Prepared by: Ricondo & Associates, Inc.

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix F

Appendix F

Table F-1

Project Cash Flow Schedule (in 2008 dollars)

OMP Completion Phase Airfield	Base Year FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	Period Total
Runway 9C-27C	$817,974	$40,134,867	$312,297,610	$512,289,697	$288,528,157	$222,390,828	$93,229,054	$1,469,688,187
Runway 9R Extension	$817,974	$11,011,358	$35,159,241	$64,240,025	$171,767,659	$52,177,904	$22,013,398	$357,187,559
Runway 10R-28L	$817,974	$15,954,344	$79,155,597	$239,034,494	$169,330,142	$67,193,130	$6,575,519	$578,061,200
Total OMP Completion Phase Airfield	$2,453,922	$67,100,569	$426,612,448	$815,564,215	$629,625,957	$341,761,862	$121,817,971	$2,404,936,946
World Gateway Program Taxiway Improvement	$817,974	$1,272,772	$5,992,635	$83,285,982	$150,805,951			$242,175,314
Total LOI Projects	$3,271,896	$68,373,341	$432,605,083	$898,850,198	$780,431,909	$341,761,862	$121,817,971	$2,647,112,260
OMP Completion Phase Noise Program	$0	$0	$0	$27,023,919	$28,704,636	$25,757,175	$23,211,591	$104,697,321
Total Proposed Action	$3,271,896	$68,373,341	$432,605,083	$925,874,117	$809,136,545	$367,519,037	$145,029,562	$2,751,809,581

Source: OMP Project Management Office, Feb. 2009

Prepared by: Ricondo & Associates, Inc.

Table F-2

Incremental O&M Expense (in millions of 2008 dollars)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Total Completion Phase Airfield	0.0	0.0	0.0	0.0	0.0	7.5	11.4	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2032	2032
Incremental O&M Impact by Proposed Runway																											
Runway 9C-27C	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$1.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2
Runway 9R-27L Extension	$0.0	$0.0	$0.0	$0.0	$0.0	$1.6	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1	$3.1
Runway 10R-28L	$0.0	$0.0	$0.0	$0.0	$0.0	$5.9	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1	$7.1
Total	$0.0	$0.0	$0.0	$0.0	$0.0	$7.5	$11.4	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3	$24.3

Source: City of Chicago Projected Rates Model, Feb. 2009.

Prepared by: Ricondo & Associates, Inc.

Table F-3

Average Travel Times per Operation

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Activity																				
Constrained Total Aircraft Operations (thousands)	946.7	969.2	993.8	1,017.5	1,041.1	1,064.6	1,088.1	1,112.5	1,136.8	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0
Passenger Airline and All-Cargo Ops (thousands)	925.2	947.2	971.2	994.4	1,017.5	1,040.5	1,063.4	1,087.2	1,111.1	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0
Estimated Peak Month Average Day Operations	2,675	2,739	2,808	2,875	2,942	3,008	3,075	3,143	3,212	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250	3,250
Average Annual Day Operations	2,594	2,655	2,723	2,788	2,852	2,917	2,981	3,048	3,115	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151
EIS Phase 1 Travel Times (In minutes):																				
Average Travel Time per Operation																				
Unimpeded Travel Time	131.3	131.3	131.3	131.3	133.5	135.8	138.3	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8
Delay	6.1	6.7	7.4	8.2	9.1	10.0	11.0	12.2	13.5	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
Total Travel Time In Operational Phase	137.4	138.0	138.7	139.5	142.6	145.8	149.3	153.0	154.3	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1
Full Build Travel Times (In minutes):																				
Average Travel Time per Operation																				
Unimpeded Travel Time	133.8	133.8	133.8	133.8	136.1	138.4	140.7	143.0	143.0	143.0	143.0	143.0	143.0	143.0	143.0	143.0	143.0	143.0	143.0	143.0
Delay	2.7	2.8	3.1	3.3	3.5	3.8	4.1	4.4	4.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Total Travel Time	136.5	136.7	136.9	137.1	139.6	142.2	144.8	147.4	147.8	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0
Travel Time Savings	0.9	1.3	1.8	2.3	2.9	3.6	4.5	5.6	6.5	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1

Sources: Area Forecast, FAA 2009, and Ricondo & Associates, Inc. 2009; Travel & Delay Time- EIS Simulations, 2004, Ricondo & Associates, Inc., 2009

Prepared by: Ricondo & Associates, Inc.

Table F-4

Project Benefits

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
ANNUAL OPERATIONS																				
Total Aircraft Operations (thousands)	946.7	969.2	993.8	1,017.5	1,041.1	1,064.6	1,088.1	1,112.5	1,136.8	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0
Estimated Passenger Airline and All-Cargo Operations (thousands)	925.2	947.2	971.2	994.4	1,017.5	1,040.5	1,063.4	1,087.2	1,111.1	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0	1,150.0
AIRCRAFT TRAVEL TIME (MINUTES) PER OPERATION																				
Base Case: EIS Phase 1	137.4	138.0	138.7	139.5	142.6	145.8	149.3	153.0	154.3	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1	155.1
With Proposed Action	136.5	136.7	136.9	137.1	139.6	142.2	144.8	147.4	147.8	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0
Difference in Travel Time per Operation between scenarios (minutes)	0.9	1.3	1.8	2.3	2.9	3.6	4.5	5.6	6.5	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
AIRCRAFT DELAY BENEFITS																				
Total Incremental Aircraft Travel Time Minutes (millions)	0.83	1.24	1.75	2.33	2.99	3.74	4.82	6.07	7.26	8.16	8.16	8.16	8.16	8.16	8.16	8.16	8.16	8.16	8.16	8.16
Average Aircraft Operating Savings per Minute	$65.86	$65.86	$65.86	$65.86	$65.73	$65.60	$64.96	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32	$64.32
Total Aircraft Savings (millions)	$54.7	$81.5	$115.4	$153.3	$196.4	$245.5	$313.2	$390.7	$467.1	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8
PASSENGER DELAY BENEFITS																				
Total Passengers (millions)	76.6	78.7	81.0	83.2	85.4	87.7	90.0	92.4	94.7	97.1	98.4	99.7	100.9	102.2	103.5	104.8	106.1	107.5	108.8	110.1
Total Incremental Passenger Travel Time Minutes (millions)	68.8	102.8	146.1	194.7	250.9	315.5	408.1	516.1	619.3	689.2	698.1	707.2	716.2	725.4	734.5	743.8	753.1	762.4	771.8	781.3
Passenger Delay Savings per Minute	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54	$0.54
Total Passenger Delay Savings (millions)	$36.8	$55.0	$78.2	$104.1	$134.2	$168.8	$218.3	$276.1	$331.3	$368.7	$373.5	$378.3	$383.2	$388.1	$393.0	$397.9	$402.9	$407.9	$412.9	$418.0
Total Passenger Delay Downstream Savings (millions)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
PROJECT BENEFITS																				
Total Incremental Aircraft Delay Savings (millions)	$54.7	$81.5	$115.4	$153.3	$196.4	$245.5	$313.2	$390.7	$467.1	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8	$524.8
Total Passenger Delay Savings (millions)	36.8	55.0	78.2	104.1	134.2	168.8	218.3	276.1	331.3	368.7	373.5	378.3	383.2	388.1	393.0	397.9	402.9	407.9	412.9	418.0
Total Passenger Delay Downstream Savings (millions)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Savings (millions)	$91.5	$136.5	$193.6	$257.4	$330.7	$414.3	$531.5	$666.8	$798.5	$893.5	$898.3	$903.1	$908.0	$912.9	$917.8	$922.7	$927.7	$932.7	$937.7	$942.8

Sources: Area Forecast, FAA 2009, and Ricondo & Associates, Inc. 2009; Travel & Delay Time- EIS Simulations, 2004, Ricondo & Associates, Inc., 2009. Aircraft Operating Cost - U.S. DOT, Form 41, fourth quarter of calendar year 2007 through third quarter of 2008; Value of Passenger Time - FAA-APO-03-1, Treatment of Values of Passenger Time in Economic Analysis, March 2003 and percentages of business and leisure travelers, Landrum & Brown, In-Flight Survey, 1997; Discount Rate - FAA, BCA Guidance, December 15, 1999.

Prepared by: Ricondo & Associates, Inc.

Table F-5

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	54.7	36.8	0.0	91.5	0.0	24.3	24.3	1.6058	57.0	15.2	41.8
2016	81.5	55.0	0.0	136.5	0.0	24.3	24.3	1.7182	79.5	14.2	65.3
2017	115.4	78.2	0.0	193.6	0.0	24.3	24.3	1.8385	105.3	13.2	92.1
2018	153.3	104.1	0.0	257.4	0.0	24.3	24.3	1.9672	130.9	12.4	118.5
2019	196.4	134.2	0.0	330.7	0.0	24.3	24.3	2.1049	157.1	11.6	145.5
2020	245.5	168.8	0.0	414.3	0.0	24.3	24.3	2.2522	184.0	10.8	173.1
2021	313.2	218.3	0.0	531.5	0.0	24.3	24.3	2.4098	220.5	10.1	210.4
2022	390.7	276.1	0.0	666.8	0.0	24.3	24.3	2.5785	258.6	9.4	249.1
2023	467.1	331.3	0.0	798.5	0.0	24.3	24.3	2.7590	289.4	8.8	280.6
2024	524.8	368.7	0.0	893.5	0.0	24.3	24.3	2.9522	302.7	8.2	294.4
2025	524.8	373.5	0.0	898.3	0.0	24.3	24.3	3.1588	284.4	7.7	276.7
2026	524.8	378.3	0.0	903.1	0.0	24.3	24.3	3.3799	267.2	7.2	260.0
2027	524.8	383.2	0.0	908.0	0.0	24.3	24.3	3.6165	251.1	6.7	244.3
2028	524.8	388.1	0.0	912.9	0.0	24.3	24.3	3.8697	235.9	6.3	229.6
2029	524.8	393.0	0.0	917.8	0.0	24.3	24.3	4.1406	221.7	5.9	215.8
2030	524.8	397.9	0.0	922.7	0.0	24.3	24.3	4.4304	208.3	5.5	202.8
2031	524.8	402.9	0.0	927.7	0.0	24.3	24.3	4.7405	195.7	5.1	190.6
2032	524.8	407.9	0.0	932.7	0.0	24.3	24.3	5.0724	183.9	4.8	179.1
2033	524.8	412.9	0.0	937.7	0.0	24.3	24.3	5.4274	172.8	4.5	168.3
2034	524.8	418.0	0.0	942.8	0.0	24.3	24.3	5.8074	162.3	4.2	158.1
Total	$7,790.5	$5,727.3	$0.0	$13,517.7	$2,748.5	$505.8	$3,254.3		$3,968.0	$2,358.3	$1,609.7
Present Value											
									$3,968.0	$2,358.3	$1,609.7

Benefit-Cost Ratio:	**1.68**

2008 project costs are a sunk costs and not included in the BCA analysis.

Table F-6

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars) Passengers held constant at constrained demand level
Increased Costs 25%

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	85.5	0.0	85.5	1.0700	0.0	79.9	(79.9)
2010	0.0	0.0	0.0	0.0	540.8	0.0	540.8	1.1449	0.0	472.3	(472.3)
2011	0.0	0.0	0.0	0.0	1,157.3	0.0	1,157.3	1.2250	0.0	944.7	(944.7)
2012	0.0	0.0	0.0	0.0	1,011.4	0.0	1,011.4	1.3108	0.0	771.6	(771.6)
2013	0.0	0.0	0.0	0.0	459.4	7.5	466.9	1.4026	0.0	332.9	(332.9)
2014	0.0	0.0	0.0	0.0	181.3	11.4	192.7	1.5007	0.0	128.4	(128.4)
2015	54.7	36.8	0.0	91.5	0.0	24.3	24.3	1.6058	57.0	15.2	41.8
2016	81.5	55.0	0.0	136.5	0.0	24.3	24.3	1.7182	79.5	14.2	65.3
2017	115.4	78.2	0.0	193.6	0.0	24.3	24.3	1.8385	105.3	13.2	92.1
2018	153.3	104.1	0.0	257.4	0.0	24.3	24.3	1.9672	130.9	12.4	118.5
2019	196.4	134.2	0.0	330.7	0.0	24.3	24.3	2.1049	157.1	11.6	145.5
2020	245.5	168.8	0.0	414.3	0.0	24.3	24.3	2.2522	184.0	10.8	173.1
2021	313.2	218.3	0.0	531.5	0.0	24.3	24.3	2.4098	220.5	10.1	210.4
2022	390.7	276.1	0.0	666.8	0.0	24.3	24.3	2.5785	258.6	9.4	249.1
2023	467.1	331.3	0.0	798.5	0.0	24.3	24.3	2.7590	289.4	8.8	280.6
2024	524.8	368.7	0.0	893.5	0.0	24.3	24.3	2.9522	302.7	8.2	294.4
2025	524.8	373.5	0.0	898.3	0.0	24.3	24.3	3.1588	284.4	7.7	276.7
2026	524.8	378.3	0.0	903.1	0.0	24.3	24.3	3.3799	267.2	7.2	260.0
2027	524.8	383.2	0.0	908.0	0.0	24.3	24.3	3.6165	251.1	6.7	244.3
2028	524.8	388.1	0.0	912.9	0.0	24.3	24.3	3.8697	235.9	6.3	229.6
2029	524.8	393.0	0.0	917.8	0.0	24.3	24.3	4.1406	221.7	5.9	215.8
2030	524.8	397.9	0.0	922.7	0.0	24.3	24.3	4.4304	208.3	5.5	202.8
2031	524.8	402.9	0.0	927.7	0.0	24.3	24.3	4.7405	195.7	5.1	190.6
2032	524.8	407.9	0.0	932.7	0.0	24.3	24.3	5.0724	183.9	4.8	179.1
2033	524.8	412.9	0.0	937.7	0.0	24.3	24.3	5.4274	172.8	4.5	168.3
2034	524.8	418.0	0.0	942.8	0.0	24.3	24.3	5.8074	162.3	4.2	158.1
Total	$7,790.5	$5,727.3	$0.0	$13,517.7	$3,435.7	$505.8	$3,941.5		$3,968.0	$2,901.7	$1,066.3
Present Value											
Plus: Salvage Value									$3,968.0	$2,901.7	$1,066.3

Benefit-Cost Ratio:	**1.37**

2008 project costs are considered a sunk costs and not included in the BCA analysis.

Table F-7

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars) Passengers held constant at constrained demand level
Decreased Benefits 25%

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	41.0	27.6	0.0	68.6	0.0	24.3	24.3	1.6058	42.7	15.2	27.6
2016	61.1	41.3	0.0	102.4	0.0	24.3	24.3	1.7182	59.6	14.2	45.4
2017	86.6	58.6	0.0	145.2	0.0	24.3	24.3	1.8385	79.0	13.2	65.7
2018	115.0	78.1	0.0	193.1	0.0	24.3	24.3	1.9672	98.1	12.4	85.8
2019	147.3	100.7	0.0	248.0	0.0	24.3	24.3	2.1049	117.8	11.6	106.3
2020	184.1	126.6	0.0	310.7	0.0	24.3	24.3	2.2522	138.0	10.8	127.2
2021	234.9	163.7	0.0	398.6	0.0	24.3	24.3	2.4098	165.4	10.1	155.3
2022	293.0	207.1	0.0	500.1	0.0	24.3	24.3	2.5785	193.9	9.4	184.5
2023	350.3	248.5	0.0	598.8	0.0	24.3	24.3	2.7590	217.0	8.8	208.2
2024	393.6	276.5	0.0	670.1	0.0	24.3	24.3	2.9522	227.0	8.2	218.7
2025	393.6	280.1	0.0	673.7	0.0	24.3	24.3	3.1588	213.3	7.7	205.6
2026	393.6	283.7	0.0	677.3	0.0	24.3	24.3	3.3799	200.4	7.2	193.2
2027	393.6	287.4	0.0	681.0	0.0	24.3	24.3	3.6165	188.3	6.7	181.6
2028	393.6	291.0	0.0	684.6	0.0	24.3	24.3	3.8697	176.9	6.3	170.6
2029	393.6	294.7	0.0	688.3	0.0	24.3	24.3	4.1406	166.2	5.9	160.4
2030	393.6	298.4	0.0	692.0	0.0	24.3	24.3	4.4304	156.2	5.5	150.7
2031	393.6	302.2	0.0	695.8	0.0	24.3	24.3	4.7405	146.8	5.1	141.6
2032	393.6	305.9	0.0	699.5	0.0	24.3	24.3	5.0724	137.9	4.8	133.1
2033	393.6	309.7	0.0	703.3	0.0	24.3	24.3	5.4274	129.6	4.5	125.1
2034	393.6	313.5	0.0	707.1	0.0	24.3	24.3	5.8074	121.8	4.2	117.6
Total	$5,842.8	$4,295.4	$0.0	$10,138.3	$2,748.5	$505.8	$3,254.3		$2,976.0	$2,358.3	$617.7
Present Value											
Plus: Salvage Value									$2,976.0	$2,358.3	$617.7

Benefit-Cost Ratio:	**1.26**

2008 project costs are considered a sunk costs and not included in the BCA analysis.

Table F-8

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars) Passengers held constant at constrained demand level
Increased Costs 25%, Decreased Benefits 25%

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	85.5	0.0	85.5	1.0700	0.0	79.9	(79.9)
2010	0.0	0.0	0.0	0.0	540.8	0.0	540.8	1.1449	0.0	472.3	(472.3)
2011	0.0	0.0	0.0	0.0	1,157.3	0.0	1,157.3	1.2250	0.0	944.7	(944.7)
2012	0.0	0.0	0.0	0.0	1,011.4	0.0	1,011.4	1.3108	0.0	771.6	(771.6)
2013	0.0	0.0	0.0	0.0	459.4	7.5	466.9	1.4026	0.0	332.9	(332.9)
2014	0.0	0.0	0.0	0.0	181.3	11.4	192.7	1.5007	0.0	128.4	(128.4)
2015	41.0	27.6	0.0	68.6	0.0	24.3	24.3	1.6058	42.7	15.2	27.6
2016	61.1	41.3	0.0	102.4	0.0	24.3	24.3	1.7182	59.6	14.2	45.4
2017	86.6	58.6	0.0	145.2	0.0	24.3	24.3	1.8385	79.0	13.2	65.7
2018	115.0	78.1	0.0	193.1	0.0	24.3	24.3	1.9672	98.1	12.4	85.8
2019	147.3	100.7	0.0	248.0	0.0	24.3	24.3	2.1049	117.8	11.6	106.3
2020	184.1	126.6	0.0	310.7	0.0	24.3	24.3	2.2522	138.0	10.8	127.2
2021	234.9	163.7	0.0	398.6	0.0	24.3	24.3	2.4098	165.4	10.1	155.3
2022	293.0	207.1	0.0	500.1	0.0	24.3	24.3	2.5785	193.9	9.4	184.5
2023	350.3	248.5	0.0	598.8	0.0	24.3	24.3	2.7590	217.0	8.8	208.2
2024	393.6	276.5	0.0	670.1	0.0	24.3	24.3	2.9522	227.0	8.2	218.7
2025	393.6	280.1	0.0	673.7	0.0	24.3	24.3	3.1588	213.3	7.7	205.6
2026	393.6	283.7	0.0	677.3	0.0	24.3	24.3	3.3799	200.4	7.2	193.2
2027	393.6	287.4	0.0	681.0	0.0	24.3	24.3	3.6165	188.3	6.7	181.6
2028	393.6	291.0	0.0	684.6	0.0	24.3	24.3	3.8697	176.9	6.3	170.6
2029	393.6	294.7	0.0	688.3	0.0	24.3	24.3	4.1406	166.2	5.9	160.4
2030	393.6	298.4	0.0	692.0	0.0	24.3	24.3	4.4304	156.2	5.5	150.7
2031	393.6	302.2	0.0	695.8	0.0	24.3	24.3	4.7405	146.8	5.1	141.6
2032	393.6	305.9	0.0	699.5	0.0	24.3	24.3	5.0724	137.9	4.8	133.1
2033	393.6	309.7	0.0	703.3	0.0	24.3	24.3	5.4274	129.6	4.5	125.1
2034	393.6	313.5	0.0	707.1	0.0	24.3	24.3	5.8074	121.8	4.2	117.6
Total	$5,842.8	$4,295.4	$0.0	$10,138.3	$3,435.7	$505.8	$3,941.5		$2,976.0	$2,901.7	$74.3
Present Value											
Plus: Salvage Value									$2,976.0	$2,901.7	$74.3

Benefit-Cost Ratio:	**1.03**

2008 project costs are considered a sunk costs and not included in the BCA analysis.

Table F-9

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)
Constrained Passengers

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	54.7	36.8	0.0	91.5	0.0	24.3	24.3	1.6058	57.0	15.2	41.8
2016	81.5	55.0	0.0	136.5	0.0	24.3	24.3	1.7182	79.5	14.2	65.3
2017	115.4	78.2	0.0	193.6	0.0	24.3	24.3	1.8385	105.3	13.2	92.1
2018	153.3	104.1	0.0	257.4	0.0	24.3	24.3	1.9672	130.9	12.4	118.5
2019	196.4	134.2	0.0	330.7	0.0	24.3	24.3	2.1049	157.1	11.6	145.5
2020	245.5	168.8	0.0	414.3	0.0	24.3	24.3	2.2522	184.0	10.8	173.1
2021	313.2	218.3	0.0	531.5	0.0	24.3	24.3	2.4098	220.5	10.1	210.4
2022	390.7	276.1	0.0	666.8	0.0	24.3	24.3	2.5785	258.6	9.4	249.1
2023	467.1	331.3	0.0	798.5	0.0	24.3	24.3	2.7590	289.4	8.8	280.6
2024	524.8	368.7	0.0	893.5	0.0	24.3	24.3	2.9522	302.7	8.2	294.4
2025	524.8	368.7	0.0	893.5	0.0	24.3	24.3	3.1588	282.9	7.7	275.1
2026	524.8	368.7	0.0	893.5	0.0	24.3	24.3	3.3799	264.4	7.2	257.1
2027	524.8	368.7	0.0	893.5	0.0	24.3	24.3	3.6165	247.1	6.7	240.3
2028	524.8	368.7	0.0	893.5	0.0	24.3	24.3	3.8697	230.9	6.3	224.6
2029	524.8	368.7	0.0	893.5	0.0	24.3	24.3	4.1406	215.8	5.9	209.9
2030	524.8	368.7	0.0	893.5	0.0	24.3	24.3	4.4304	201.7	5.5	196.2
2031	524.8	368.7	0.0	893.5	0.0	24.3	24.3	4.7405	188.5	5.1	183.3
2032	524.8	368.7	0.0	893.5	0.0	24.3	24.3	5.0724	176.1	4.8	171.3
2033	524.8	368.7	0.0	893.5	0.0	24.3	24.3	5.4274	164.6	4.5	160.1
2034	524.8	368.7	0.0	893.5	0.0	24.3	24.3	5.8074	153.9	4.2	149.7
Total	$7,790.5	$5,458.7	$0.0	$13,249.1	$2,748.5	$505.8	$3,254.3		$3,910.6	$2,358.3	$1,552.3
Present Value											
Plus: Salvage Value									$3,910.6	$2,358.3	$1,552.3

Benefit-Cost Ratio:	**1.66**

2008 project costs are considered a sunk costs and not included in the BCA analysis.

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars) Passengers held constant at constrained demand level
Project Delayed 5 Years

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0700	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1449	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2250	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3108	0.0	0.0	0.0
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4026	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.5007	0.0	45.6	(45.6)
2015	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.6058	0.0	269.4	(269.4)
2016	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.7182	0.0	538.9	(538.9)
2017	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.8385	0.0	440.1	(440.1)
2018	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.9672	0.0	190.6	(190.6)
2019	0.0	0.0	0.0	0.0	145.0	11.4	156.4	2.1049	0.0	74.3	(74.3)
2020	245.5	168.8	0.0	414.3	0.0	24.3	24.3	2.2522	184.0	10.8	173.1
2021	313.2	218.3	0.0	531.5	0.0	24.3	24.3	2.4098	220.5	10.1	210.4
2022	390.7	276.1	0.0	666.8	0.0	24.3	24.3	2.5785	258.6	9.4	249.1
2023	467.1	331.3	0.0	798.5	0.0	24.3	24.3	2.7590	289.4	8.8	280.6
2024	524.8	368.7	0.0	893.5	0.0	24.3	24.3	2.9522	302.7	8.2	294.4
2025	524.8	373.5	0.0	898.3	0.0	24.3	24.3	3.1588	284.4	7.7	276.7
2026	524.8	378.3	0.0	903.1	0.0	24.3	24.3	3.3799	267.2	7.2	260.0
2027	524.8	383.2	0.0	908.0	0.0	24.3	24.3	3.6165	251.1	6.7	244.3
2028	524.8	388.1	0.0	912.9	0.0	24.3	24.3	3.8697	235.9	6.3	229.6
2029	524.8	393.0	0.0	917.8	0.0	24.3	24.3	4.1406	221.7	5.9	215.8
2030	524.8	397.9	0.0	922.7	0.0	24.3	24.3	4.4304	208.3	5.5	202.8
2031	524.8	402.9	0.0	927.7	0.0	24.3	24.3	4.7405	195.7	5.1	190.6
2032	524.8	407.9	0.0	932.7	0.0	24.3	24.3	5.0724	183.9	4.8	179.1
2033	524.8	412.9	0.0	937.7	0.0	24.3	24.3	5.4274	172.8	4.5	168.3
2034	524.8	417.9	0.0	942.7	0.0	24.3	24.3	5.8074	162.3	4.2	158.1
2035	524.8	422.9	0.0	947.7	0.0	24.3	24.3	6.2139	152.5	3.9	148.6
2036	524.8	427.9	0.0	952.7	0.0	24.3	24.3	6.6488	143.3	3.7	139.6
2037	524.8	432.9	0.0	957.7	0.0	24.3	24.3	7.1143	134.6	3.4	131.2
2038	524.8	437.9	0.0	962.7	0.0	24.3	24.3	7.6123	126.5	3.2	123.3
2039	524.8	442.9	0.0	967.7	0.0	24.3	24.3	8.1451	118.8	3.0	115.8
Total	$9,813.0	$7,483.4	$0.0	$17,296.4	$2,748.5	$505.8	$3,254.3		$4,113.9	$1,681.4	$2,432.5
Present Value											
Plus: Salvage Value									$4,113.9	$1,681.4	$2,432.5

Benefit-Cost Ratio: 2.45

2008 project costs are considered a sunk costs and not included in the BCA analysis.

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)
EIS Forecast

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	524.8	352.0	0.0	876.8	0.0	24.3	24.3	1.6058	546.0	15.2	530.9
2016	524.8	358.2	0.0	883.0	0.0	24.3	24.3	1.7182	513.9	14.2	499.7
2017	524.8	365.3	0.0	890.0	0.0	24.3	24.3	1.8385	484.1	13.2	470.9
2018	524.8	372.5	0.0	897.3	0.0	24.3	24.3	1.9672	456.1	12.4	443.7
2019	524.8	379.6	0.0	904.3	0.0	24.3	24.3	2.1049	429.6	11.6	418.1
2020	524.8	386.8	0.0	911.6	0.0	24.3	24.3	2.2522	404.7	10.8	393.9
2021	524.8	393.3	0.0	918.1	0.0	24.3	24.3	2.4098	381.0	10.1	370.9
2022	524.8	400.0	0.0	924.8	0.0	24.3	24.3	2.5785	358.7	9.4	349.2
2023	524.8	406.8	0.0	931.6	0.0	24.3	24.3	2.7590	337.7	8.8	328.8
2024	524.8	413.7	0.0	938.5	0.0	24.3	24.3	2.9522	317.9	8.2	309.7
2025	524.8	420.0	0.0	944.7	0.0	24.3	24.3	3.1588	299.1	7.7	291.4
2026	524.8	426.3	0.0	951.0	0.0	24.3	24.3	3.3799	281.4	7.2	274.2
2027	524.8	432.6	0.0	957.4	0.0	24.3	24.3	3.6165	264.7	6.7	258.0
2028	524.8	439.1	0.0	963.9	0.0	24.3	24.3	3.8697	249.1	6.3	242.8
2029	524.8	445.6	0.0	970.4	0.0	24.3	24.3	4.1406	234.4	5.9	228.5
2030	524.8	452.1	0.0	976.9	0.0	24.3	24.3	4.4304	220.5	5.5	215.0
2031	524.8	458.6	0.0	983.4	0.0	24.3	24.3	4.7405	207.4	5.1	202.3
2032	524.8	465.1	0.0	989.9	0.0	24.3	24.3	5.0724	195.2	4.8	190.4
2033	524.8	471.6	0.0	996.4	0.0	24.3	24.3	5.4274	183.6	4.5	179.1
2034	524.8	478.1	0.0	1,002.9	0.0	24.3	24.3	5.8074	172.7	4.2	168.5
Total	$10,495.7	$8,317.3	$0.0	$18,813.0	$2,748.5	$505.8	$3,254.3		$6,537.8	$2,358.3	$4,179.5
Present Value											
Plus: Salvage Value									$6,537.8	$2,358.3	$4,179.5

Benefit-Cost Ratio:	**2.77**

2008 project costs are considered a sunk costs and not included in the BCA analysis.

Request for Letter of Intent

Multi-Year Commitment of Airport Improvement Program Grant-in-Aid Funding

March 1, 2009

Appendix G

Appendix G. LOI Application Financial Tables

Sponsors requesting Letters of Intent (LOIs) are required to submit the information shown, in substantially the same format as this template. Sponsors are strongly encouraged to use this template, as it may help to expedite the review and approval process. Regardless, Sponsors should review the instructions contained in Appendix 29 carefully, because those instructions contain specific parameters for what to include on certain key lines of this template.

Airport Sponsor Information

1. O'Hare International Airport
2. ORD
3. Chicago, Illinois
4. Large Hub
5. City of Chicago
6. 2/27/2009

Capital Costs and Annual Cashflow Requirements - Proposed Action

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
7.	Professional Services	$0	0.0%												
8.	Land Acquisition	0	0.0%												
9.	Runway 9C-27C	1,739,784,000	53.1%	817,974	42,141,610	344,308,115	593,039,361	350,707,778	283,833,314	124,935,849					
10.	Runway 10R-28L	681,942,410	20.8%	817,974	16,752,061	87,269,045	276,712,306	205,821,846	85,757,353	8,811,825					
11.	Runway 9R-27L Extension	430,387,241	13.1%	817,974	11,561,926	38,763,064	74,365,859	208,784,662	66,593,697	29,500,059					
12.	Runway - World Gateway Taxiway Improvement	288,480,776	8.8%	745,189	1,409,196	6,606,880	96,413,935	183,305,576							
13.	Noise Mitigation Program	136,661,060	4.2%			2,674,575	35,093,089	36,764,410	38,519,297	23,609,689					
14.	Infrastructure	0	0.0%												
	Summary	**$3,277,255,487**	**100.0%**	**$3,199,111**	**$71,864,794**	**$479,621,679**	**$1,075,624,549**	**$985,384,273**	**$474,703,661**	**$186,857,421**					
	Cumulative Needs			$3,199,111	$75,063,904	$554,685,583	$1,630,310,133	$2,615,694,405	$3,090,398,066	$3,277,255,487					

Capital Funding Sources - Proposed Action

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
	Federal and State Grants														
15.	Entitlements - Grants Awarded	$0	0.0%												
16.	Entitlements - Future Grants	0	0.0%												
17.	Discretionary - LOI Request	500,000,000	15.3%			$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	50,000,000
18.	Discretionary - Other - Awarded	0	0.0%												
19.	Discretionary - Other - Future Grants	0	0.0%												
20.	Discretionary - Noise - Awarded	0	0.0%												
21.	Discretionary - Noise - Future Grants	0	0.0%												
22.	State Apportionment - Grants Awarded	0	0.0%												
23.	State Apportionment - Future Grants	0	0.0%												
24.	Other Federal (non-AIP) - Grants Awarded	0	0.0%												
25.	Other Federal (non-AIP) - Future Grants	0	0.0%												
26.	State - Grants Awarded	0	0.0%												
27.	State - Future Grants	0	0.0%												
	Subtotal - Federal/State Grants	**$500,000,000**	**15.3%**	**$0**	**$0**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**
	Passenger Facility Charges														
28.	PFCs - $3.00 Application Approved	$0	0.0%												
29.	PFCs - $3.00 Application Submitted	0	0.0%												
30.	PFCs - $3.00 Future Application(s)	0	0.0%												
31.	PFCs - $4.50 Application Approved	0	0.0%												
32.	PFCs - $4.50 Application Submitted	0	0.0%												
33.	PFCs - $4.50 Future Application(s)	46,068,049	1.4%		46,068,049										
34.	PFCs - Future Level	954,760,711	29.1%			81,815,010	76,225,650	485,158,969	174,919,790	136,641,292					
	Subtotal - PFCs	**$1,000,828,760**	**30.5%**	**$0**	**$46,068,049**	**$81,815,010**	**$76,225,650**	**$485,158,969**	**$174,919,790**	**$136,641,292**	**$0**	**$0**	**$0**	**$0**	**$0**
	Debt														
35.	Revenue Bonds - MII Approved	$0	0.0%												
36.	Revenue Bonds - MII pending	0	0.0%												
37.	General Obligation - Authority in Place	0	0.0%												
38.	General Obligation - Future GARBs	1,776,426,727	54.2%	3,199,111	25,796,745	347,806,669	949,398,899	450,225,304	0	0	0				
39.	Other Debt - Authority in Place	0	0.0%												
40.	Other Debt - Interim Funding	0	0.0%	0					249,783,871	216,129	-50,000,000	-50,000,000	-50,000,000	-50,000,000	-50,000,000
	Subtotal - Debt	**$1,776,426,727**	**54.2%**	**$3,199,111**	**$25,796,745**	**$347,806,669**	**$949,398,899**	**$450,225,304**	**$249,783,871**	**$216,129**	**-$50,000,000**	**-$50,000,000**	**-$50,000,000**	**-$50,000,000**	**-$50,000,000**
41.	Airport Funds	$0	0.0%												
42.	Tenant or Third-Party Funds	$0	0.0%												
			0.0%												
	Total - All Funding Sources	**$3,277,255,487**	**100.0%**	**$3,199,111**	**$71,864,794**	**$479,621,679**	**$1,075,624,549**	**$985,384,273**	**$474,703,661**	**$186,857,421**	**$0**	**$0**	**$0**	**$0**	**$0**
	Cumulative Sources			$3,199,111	$75,063,904	$554,685,583	$1,630,310,133	$2,615,694,405	$3,090,398,066	$3,277,255,487	$0	$0	$0	$0	$0

Unmet Funding Needs	**Totals**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Capital Costs and Annual Cashflow Requirements - Other Capital Plans

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
43.	OMP Remaing Phase 1	$1,800,520,116	59.1%	$456,957,775	$561,856,117	$492,330,530	$202,359,033	$87,016,661							
44.	Airfield	474,857,414	15.6%	151,754,097	94,091,873	68,461,360	80,435,714	80,114,370							
45.	Terminal	263,594,801	8.7%	177,076,338	25,410,440	27,323,632	22,689,526	11,094,865							
46.	Noise Mitigation	95,184,983	3.1%	35,617,060	28,642,923	25,000,000	5,925,000								
47.	Safety and Security	64,553,472	2.1%	17,299,935	15,273,322	22,566,002	6,224,531	3,189,682							
48.	Parking and Roadway	327,748,242	10.8%	28,305,924	25,820,579	77,071,876	98,407,964	98,141,899							
49.	Other [1/]	6,462,148	0.2%	1,719,948	4,742,200										
50.	Implementation	118,471,887	3.9%	23,293,194	14,395,880	25,625,000	26,906,250	28,251,563							
51.	Planning other projects	1,056,395	0.0%	946,395		110,000									
52.	H&R	95,971,250	3.2%	13,360,490	31,001,119	24,607,551	23,545,375	3,456,715							
	Summary	**$3,248,420,708**	**106.7%**	**$906,331,156**	**$801,234,453**	**$763,095,951**	**$466,493,393**	**$311,265,755**							
	Cumulative Needs			$906,331,156	$1,707,565,609	$2,470,661,560	$2,937,154,953	$3,248,420,708							

Capital Funding Sources - Other Capital Plans 0

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
	Federal and State Grants														
53.	Entitlements - Grants Awarded	$19,500,000	0.6%	6,500,000	6,500,000	6,500,000									
54.	Entitlements - Future Grants	0	0.0%												
55.	Discretionary - LOI Request[2/]	260,000,000	8.5%	112,885,000	37,391,000	87,609,000	22,115,000								
56.	Discretionary - Other - Awarded[3/]	32,030,745	1.1%	23,030,745	9,000,000										
57.	Discretionary - Other - Future Grants	0	0.0%												
58.	Discretionary - Noise - Awarded	0	0.0%												
59.	Discretionary - Noise - Future Grants	0	0.0%												
60.	State Apportionment - Grants Awarded	0	0.0%												
61.	State Apportionment - Future Grants	0	0.0%												
62.	Other Federal (non-AIP) - Grants Awarded[4/]	68,610,828	2.3%	68,541,821	69,007										
63.	Other Federal (non-AIP) - Future Grants	0	0.0%												
64.	State - Grants Awarded	0	0.0%												
65.	State - Future Grants	0	0.0%												
	Subtotal - Federal/State Grants	**$380,141,573**	**12.5%**	**$210,957,566**	**$52,960,007**	**$94,109,000**	**$22,115,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
			0.0%												
	Passenger Facility Charges		0.0%												
66.	PFCs - $3.00 Application Approved	$0	0.0%												
67.	PFCs - $3.00 Application Submitted	0	0.0%												
68.	PFCs - $3.00 Future Application(s)	0	0.0%												
69.	PFCs - $4.50 Application Approved	871,715,062	28.6%	636,652,399	142,161,154	92,901,509									
70.	PFCs - $4.50 Application Submitted	0	0.0%												
71.	PFCs - $4.50 Future Application(s)	29,870,000	1.0%			29,870,000									
72.	PFCs - Future Level	111,412,958	3.7%				57,162,500	54,250,458							
	Subtotal - PFCs	**$1,012,998,020**	**33.3%**	**$636,652,399**	**$142,161,154**	**$122,771,509**	**$57,162,500**	**$54,250,458**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	Debt														
73.	Revenue Bonds - MII Approved	$395,552,689	13.0%	$245,150,404	$150,402,285										
74.	Revenue Bonds - MII pending	0	0.0%												
75.	General Obligation - Authority in Place[5/]	216,227,084	7.1%	176,952,606	36,390,728	1,733,750	1,150,000								
76.	General Obligation - Future GARBs	1,040,478,054	34.2%	88,037,903	165,375,993	291,168,162	304,307,360	191,588,636							
77.	Other Debt - Authority in Place	0	0.0%												
78.	Other Debt - Authority Pending	0	0.0%												
	Subtotal - Debt	**$1,652,257,827**	**54.3%**	**$510,140,913**	**$352,169,006**	**$292,901,912**	**$305,457,360**	**$191,588,636**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
79.	Airport Funds	$0	0.0%												
80.	Tenant or Third-Party Funds	0	0.0%												
	Total - All Funding Sources	**$3,045,397,420**	**100.0%**	**$1,357,750,878**	**$547,290,167**	**$509,782,421**	**$384,734,860**	**$245,839,094**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	Cumulative Sources			$1,357,750,878	$1,905,041,045	$2,414,823,466	$2,799,558,326	$3,045,397,420	$0	$0	$0	$0	$0	$0	$0

Unmet Funding Needs [6/]

Totals	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
$203,023,288	**-$451,419,722**	**$253,944,286**	**$253,313,530**	**$81,758,533**	**$65,426,661**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Notes:

[1/] Includes Western Terminal Planning.

[2/] Reflecccts use of proceeds from borrowing in anticipation of future repayment from AIP Discretionary LOI grants

[3/] Consists of AIP and MPEA Grants

[4/] TSA Grants

[5/] Commerical Paper

[6/] Unmet funding needs for CIP projects are projects that have been approved but are not yet funded

*Cost reflect the City's 5-year Capital Improvement Program as of July 2008. The City is in the process of updating the 5-year CIP

Appendix G. LOI Application Financial Tables
Data Entry Sheet #2

Airport Sponsor Information

O'Hare International Airport
ORD
Chicago, Illinois
Large Hub
City of Chicago
2/27/2009

Alternative Disbursement Proposal(s)

OFFICIAL REQUEST	Totals	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Discretionary - LOI disbursement schedule	$500,000,000	$0	$0	$0	$0	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000

ALTERNATIVE A

Discretionary - LOI disbursement schedule						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Change (if any) in LOI Discretionary funding															
Impact on costs and/or other funding sources															

ALTERNATIVE B

Discretionary - LOI disbursement schedule						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Change (if any) in LOI Discretionary funding															
Impact on costs and/or other funding sources															

ALTERNATIVE C

Discretionary - LOI disbursement schedule						$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Change (if any) in LOI Discretionary funding															
Impact on costs and/or other funding sources															

ALTERNATIVE D

Discretionary - LOI disbursement schedule	$0	
Change (if any) in LOI Discretionary funding	0	
Impact on costs and/or other funding sources		[insert explanation]

Appendix G. LOI Application Financial Tables
Data Entry Sheet #3

Airport Sponsor Information

O'Hare International Airport
ORD
Chicago, Illinois
Large Hub
City of Chicago
2/27/2009

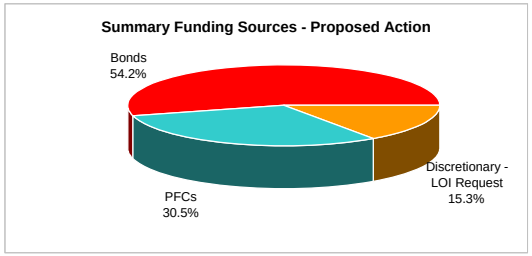
Individual Project Components

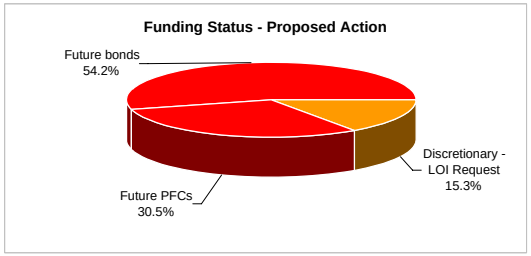
	Cost	Part of Proposed Action? Y/N	Include in BCA? Y/N	Justification for Requested Exclusion	LOI Project	Proposed Action	Overall Capital Plan	Airfield	
Runway 9C-27C	$1,739,784,000	Y	Y		$1,739,784,000	$1,739,784,000	$1,739,784,000	$1,739,784,000	
Runway 9R Extension	$430,387,241	Y	Y		$430,387,241	$430,387,241	$430,387,241	$430,387,241	
Runway 10R-28L	$681,942,410	Y	Y		$681,942,410	$681,942,410	$681,942,410	$681,942,410	
World Gateway Taxiway Improvements	288,480,776	Y	Y		$288,480,776	$288,480,776	$288,480,776	$288,480,776	
Noise Mitigation Program	136,661,060	**N**	Y		$136,661,060	$0	$136,661,060	$136,661,060	
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
					$0	$0	$0		
Summary	**$3,277,255,487**				**$3,277,255,487**	**$3,140,594,427**	**$3,277,255,487**	**$3,277,255,487**	**$0**

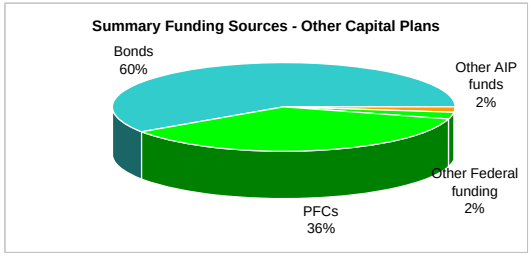
Appendix G. LOI Application Financial Tables

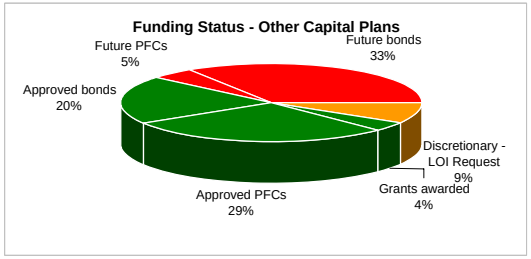
Airport Sponsor Information

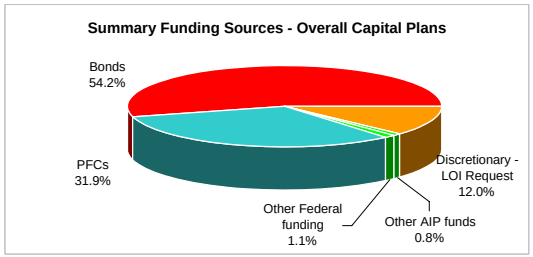
1. O'Hare International Airport
2. ORD
3. Chicago, Illinois
4. Large Hub
5. City of Chicago
6. 2/27/2009

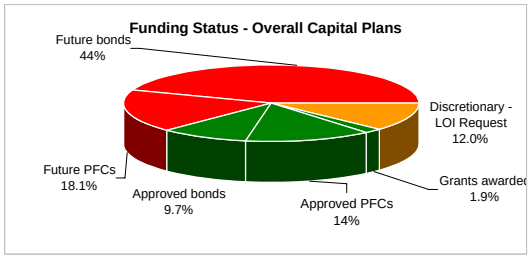












Completion Phase Summary of Cost Program Administration Revised Cash Flow
(All Costs Shown in 2008 $'s)

Completion Phase Component	Construction Cost	Design Cost	Soft Cost	Project Contingencies	Total Project Budget
Runway 9R Extension	$ 242,589,624	$ 20,959,744	$ 44,432,744	$ 48,759,112	$ 357,187,559
Runway 9C-27C	$ 976,486,387	$ 84,368,424	$ 178,853,360	$ 228,183,394	$ 1,469,688,187
Runway 10R-28L	$ 392,864,754	$ 33,943,515	$ 71,955,406	$ 78,572,951	$ 578,061,200
Taxiway LL	$ 166,569,106	$ 14,391,571	$ 30,508,817	$ 30,399,352	$ 242,175,314
TOTAL	**$ 1,778,509,872**	**$ 153,663,253**	**$ 325,750,326**	**$ 385,914,809**	**$ 2,647,112,259**

Breakout of Program Admin to establish Revised Soft Cost Spread Less $3,274,000 (2008 Projection):

Original	% Breakout	3.274 breakdown
$ 44,879,080	13.63%	$ 446,337
$ 180,649,982	54.88%	$ 1,796,622
$ 72,855,730	22.13%	$ 724,574
$ 30,815,285	9.36%	$ 306,468
$ 329,200,076	100.00%	$ 3,274,000

Completion Phase Summary of Cost Program Administration Revised Cash Flow
(All Costs Shown in 2008 $'s)

Completion Phase Component	Construction Cost	Design Cost	Soft Cost	Project Contingencies	Total Project Budget
Runway 9R Extension	$ 242,589,624	$ 20,959,744	$ 44,879,080	$ 48,759,112	$ 357,187,559
Runway 9C-27C	$ 976,486,387	$ 84,368,424	$ 180,649,982	$ 228,183,394	$ 1,469,688,187
Runway 10R-28L	$ 392,864,754	$ 33,943,515	$ 72,679,980	$ 78,572,951	$ 578,061,200
Taxiway LL	$ 166,569,106	$ 14,391,571	$ 30,815,285	$ 30,399,352	$ 242,175,314
TOTAL	**$ 1,778,509,872**	**$ 153,663,253**	**$ 329,024,326**	**$ 385,914,809**	**$ 2,647,112,260**

Completion Phase Summary of Cost Program Administration Revised Cash Flow
(All Costs Shown in 2008 $'s)

Project Description	Construction Cost	Design Cost	Soft Cost	Project Contingencies	Total Project Budget
Runway 9R-27L Extension & Assoc. Taxiways	$ 89,339,482	$ 7,718,931	$ 16,527,804	$ 13,400,922	$ 126,987,140
Facilities Infrastructure	$ 24,025,740	$ 2,075,824	$ 4,444,762	$ 8,409,009	$ 38,955,335
Detention Basin Capacity Increase [1]	$ 15,750,000	$ 1,360,800	$ 2,913,750	$ 3,150,000	$ 23,174,550
Fuel System Piping [2]	$ 88,000,000	$ 7,603,200	$ 16,280,000	$ 17,600,000	$ 129,483,200
Rental Car Facility Relocations [3]	$ 11,043,000	$ 954,115	$ 2,042,955	$ 3,312,900	$ 17,352,970
Rental Car Parking Relocation (Flat Pavement Parking) [3]	$ 14,431,402	$ 1,246,873	$ 2,669,809	$ 2,886,280	$ 21,234,365
TOTAL	**$ 242,589,624**	**$ 20,959,744**	**$ 44,879,080**	**$ 48,759,112**	**$ 357,187,559**

NOTES

1 - Detension Basin Capacity Increase is a Deferred Projects from Phase 1.
2 - The Fuel System Piping project was not included in Estimate F. At the time Estimate F was prepared, the fuel piping relocation was part of another project that was later cancelled.
3 - Rental Car Facility & Parking Relocations are identified in Ricondo Exhibit 1 . The estimate assumes replacement in kind (i.e. surface lot) of 3144 spaces and existing facilities. This estimate does **NOT** include any land purchase or major infrastructure improvements.

Completion Phase Summary of Cost Program Administration Revised Cash Flow
(All Costs Shown in 2008 $'s)

Project Description	Construction Cost	Design Cost	Soft Cost	Project Contingencies	Total Project Budget
Building Demo for RW 9C-27C & Assoc. Taxiways	$ 5,513,928	$ 476,403	$ 1,020,077	$ 1,102,786	$ 8,113,194
Facility Relocations	$ 291,871,695	$ 25,217,714	$ 53,996,264	$ 87,561,509	$ 458,647,182
Runway 9C-27C & Assoc. Taxiways	$ 318,455,483	$ 27,514,554	$ 58,914,264	$ 47,768,322	$ 452,652,623
Facilities Infrastructure	$ 33,234,665	$ 2,871,475	$ 6,148,413	$ 11,632,133	$ 53,886,686
New Pavement 14R-32L & Assoc. Taxiways	$ 47,837,489	$ 4,133,159	$ 8,849,935	$ 7,175,623	$ 67,996,206
Facilities Infrastructure	$ 59,909,532	$ 5,176,184	$ 11,083,263	$ 20,968,336	$ 97,137,315
NAF High Speed Taxiways [1]	$ 4,647,681	$ 401,560	$ 859,821	$ 929,536	$ 6,838,598
NALCV [2]	$ 6,274,580	$ 542,124	$ 1,160,797	$ 2,196,103	$ 10,173,603
West Side Service Road & Tunnel Under 14R-32L [3]	$ 88,308,424	$ 7,629,848	$ 16,337,058	$ 17,661,685	$ 129,937,015
Mt. Prospect Rd Under T/W WK [4]	$ 16,511,501	$ 1,426,594	$ 3,054,628	$ 3,302,300	$ 24,295,022
Reconstruction of T/W 'U' or Suitable Alternative	$ 15,243,086	$ 1,317,003	$ 2,819,971	$ 4,572,926	$ 23,952,985
ATS Station Relocation and Track Extension [5]	$ 55,764,705	$ 4,818,071	$ 10,316,470	$ 16,729,412	$ 87,628,657
Parking Relocations - East of Mannheim [6]	$ 16,413,619	$ 1,418,137	$ 3,036,520	$ 3,282,724	$ 24,150,999
Runway 9C-27C RPZ Impacted Facilities Demolition & Relocation [7]	$ 16,500,000	$ 1,425,600	$ 3,052,500	$ 3,300,000	$ 24,278,100
TOTAL	$ 976,486,387	$ 84,368,424	$ 180,649,982	$ 228,183,394	$ 1,469,688,187

NOTES

1 - NAF High Speed Taxiways is a Deferred Project from Phase 1.
2 - NALCV included from Estimate F - Airfield Facilities.
3 - West Side Service Road & Tunnel Under 14R-32L included from Estimate F - Phase 1 West Satellite.
4 - Mt. Prospect Rd Under T/W WK included from Estimate F - Phase 1A.
5 - ATS has been priced based on moving station outside the OFA.
6 - Parking Relocations equate to approximately 2652 spaces (including 48 accessible spaces). Estimate assumes surface lot replacement with no property acquisition or major infrastructure replacement.
7 - Ricondo Project Definition Document for 27C RPZ - Exhibit 1 identifies impacted projects as follows: 1) Salt Dome Remove & Relocate; 2) Lot E Parking Exit Plaza Relocation; 3) Facility Power Substation 6 Remove & Relocate; 4) Unknown Structures Remove/Relocate

Completion Phase Summary of Cost Program Administration Revised Cash Flow
(All Costs Shown in 2008 $'s)

Project Description	Construction Cost	Design Cost	Soft Cost	Project Contingencies	Total Project Budget
Bensenville Ditch Extension & Wetlands Filling	$ 17,760,083	$ 1,534,471	$ 3,285,615	$ 3,552,017	$ 26,132,187
Irving Park Road Relocation	$ 18,072,417	$ 1,561,457	$ 3,343,397	$ 3,614,483	$ 26,591,754
Runway 10R-28L East Site Preparation	$ 73,842,225	$ 6,379,968	$ 13,660,812	$ 14,768,445	$ 108,651,450
Runway 10R-28L Mass Grading - East	$ 17,653,821	$ 1,525,290	$ 3,265,957	$ 3,530,764	$ 25,975,832
Runway 10R-28L Mass Grading - West	$ 37,788,238	$ 3,264,904	$ 6,990,824	$ 7,557,648	$ 55,601,613
South Airfield Traffic Control Tower (SATCT)	$ 44,525,333	$ 3,846,989	$ 8,237,187	$ 8,905,067	$ 65,514,575
ASR-9 Facility and LLWAS	$ 5,565,667	$ 480,874	$ 1,029,648	$ 1,113,133	$ 8,189,322
Runway 10R-28L Paving & Electrical	$ 55,873,850	$ 4,827,501	$ 10,336,662	$ 11,174,770	$ 82,212,783
Runway 10R-28L NAVAIDS & FOTS	$ 24,078,583	$ 2,080,390	$ 4,454,538	$ 4,815,717	$ 35,429,228
Utilities - ComEd & FAA from Phase 1 [1]	$ 8,667,219	$ 748,848	$ 1,603,436	*$ 1,733,444*	$ 12,752,946
10L High Speed Taxiways [1]	$ 9,679,234	$ 836,286	$ 1,790,658	$ 1,935,847	$ 14,242,026
T/W 45 & R/W 14R Storm Sewer Systems 2A & 3A [1]	$ 35,914,861	$ 3,103,044	$ 6,644,249	$ 7,182,972	$ 52,845,126
Bensenville Ditch - ALP Alignment [1]	$ 43,443,222	$ 3,753,494	$ 8,036,996	$ 8,688,644	$ 63,922,357
TOTAL	$ 392,864,754	$ 33,943,515	$ 72,679,980	$ 78,572,951	$ 578,061,200
Note (*) The contingency for the Deferred Projects on 10R-28L includes a slightly higher than 20% due to extra amount on T/W 45 & R/W 14R Storm Sewer (see PSM 6130-114)					

NOTES

1 - Utilities - ComEd & FAA; 10L High Speed Taxiways; TW 45 & Storm Systems 2A/3A; and Bensenville Ditch ALP Alignment are Deferred Projects from Phase 1.

Completion Phase Summary of Cost Program Administration Revised Cash Flow
(All Costs Shown in 2008 $'s)

Project Description	Construction Cost	Design Cost	Soft Cost	Project Contingencies	Total Project Budget
Taxiway LL & Taxiway M Relocation	$ 86,838,198	$ 7,502,820	$ 16,065,067	$ 17,367,640	$ 127,773,724
Relocation of Lockheed Maintenance Facility	$ 2,680,191	$ 231,569	$ 495,835	$ 804,057	$ 4,211,653
Relocation of Glycol Facility	$ 3,350,239	$ 289,461	$ 619,794	$ 502,536	$ 4,762,030
Relocation of Truck Fuel Stand	$ 3,350,239	$ 289,461	$ 619,794	$ 1,172,584	$ 5,432,078
Relocation of AAL GSE Facility	$ 3,350,239	$ 289,461	$ 619,794	$ 502,536	$ 4,762,030
Super Fuel Satellite	$ 67,000,000	$ 5,788,800	$ 12,395,000	$ 10,050,000	$ 95,233,800
TOTAL	**$ 166,569,106**	**$ 14,391,571**	**$ 30,815,285**	**$ 30,399,352**	**$ 242,175,314**

NOTES

1 - All projects associated with Taxiway LL were not included in Estimate F.

Chicago O’Hare International Airport

Appendix B

U.S. Department
of Transportation
**Federal Aviation
Administration**

2300 East Devon Avenue
Des Plaines, IL 60018

June 24, 2009

Ms. Rosemarie Andolino
Commissioner
Department of Aviation
10510 West Zemke Road
Chicago, Illinois 60666

Dear Ms. Andolino:

The FAA has completed its initial review of the City of Chicago's Request for Letter of Intent for a Multi-Year Commitment of Airport Improvement Program Grant-In-Aid Funding dated March 1, 2009. Please find below a listing of comments which we request the City address and provide responses to the FAA as soon as possible, preferably no later than the close of business July 2, 2009. If you need more time than that, please let us know as soon as possible. If you have any questions, please let me know; we will be happy to walk through these comments with you.

It is important to note that FAA review is on-going on both the Benefit Cost Analysis and the LOI request itself. We may yet have additional comments and/or requests for clarification or additional information.

These comments are organized into four groups: General Comments, Benefit Cost Analysis, Project Financing, and Additional Data Needs.

GENERAL COMMENTS

1. Section 1.3 Benefit Cost Analysis, Page 1-3 (Also on page V-1 section V), - The paragraph states, *"The FAA does not use the benefit-cost ratio for ranking projects to assess how AIP discretionary grants are to be allocated. The primary purpose of this BCA is to present the Net Present Value, assessing the ongoing value of the investment over time, and benefit-cost ratio of the Proposed Action, which consists of the LOI Projects and the OMP Completion Phase noise program."*

   Although the BCA ratio does not automatically drive funding allocations or decisions, the FAA does use the BCA ratio to help evaluate the degree to which benefits outweigh costs, to aid in establishing Federal investment limits and as a comparative tool among projects.

2. It appears there is a typographical error on Page V-14, 1st Paragraph, second line - States *"Exhibit IV-7 shows the average unimpeded travel time for...."* The reference should have been to Exhibit V-7.

3. As we continue to evaluate the optimal method of quantifying the benefits of the Completion Phase, and to understand the City's progress in securing the rest of the funds, it would help to get a status update on the City's progress in negotiating bond authority with the airlines, and the timetable for concluding those negotiations or making other arrangements as necessary for securing the bond funds.

BENEFIT COST ANALYSIS

4. It is not clear why the City has established a cap on annual operations for analytical purposes for the Completion Phase scenario. Please clarify the rationale, including why the operational caps for the Base Case and Completion Phase are the same.

5. On Page V-2 of the city's application, it states:

"There are several different ways to prepare a BCA. The Phase 1 BCA used two distinct methodologies -- one using a delay savings-based analysis and the other using the FAA supplied consumer surplus methodology. The latter, which was appropriate for Phase 1 for valuing the additional capacity, produced a higher BC ratio than an analysis based on delay savings, although both methods satisfied the FAA's pass/fail test of having a positive ratio – a ratio exceeding 1.0. The delay savings methodology produces lower benefit cost ratios because it takes into account fewer benefits."

This discussion is factually wrong and should be removed from subsequent revisions to the BCA. It is incorrect to assert that both BCAs developed by the airport sponsor produced benefit-cost ratios over 1. The original Phase-1 BCA, as described in the February 15, 2005 LOI (revised), overstated delay saving benefits from inappropriately capping aircraft operations at current levels and estimating delay savings based on the corresponding level of annual average delay, rather than allowing delays to increase, reflecting the fact of increased passenger demand. [1]

6. On Page V-2 of the City's LOI request, the text states:

"The BCA for the Completion Phase included in this document uses the delay savings methodology, which is appropriate now because some of the Phase 1 projects have improved airport capacity. However, to the extent that the City is correct that gate capacity imposes no practical limit on operations (see Section 5.2 for further

[1] However, the City's revised submittal, using a different methodological approach to calculate delay savings properly allowed operations to grow in the build case to the same levels of delay that caused the FAA to impose an operational cap at the Airport.

discussion), valuation of the additional capacity provided by the Completion Phase airfield would produce a ***higher ratio*** *than the analysis relied on in this application."*

Comment: This appears to state that the BCA ratio would be higher if the City had not imposed an artificial cap on operations for purposes of the analysis. It is not clear to the FAA that this is necessarily the case.

Assuming that the gates are not necessarily a constraint to operations at the Airport, net delay savings would be expected to diminish over time. For the purpose of the BCA, delay savings are measured by the distance between a constrained Phase-1 delay curve and an unconstrained Completion Phase delay curve.

As operations increase, it would seem reasonable to the FAA that the distance between these two curves would diminish over time even with capacity increases, as operations grow beyond certain levels, depending upon how the air carriers adjust their fleet mix and flight schedules in response. It would be helpful for the City to provide some general explanation of how air carriers adjust their fleet mix and schedules in response to capacity increases and changing delay patterns at hub airports.

7. **Page D-1,** The City's LOI request states:

"... the City believes that the number of gates at the Airport will not limit operations, and that carriers will reconfigure existing gates and/or utilize hardstand facilities if gate needs exceed current availability, for the purposes of utilizing conservative assumptions for the determination of benefits, a capping of operations due to gate limitations was included in the BCA."

Comment: Here again, assuming that gates will not likely represent a capacity constraint at the airport, we remain open to the possibility of an operational cap for analytical purposes. Establishing this cap should be based on average annual delay levels.

The City's LOI request also states:

"As such, the 1,150,000 annual operations ***established by the FAA*** *as the limiting capacity of the terminal gate facilities seems reasonable, and is utilized as a conservative assumption in the BCA."*

Comment: FAA did not establish the 1,150,000 annual operations based on terminal capacity. This number was chosen based on the delay curves referenced in the EIS and reproduced in the Phase-1 BCA. Under the Phase-1 analysis, aircraft operations were allowed to grow up to the point where average annual delays (measured in minutes) matched those levels of delay that caused the FAA to impose an operational

cap at the airport. The rationale for limiting aircraft operations is not supported by the discussion found in Appendix D. Additional documentation will be needed. For consistency, the choice of an operational cap (if any) for analytical purposes should be related to average aircraft delay.

8. Section V: Benefit-Cost Analysis Summary - Given the scale of the proposed project and complexities surrounding the BCA, FAA expected a more detailed BCA, including documentation of all of the underlying assumptions used to generate the benefit cost ratio. Subsequent revisions to the BCA should address all of the questions raised in this initial review, as well as provide the FAA with a more comprehensive discussion of the BCA methodology.

9. Incorporation of Relevant Costs

- Please provide a detailed list of the project components and their associated costs that are included in the BCA. If terminal facilities are not included, please explain why, including an explanation of why the delay-reduction and capacity benefits of the Completion Phase airfield are not dependent on new terminals. This should include both airside processing of aircraft and landside processing of passengers (e.g., ticketing, baggage claim, curbside processing, etc.)

- Based on the table titled *Completion Phase Summary of Cost Program Administration Revised Cash Flow* in the March 2009 LOI, it appears that the airport sponsor has inadvertently included costs for Taxiway Lima Lima. FAA believes these costs have already been included in the Phase-1 BCA; therefore, they should be excluded from the Completion Phase BCA.

10. Methodology Used to Calculate Travel Time Savings

- Page V-11 of the LOI states that the FAA asked that the BCA consider a constrained forecast of activity based on the assumptions that the new terminal capacity will not be constructed at the same time as the airfield project. This is factually incorrect. The FAA did not request the airport sponsor to consider a constrained forecast. Instead, the airport sponsor noted its intention to cap operations for the purpose of conducting the BCA. At that time, the FAA reiterated its concern regarding how operations were capped in the original Phase-1 BCA. Based on the information provided in the BCA, FAA cannot determine whether an operational cap is needed. Assuming, for the sake of argument, that a cap is reasonable, additional information will be needed to determine how that cap should be set. It is not immediately clear to the FAA why the City would assume that the operational caps under the Base Case and the Completion Phase scenario should be the same.

Rather than constraining the number of operations in the scenario case to be equal to the base case, one alternative would be to grow the operations under the scenario case to the point that the level of delay equals the level of delay at which the Federal government imposed operational caps previously.

- Page V-12. The delay curve referenced in the March 1, 2009 LOI appears different than the delay curve referenced in the March 1, 2004 LOI. The delay curve reported in the 2004 LOI suggests that at 1,150,000 operations per year average annual delays would be approximately 17 minutes. The same delay curve reported in the 2009 LOI suggests that at 1,150,000 operations per year average annual delays would be only around 14 minutes. Please explain the difference. It would appear to the FAA that the City should retain the delay curves used in the original Phase-1 analysis.

- Subsequent revisions to the BCA should also address whether construction during the Completion Phase of the OPM will likely have a negative impact on travel time savings. The analysis should take into account the airport's experience with Phase-1 construction.

- Please explain the basis of the variable operating cost (VOC) assumptions, particularly because in the analysis they appear to be applied to the full block-time. Given that a sizable portion of the reported delay savings may occur on the ground, the full block-time VOCs would need to be adjusted to reflect a lower fuel burn rate. Subsequent revisions to the BCA document should properly address this issue.

- The FAA is unable to determine what deflator was used to express aircraft VOCs in 2008 dollars. It should be noted that the fuel component, per FAA guidance, should be adjusted using a fuel price index rather than a more generic index such as the Gross Domestic deflator.

- To assist the FAA with its further review of the BCA, please provide the FAA with a spreadsheet detailing the VOC cost buildup by year, including the relevant Form 41 data and fleet mix assumptions.

11. Page V-11 Full Build Scenario Constraint

The City's LOI request states:

"As previously discussed, the FAA requested that this BCA consider a constrained forecast of activity based on the assumption that new terminal capacity will not be constructed at the same time as the airfield projects included in this application. Based on an analysis of existing gate facility capabilities, it was estimated that total operations would be constrained at approximately

1,150,000 annual operations, or 3,151 annual average day operations, approximately 6 percent more operations than the 2,968 peak number of daily operations actually handled by the Airport July 1, 2004 as reported by FAA in its OPSNET database."

As explained earlier in this letter, in the 2005 BCA Phase 1 scenario, operations were constrained due to airside infrastructure limitations, and the level of 1,150,000 operations was based on the level of delay at which the Federal government previously imposed an operational cap. Then, FAA looked at the impacts if the western concourse was not constructed in the originally anticipated timeframe. In that case, it was determined that impacts were minimal.

PROJECT FINANCING

12. Construction costs (multiple locations) - The City's LOI request cites a few different cost figures for the OMP Completion Phase:

Executive Summary, page I-4	$2,647.1 billion (in 2008 dollars).
Table IV-1, page IV-4	$2,751,810 (in 2008 dollars)
Appendix G	$3,277,255,487

Please describe the differences between the various cost estimates above.

13. Cashflow (Executive Summary, page I-4) shows expenditures in CY 2008 and 2009. Please describe the expenditures shown in both calendar years.

14. Section 4.2.2.3 (Page IV-3) -- The scope of Runway 10R/28L as described consistently includes the South ATCT. Please verify if the cost estimates include the South ATCT.

15. Section 4.5 (page IV-7) -- This section includes a statement saying *"Most of the ADG-VI traffic simulated for the EIS, primarily international arrivals, arrived and departed over navigational fixes served by runways on the north airfield."* Please clarify how the City anticipates the two ADG-VI capable runways will be used under the Completion Phase scenario.

16. Exhibit IV-2 (page IV-12) -- This shows the taxiway improvements, including construction of Taxiway Lima Lima, being constructed during 2011-2012. Please verify that this schedule includes all enabling projects associated with these improvements, including the fuel distribution system changes.

17. Section VI - This section mentions all of the different sources of Federal funding the airport has received; however, it is scattered in different paragraphs. Please

provide a single chart showing the year, federal funding category, amount and what the funds supported.

18. Appendix G -- Please either move the data from Row 38 (which is for GO bonds) to either Row 35 or 36 (which are for Revenue Bonds) or to Row 39 (Other Debt), or explain why it is more appropriate to include these data points as shown.

In modifying the format of some of the financial templates—adding categories, etc.—it appears that some of the percentage calculations are in error. Please recalculate these percentages.

In addition, the application does not show the full funding sources for the Other Capital Programs. The application has only identified $3,045,397,420 as compared with $3,248,420,708, a shortfall of $203,023,288. There is a footnote that states, *"Unmet funding needs for CIP projects are projects that have been approved but are not yet funded."* The FAA's intent of the template is for the Sponsor to show complete funding sources for all costs, and the template does not delineate between planned sources versus cash-on-hand. Rather, it delineates between what's planned versus what's approved.

Finally, in addition to the tables referenced above, there is GARB data on the GO lines. Please either revise the Appendix G tables to clearly delineate between revenue bonds and GO bonds, or explain why it is more appropriate to include these data points as shown.

19. Does the cost estimate for Runway 10R/28L (which is technically a relocation of Runway 14R/32L) include the costs of decommissioning Runway 14R/32L?

20. The soft costs appear to consistently be in the 18% to 19% range. Please describe the methodology used to determine the soft costs and what items are included.

21. The contingency costs range in the 20% to 23% range. Please describe the methodology used to determine the estimated contingency costs and what types of items are included, and indicate when more refined cost estimates will be available based on advanced engineering design data.

ADDITIONAL DATA NEEDS

22. Using the best information available, it would be useful if the City would provide information on the average delays in the future after the cap is instituted in the Phase 1 case. So for example, if the average delay reaches 16 minutes in the first year of the cap, what would it be 5 years later given the changes in fleet mix?

23. Please provide details on the flight schedules used in the Phase 1 and Completion Phase analysis including the following in each city pair:

a. Number of daily arrivals and departures by each aircraft type and airline,
b. Number of seats for each aircraft type and airline, and
c. Assumed number of passengers for each aircraft type and airline.

The FAA is prepared to meet with you at your convenience and discuss further any of the comments/questions above.

Sincerely,

James G. Keefer
Manager, CHI Airports District Office

Appendix C

Response to FAA Comments on
City of Chicago's Request for Letter of Intent for a Multi-Year Commitment
Of Airport Improvement Program Grant-In-Aid funding

Application Dated March 1, 2009

RESPONSE TO FAA JUNE 24, 2009 COMMENTS

On June 24, 2009, the FAA requested the City of Chicago (City) respond to FAA comments on the City's request for Letter of Intent for a Multi-Year Commitment of Airport Improvement Program Grant-In-Aid funding submitted March 1, 2009. The FAA requested a response to the specific comments, not a new submission of the application. This response addresses the comments included in the June 24, 2009 letter. The numbering below reflects the numbering included in the June 24, 2009 letter.

GENERAL COMMENTS

Comment 1: Section 1.3 Benefit Cost Analysis, Page 1-3 (Also on page V-l section V), - The paragraph states, *"The FAA does not use the benefit-cost ratio for ranking projects to assess how AIP discretionary grants are to be allocated. The primary purpose of this BCA is to present the Net Present Value, assessing the ongoing value of the investment over time, and benefit-cost ratio of the Proposed Action, which consists of the LOI Projects and the OMP Completion Phase noise program."*

Although the BCA ratio does not automatically drive funding allocations or decisions, the FAA does use the BCA ratio to help evaluate the degree to which benefits outweigh costs, to aid in establishing Federal investment limits and as a comparative tool among projects

Response 1: In *FAA Policy and Final Guidance Regarding Benefit Cost Analysis (BCA) on Airport Capacity Projects for FAA Decisions on Airport Improvement Program (AIP) Discretionary Grants and Letters of Intent (LOI), December 15, 1999* FAA states "*it has no present intention of ranking different airports' projects on the basis of their benefit-cost ratios or net present values. However, the FAA will not limit BCA to pass-fail among alternative projects at a given airport*". The citation should have noted FAA's potential to use the BCA to compare alternatives at the same airport.

Comment 2: It appears there is a typographical error on Page V-14.1st Paragraph, second line - States *"Exhibit IV-7 shows the average unimpeded travel time for…"*. The reference should have been to Exhibit V-7.

Response 2: The reference should have been to Exhibit V-7. The City will revise the reference in any future submissions of the application as requested by the FAA.

Comment 3: As we continue to evaluate the optimal method of quantifying the benefits of the Completion Phase, and to understand the City's progress in securing the rest of the funds, it would help to get a status update on the City's progress in negotiating bond authority with the

airlines, and the timetable for concluding those negotiations or making other arrangements as necessary for securing the bond funds:

Response 3: The City has been actively engaged in discussions with the airlines related to Completion Phase airfield projects since November 2007. These discussions cover operational, and related design and construction issues, and funding issues. The City intends to include some General Airport Revenue Bonds (GARBs) for Completion Phase funding in a bond issue currently expected either in the fourth quarter of this year or the first quarter of next. The City views it as desirable, although not necessary, to have reached some level of agreement with the airlines by the time of that bond issue. The City and the airlines have agreed to form a joint financial working group to review funding options for OMP Completion Phase.

BENEFIT COST ANALYSIS

Comment 4: It is not clear why the City has established a cap on annual operations for analytical purposes for the Completion Phase scenario. Please clarify the rationale, including why the operational caps for the Base Case and completion Phase are the same.

Response 4: Currently, the City's request for Federal funding and on-going funding discussion with the airlines in connection with Completion Phase relate to the airfield components and not development of additional gate facilities at the Airport. Thus, these additional gate facilities have not been included in the BCA from a cost or additional capacity perspective. As such, any resulting limitation on activity due to gate capacity will impact both the Phase 1 and Completion Phase commensurately.

The activity level at which gate limitations might impact operations is debatable. Prior analysis by FAA determined that the 2009 (1,057,200 annual operations) and 2013 (1,120,600 annual operations) schedules of activity could be accommodated in the existing gate facilities with the exception of only 8 flights, and 12 flights, respectively. This 2013 level of demand would suggest an average of 8.1 turns per day per gate (2999 passenger operations/184gates/2).

The City believes that the availability of contact gates will not limit the ability to accommodate demand through the EIS analysis period (originally 2018). To the extent necessary, carriers will utilize hardstand positions to accommodate activity that cannot be served by the existing contact gates. However, for analytical purposes it was assumed that operations would be limited to contact gates, and that the resulting limits of the gate facilities roughly equaled the operational limits defined by FAA for Phase 1; 1,150,000 annual operations. This would equate to approximately 8.4 daily turns per contact gate position, a reasonable limit of gate capacity. FAA considers a daily utilization factor of 9 to 10 the ceiling for master planning purposes (AC150/5360-13, change 1).

The City believes that making this assumption for analytical purposes underestimates the benefits of the true proposed project and serves to illustrate that even under this type of "worst-case scenario" the Completion Phase produces a benefit-cost ration greater than one.

Comment 5: On Page V-2 of the city's application, it states:

"There are several different ways to prepare a BCA. The Phase 1 BCA used two distinct methodologies -- one using a delay savings-based analysis and the other using the FAA supplied consumer surplus methodology. The latter, which was appropriate for Phase l for valuing the additional capacity, produced a higher BC ratio than an analysis based on delay savings, although both methods satisfied the FAA's pass/fail test of having a positive ratio - a ratio exceeding 1.0, The delay savings methodology produces lower benefit cost ratios because it takes into account fewer benefits."

This discussion is factually wrong and should be removed from subsequent revisions to the BCA. It is incorrect to assert that both BCAs developed by the airport sponsor produced benefit-cost ratios over 1. The original Phase-1 BCA, as described in the February 15, 2005 LOI (revised), overstated delay saving benefits from inappropriately capping aircraft operations at current levels and estimating delay savings based on the corresponding level of annual average delay, rather than allowing delays to increase; reflecting the fact of increased passenger demand.[1]

Response 5: Per the FAA Guidance Document, "*….it would be unrealistic to conclude that an investment alternative would save more than 20 minutes of delay per operation relative to the base case. Instead, at some point where delay in the base case begins to increase exponentially beyond 10 to 15 minutes per operation, it would be appropriate to modify the traffic projection developed for the airport.... It would be more realistic to reflect a flat or only slightly escalating rate of growth once delay reaches 20 minutes.* ***Figure 10.2 illustrates the type of adjustment to traffic projections that would be appropriate as delay begins to exceed reasonable levels in the base case. The investment alternatives would also be simulated at the adjusted traffic levels.*** *Capping of traffic growth is clearly an imperfect solution,* ***in that it ignores real costs experienced by aircraft operators who must adjust or constrain schedules or by passengers who must seek other means of transportation due to excessive delays at a preferred airport.*** *However, capping of traffic growth prevents the measurement of excessively high apparent delay savings that ignore the availability to airport users of alternative actions to simply waiting in line."*

This section of the FAA Guidance material ensures that delay benefits are not over exaggerated as a result of considering delays in the Base Case that are excessive and unlikely to occur. It requires adjusting the demand forecast so that delays cap at between 15 and 20 minutes per aircraft in the Base Case, and suggest that the "*investment alternatives would be simulated at the adjusted traffic levels*", recognizing that capping of traffic is an imperfect solution. The City believes that the initial BCA correctly applied this approach, and that it underestimates benefits by ignoring "*real costs experienced by aircraft operators who must adjust or constrain schedules or by passengers who must seek other means of transportation due to excessive delays at a preferred airport,"* in addition to other ignored benefits.

However, the City recognizes that the consumer surplus methodology supplied by FAA for the Phase 1 BCA provides an alternative method to quantify the benefits associated with incremental

[1] However, the City's revised submittal, using a different methodological approach to calculate delay savings properly allowed operations to grow in the build case to the same levels of delay that caused the FAA to impose an operational cap at the Airport.

demand that a proposed project may allow the Airport to process. In this context, the City is willing to test this or other methodologies FAA deems appropriate.

Comment 6: On Page V-2 of the City's LOI request, the text states:

"The BCA for the Completion Phase included in this document uses the delay savings methodology, which is appropriate now because some of the Phase 1 projects have improved airport capacity. However, to the extent that the City is correct that gate capacity imposes no practical limit on operations (see Section 5.2 for further discussion), valuation of the additional capacity provided by the Completion Phase airfield would produce a ***higher ratio*** *than the analysis relied on in this application."*

This appears to state that the BCA ratio would be higher if the City had not imposed an artificial cap on operations for purposes of the analysis. It is not clear to the FAA that this is necessarily the case.

Assuming that the gates are not necessarily a constraint to operations at the Airport, net delay savings would be expected to diminish over time. For the purpose of the BCA, delay savings are measured by the distance between a constrained Phase-1 delay curve and an unconstrained Completion Phase delay curve.

As operations increase, it would seem reasonable to the FAA that the distance between these two curves would diminish over time even with capacity increases, as operations grow beyond certain levels, depending upon how the air carriers adjust their fleet mix and flight schedules in response. It would be helpful for the City to provide some general explanation of how air carriers adjust their fleet mix and schedules in response to capacity increases and changing delay patterns at hub airports.

Response 6: The City agrees that net delay savings would diminish over time assuming that gates are not a constraint to operations and that Phase 1 will be constrained by airfield capacity while Completion Phase demand is not constrained. However, the costs experienced by aircraft operators who must adjust or constrain schedules, or by passengers who must seek other means of transportation due to excessive delays at the preferred airport under the constrained Base Case, must also be considered in addition to the delay benefits. Alternatively, a consumer surplus approach such as that employed in the Phase 1 BCA Supplemental Analysis can be undertaken. The Phase 1 Supplemental Analysis produced significantly greater BCRs than the March 2005 analysis which utilized an approach similar to that utilized in the March 2009 Completion Phase BCA.

Comment 7: Page D-1, The City's LOI request states:

" ... the City believes that the number of gates at the Airport will not limit operations, and that carriers will reconfigure existing gates and/or utilize hardstand facilities if gate needs exceed current availability, for the purposes of utilizing conservative assumptions for the determination of benefits, a capping of operations due to gate limitations was included in the BCA."

Here again, assuming that gates will not likely represent a capacity constraint at the airport, we remain open to the possibility of an operational cap for analytical purposes. Establishing this cap should be based on average annual delay levels.

The City's LOI request also states:

"As such, the 1,150,000 annual operations established by the FAA as the limiting capacity of the terminal gate facilities seems reasonable, and is utilized as a conservative assumption in the BCA."

FAA did not establish the 1,150,000 annual operations based on terminal capacity. This number was chosen based on the delay curves referenced in the EIS and reproduced in the Phase1 BCA. Under the Phase-l analysis, aircraft operations were allowed to grow up to the point where average annual delays (measured in minutes) matched those levels of delay that caused the FAA to impose an operational cap at the airport. The rationale for limiting aircraft operations is not supported by the discussion found in Appendix D. Additional documentation will be needed. For consistency, the choice of an operational cap (if any) for analytical purposes should be related to average aircraft delay.

Response 7: FAA's clarification as to the nature of the 1,150,000 annual operations cap is hereby noted and language will be revised in future submittals

In order to assess the assertion that gates will not limit operations at the Airport, sensitivity analyses were performed that capped Phase 1 activity at 1,150,000 annual operations consistent with the EIS, and allowed the Completion Phase to continue growing.

Under this scenario, delay benefits were assumed equal to the difference in travel time between the Phase 1 constrained activity and the Completion Phase unconstrained activity applied to the constrained activity projections. This analysis does not account for the significant costs experienced by passengers who must seek alternative means of transportation due to the capping of activity under the Phase 1 Base Case. A BCR of 1.25 was computed under this sensitivity scenario and is presented in **Table 2** as Sensitivity 2A, attached hereto. Sensitivity 2B, shown in **Table 3,** is the same as Table 1 except the benefits are applied to unconstrained activity projections. Sensitivity 2 produced a BCR of 1.26.[2].

Comment 8: Section V: Benefit-Cost Analysis Summary - Given the scale of the proposed project and complexities surrounding the BCA, FAA expected a more detailed BCA, including documentation of all of the underlying assumptions used to generate the benefit cost ratio. Subsequent revisions to the BCA should address all of the questions raised in this initial review, as well as provide the FAA with a more comprehensive discussion of the BCA methodology.

Response 8: Based on the guidance from the FAA at a meeting that provided a preliminary overview of the application, the City removed some of the detailed discussion of the use of

[2] These sensitivity analyses utilize revised VOCs and delay calculations as discussed in Response 10 and incorporated in Table 1 as Sensitivity 1.

TAAM simulation results to develop the delay saving for the BCR. The City will provide the FAA with a more comprehensive discussion.

The data that supports the BCA included in the March 1, 2009 application is derived from the Total Airspace and Airport Modeller (TAAM) simulation runs done in support of the Environmental Impact Statement. The TAAM simulation analysis was extensive and described as such in a December 17, 2004 memo from the Chicago Airport District Office "…the process FAA employed in this TAAM Analysis is unprecedented in scope and breadth of modeling effort and review for any simulation analysis ever conducted for any single airport." "The FAA A.T. workgroup invested approximately 1,400 hours reviewing assumptions, draft results, animations and final results as part of the process. The FAA's third party Contractor invested approximately 650 hours…" The immense amount of data and results were compiled in simulation result data packages for each airfield and demand level. The City used the following data when developing the BCA;

- OMP Phase 1 Airfield 2009 Constrained Demand
- OMP Phase 1 Airfield 2007 Unconstrained Demand
- OMP Phase 1 Airfield 2009 Unconstrained Demand
- OMP Phase 1 Airfield 2013 Unconstrained Demand
- OMP Full Build Airfield 2009 Constrained Demand
- OMP Full Build Airfield 2009 Unconstrained Demand
- OMP Full Build Airfield 2013 Unconstrained Demand
- OMP Full Build Airfield 2018 Unconstrained Demand

No new TAAM simulations were needed to support the March 1, 2009 BCA or the BCA sensitivities as explained by these responses to comments.

Comment 9: Incorporation of Relevant Costs
Please provide a detailed list of the project components and their associated costs that are included in the BCA. If terminal facilities are not included, please explain why, including an explanation of why the delay-reduction and capacity benefits of the Completion Phase airfield are not dependent on new terminals. This should include both airside processing of aircraft and landside processing of passengers (e.g., ticketing, baggage claim, curbside processing, etc.)

Based on the table titled *Completion Phase Summary of Cost Program Administration Revised Cash Flow* in the March 2009 LOI, it appears that the airport sponsor has inadvertently included costs for Taxiway Lima Lima. FAA believes these costs have already been included in the Phase-1 BCA; therefore, they should be excluded from the Completion Phase BCA.

Response 9: A detailed list of the project components can be found in Appendix G of the application. The totals correlate to Table V-3 in the BCA summary chapter. The City can provide additional detail by project component upon request.

Terminal facilities were not included in the costs included in the BCA, since they are not part of current funding requests/negotiations and the city is currently initiating a Western Terminal Area

planning study[3] for their development. Alternatively, for analytical purposes, the City used a methodology that limited activity at a level supported by the existing contact gates. (See Response 4 above).

The Phase 1 BCA included an OMP Phase 1 scenario and a Master Plan Phase 1 scenario. The cost of Taxiway Lima Lima, which is part of the World Gateway Program (WGP), was only included in the Master Plan Phase 1 scenario and not included in the OMP Phase 1 scenario. Thus, the City intentionally included the cost of Taxiway Lima Lima in the Completion Phase BCA. The City is seeking an LOI for multi-year commitment of AIP grant –in-aid funding that includes Taxiway Lima Lima. LOI AGL 06-01 included AIP funding for the OMP Phase 1 projects which did not include Taxiway Lima Lima.

Comment 10: Methodology Used to Calculate Travel Time Savings

- Page V-11 of the LO1 states that the FAA asked that the BCA consider a constrained forecast of activity based on the assumptions that the new terminal capacity will not be constructed at the same time as the airfield project. This is factually incorrect. The FAA did not request the airport sponsor to consider a constrained forecast. Instead, the airport sponsor noted its intention to cap operations for the purpose of conducting the BCA. At that time, the FAA reiterated its concern regarding how operations were capped in the original Phase-1 BCA. Based on the information provided in the BCA. FAA cannot determine whether an operational cap is needed. Assuming, for the sake of argument, that a cap is reasonable, additional information will be needed to determine how that cap should be set. It is not immediately clear to the FAA why the City would assume that the operational caps under the Base Case and the Completion Phase scenario should be the same.

Rather than constraining the number of operations in the scenario case to be equal to the base case, one alternative would be to grow the operations under the scenario case to the point that the level of delay equals the level of delay at which the Federal government imposed operational caps previously.

- Page V-12. The delay curve referenced in the March 1, 2009 LOI appears different than the delay curve referenced in the March 1, 2004 LOI. The delay curve reported in the 2004 LO1 suggests that at 1,150,000 operations per year average annual delays would be approximately 17 minutes. The same delay curve reported in the 2009 LOI suggests that at 1,150,000 operations per year average annual delays would be only around 14 minutes. Please explain the difference. It would appear to the FAA that the City should retain the delay curves used in the original Phase-1 analysis,

- Subsequent revisions to the BCA should also address whether construction during the Completion Phase of the OMP will likely have a negative impact on travel time savings. The analysis should take into account the airport's experience with Phase-l construction.

[3] PFC funding approved for Western Terminal Area planning in PFC application 08-21-C-00-ORD Final Agency Decision.

- Please explain the basis of the variable operating cost (VOC) assumptions, particularly because in the analysis they appear to be applied to the full block-time. Given that a sizable portion of the reported delay savings may occur on the ground, the full block-time VOCs would need to be adjusted to reflect a lower fuel burn rate. Subsequent revisions to the BCA document should properly address this issue.

- The FAA is unable to determine what deflator was used to express aircraft VOCs in 2008 dollars. It should be noted that the fuel component, per FAA guidance, should be adjusted using a fuel price index rather than a more generic index such as the Gross Domestic deflator.

- To assist the FAA with its further review of the BCA, please provide the FAA with a spreadsheet detailing the VOC cost buildup by year, including the relevant Form 41 data and fleet mix assumptions.

Response 10: As part of the EIS process, FAA documented that the activity levels in 2009 (1,057,200 annual operations) and 2013 (1,120,600 annual operations) could be accommodated within the existing gate facilities with a total of 8 and 12 flights unaccommodated, respectively, at contact gates. For analysis purposes, the BCA assumed that no additional gates will be developed, and imposed an operational cap on activity on both the Phase 1, and Completion Phase alternatives. Given the documented unaccommodated flights in the 2009 and 2013 schedule, it seemed a reasonable assumption that the 1,150,000 operations identified by FAA as an operational cap for the Phase 1 airfield was also a reasonable limitation for terminal contact gates. This limitation impacts both the Phase 1 and Completion Phase activity.

As previously discussed, a cap of 1,150,000 annual operations suggest 8.4 turns per gate per PMAD. FAA considers a daily utilization factor of 9 to 10 the ceiling for master planning purposes (AC150/5360-13, change 1).

Response 7 presents a sensitivity analysis that considers the potential use of airside capacity limitations only.

Response 10, Bullet 1: The March 1, 2009 BCA utilized the delay curve equation produced using Peak Month, Average Day (PMAD) results to determine the delay for each year of the 2008 Terminal Area Forecast (TAF). The delay was calculated by entering the 2008 TAF Average Annual Day (AAD) demand into PMAD delay curve equation. Alternatively, in the case of the 2005 BCA, AAD results were used to determine delay. The difference in PMAD and AAD results lead to some of the difference between the 14 and 17 minutes of delay referenced in the FAA's comment. The delay curve equation used in the sensitivities included with this response to comments is the AAD delay curve equation which more closely matches the delay calculations from the 2005 BCA for the intermediate years (between the 2005 BCA years 2009 and 2013).

FAA created the delay curve that resulted in the 17 minutes of delay at 1,150,000 operations in the 2005 BCA. Based on the City's understanding of the FAA methodology, FAA had determined that the Phase 1 cap (1,150,000) would be reached in 2015, and applied the growth in

delay produced by the simulation model in 2013 (11.8% annually) to the following two years to reach the 17.8 delay level. The following table depicts the average delay under the alternative calculation approaches. If the FAA provides the delay curve equation that supports the 17.8 minutes of delay, the City can incorporate it into a sensitivity analysis and compare the results. The delay curve used in the March 1, 2009 BCA is the most conservative and will produce the lowest BCR with the cap of 1,150,000 annual operations.

Table 4 shows the average annual delay per operation from the 2005 BCA, the March 1, 2009 BCA and the sensitivities included with this response to comments.

Table 4

BCA Average Delay Comparison

Year	2005 BCA Forecast (CY)	2005 BCA Average Delay (min/operation)	March 1, 2009 BCA Forecast (CY)	March 1, 2009 BCA, Average Delay Based on PMAD Curve (min/operation)	July Response to Comment Sensitivities, Average Delay Based on AAD Curve (min/operation)
2007	1,026,300	9.5			
2008	1,041,635	9.9	883,427	4.7	5.0
2009	1,057,200	10.3	828,608	3.8	4.0
2010	1,072,706	10.9	825,659	3.7	3.9
2011	1,088,438	11.6	838,443	3.9	4.1
2012	1,104,402	12.7	866,996	4.4	4.7
2013	1,120,600	14.2	895,522	5.0	5.3
2014	1,134,910	15.9	922,645	5.5	6.0
2015	1,149,402	17.8	946,654	6.1	6.6
2016			969,176	6.7	7.3
2017			993,766	7.4	8.1
2018			1,017,468	8.2	9.0
2019			1,041,116	9.1	10.0
2020			1,064,593	10.0	11.0
2021			1,088,058	11.0	12.2
2022			1,112,451	12.2	13.6
2023			1,136,833	13.5	15.1
2024 (Constrained)			1,150,000	14.2	16.0

Source: 2002 TAF; 2008 TAF; EIS TAAM Simulation Results, 2004; FAA, 2005; Ricondo & Associates, Inc., 2009.
Prepared By: Ricondo & Associates, Inc.

Response 10, Bullet 2: Similar to Phase 1, the City will implement the OMP in a manner that maximizes land-side construction activity and minimizes impacts to operations. Regular construction coordination will occur in established forums designed for such purposes that include representatives of the City of Chicago (and its consultants), airlines, and FAA. The City

of Chicago has a good track-record with managing construction activities at active airports. Significant resources are committed to this effort including the Phasing and Operations Evaluation Team (POET) which coordinates the phasing of OMP development to minimize operations impacts to the Airport. Weekly planning sessions have, and continue to be held with the FAA, airlines, City, and construction representatives in order to determining the best methods and phasing for construction in order to minimize operational impacts. The success of POET and the commitment of the City in minimizing operational impacts due to construction are exemplified by the success in this area during the Phase 1 program implementation.

Response 10, Bullets 3, 4, and 5: Based on this comment, VOCs have been revised to consider the source of travel time benefits (airborne versus ground) and detailed tabular information will be provided in upcoming submittals.

VOCs were developed from USDOT data covering the year ending September 2008, and were considered consistent with the 2008 base year.

Attached **Table 1** shows Sensitivity 1 which includes the AAD delay results as discuss in Response 10, Bullet 1 and the revised VOCs as discussed in Response, Bullets 3, 4, and 5. Sensitivity 1 resulted in a BCR of 1.47.

Comment 11: Page V-11 Full Build Scenario Constraint

The City's LOI request states:

"As previously discussed, the FAA requested that this BCA consider a constrained forecast of activity based on the assumption that new terminal capacity will not be constructed at the same time as the airfield projects included in this application. Based on an analysis of existing gate facility capabilities, it was estimated that total operations would be constrained at approximately 1,150,000 annual operations, or 3.151 annual average day operations, approximately 6 percent more operations than the 2,968 peak number of daily operations actually handled by the Airport July 1, 2004 as reported by FAA in its OPSNET database."

As explained earlier in this letter, in the 2005 BCA Phase 1 scenario, operations were constrained due to airside infrastructure limitations, and the level of 1,150,000 operations based on the level of delay at which the Federal government previously imposed an operational cap. Then, FAA looked at the impacts if the western concourse was not constructed in the originally anticipated timeframe, In that case, it was determined that impacts were minimal.

Response 11: See Response 10.

PROJECT FINANCING

Comment 12: Construction costs (multiple locations) - The City's LOI request cites a few different cost figures for the OMP Completion Phase:

Executive Summary. page 1-4	$2,647.1 billion (in 2008 dollars).
Table IV-I, page IV-4	$2,751,810 (in 2008 dollars)
Appendix G	$3,277,255,487

Please describe the differences between the various cost estimates above.

Response 12:
The differentiation between the three listed construction costs for OMP Completion Phase is as follows:

- Executive Summary, page I-4 - $2,647.1 billion (in 2008 dollars): reflects the total OMP Completion Phase construction costs *excluding* the completion phase noise program costs.

- Table IV-1, page IV-4 - $2,751.8 (in 2008 dollars): reflects the total OMP Completion Phase construction costs *including* the completion phase noise program costs.

- Appendix G - $3,277.3 billion: reflects the total OMP Completion Phase cost estimate including the Noise Program, cash flowed and escalated using 5% per year. The cash flow reflects the commissioning dates included in Table IV-2 and Exhibit IV-2 included in Chapter IV, The O'Hare Modernization Program.

Comment 13: Cash flow (Executive Summary, page 1-4) shows expenditures in CY 2008 and 2009. Please describe the expenditures shown in both calendar years.

Response 13: The expenditures in 2008 consisted of the following:

	Actual Amounts
Conceptual Design Costs (Master Civil -BPC)	$2,262,628
Conceptual Estimating & Logistic Planning (CM – PBCS)	$194,792
FAA Agreements	$487,500
Total	$2,944,920

The expenditures planned for 2009 include:

	Estimated Amounts
Conceptual Designs (Master Civil -BPC)	$5,000,000
Conceptual and Final Designs (Various Designers)	$32,000,000
Conceptual Estimating & Logistic Planning (CM – PBCS)	$730,000
Design Administration (Various Consultants/City/FAA)	$15,300,000
Professional Liability Insurance	$10,300,000
Western Terminal Area Planning (L&B)	$3,200,000
Fuel System Study (RS&H)	$500,000
Total	$67,030,000

Comment 14: Section 4.2.2.3 (Page IV-3) -The scope of Runway 10R/28L as described consistently includes the South ATCT. Please verify if the cost estimates include the South ATCT.

Response 14: The costs associated with the South ATCT are included in the overall cost estimate for Runway 10R/28L valued at $578,061,200 (in 2008 dollars) presented in Section 4.3 Capital Costs and Implementation Schedule, Table IV-1.

Comment 15: Section 4.5 (page IV-7) --This section includes a statement saying *"Most of the ADG-VI traffic simulated for the EIS, primarily international arrivals, arrived and departed over navigational fixes served by runways on the north airfield."*
Please clarify how the City anticipates the two ADG-VI capable runways will be used under the Completion Phase scenario.

Response 15: The City anticipates that Air Traffic will operate the two ADG-VI runways, Runway 9C-27C and Runway 10C-28C consistent with how the runways were modeled as part of the EIS. The ADG-VI arrival operations included in the EIS arrived over the northeast and northwest arrival fixes. The arrivals were then routed to Runways 9C-27C and 10C-28C as operating configuration and traffic demanded. The ADG-VI departure operations included in the EIS departed over the north and northern-most east departure fix. The departures departed from Runways 9C-27C and 10C-28C depending on the operating configuration and traffic.

Comment 16: Exhibit IV-2 (page IV-12) -- This shows the taxiway improvements, including construction of Taxiway Lima Lima, being constructed during 2011-2012. Please verify that this schedule includes all enabling projects associated with these improvements, including the fuel distribution system changes.

Response 16: The construction of Taxiway Lima Lima and the associated enabling projects, including the fuel distribution system, are scheduled to be constructed during 2011-2012.

Comment 17: Section VI - This section mentions all of the different sources of Federal funding the airport has received; however, it is scattered in different paragraphs. Please provide a single chart showing the year, federal funding category, amount and what the funds supported.

Response 17: Table 5 lists federal grants associated with the OMP.

Comment 18: Appendix G -- Please either move the data from Row 38 (which is for GO bonds) to either Row 35 or 36 (which are for Revenue Bonds) or to Row 39 (Other Debt), or explain why it is more appropriate to include these data points as shown.

In modifying the format of some of the financial templates--adding categories,
Etc, -- it appears that some of the percentage calculations are in error. Please recalculate these percentages.

In addition, the application does not show the full funding sources for the Other Capital Programs. The application has only identified $3,045,397,420 as compared with $3,248,420,708,

a shortfall of $203,023,288. There is a footnote that states, *"Unmet funding needs for CIP projects are projects that have been approved but are not yet funded."* The FAA's intent of the template is for the Sponsor to show complete funding sources for all costs, and the template does not delineate between planned sources versus cash-on-hand. Rather, it delineates between what's planned versus what's approved.

Finally, in addition to the tables referenced above, there is GARB data on the GO lines, Please either revise the Appendix G tables to clearly delineate between revenue bonds and GO bonds, or explain why it is more appropriate to include these data points as shown.

Response 18: Please see the attached revised Appendix G addressing the following changes:

- Row 38 has been moved to Row 36 as these are in fact GARBs.
- Other Capital Plans funding percentage recalculated
- Unmet funding needs removed
- GARB data revised to delineate between revenue bonds and GO bonds.

Comment 19: Does the cost estimate for Runway 10R/28L (which is technically a relocation of Runway 14R/32L) includes the costs of decommissioning Runway 14R/32L?

Response 19: The costs for decommissioning Runway 14R/32L are included in the overall cost estimate for Runway 9C-27C valued at $1,469,688,187 (in 2008 dollars) presented in Section 4.3 Capital Costs and Implementation Schedule, Table IV-1.

The construction phasing of the Completion Phase of the OMP is being refined as additional programming and detailed design efforts are performed. It remains the City's intention to decommission Runways 14L-32R and 14R-32L as new runways 9C-27C and 10R-28L are respectively commissioned. It is important to note that construction work to support the decommissioning activities will be performed in a manner that minimizes operational impacts. At the time the most recent cost estimate was developed, the costs for decommissioning activities for both Runways 14L-32R and 14R-32L were associated under Runway 9C-27C as it was anticipated that these efforts were most likely to be packaged in construction plans along with Runway 9C-27C. As additional construction phasing refinement progresses in accordance with the established working groups (See Response 10, Bullet 2), refinement to construction bid packages will also be performed.

Comment 20: The soft costs appear to consistently be in the 18% to 19% range. Please describe the methodology used to determine the soft costs and what items are included.

Response 20: Soft costs are applied consistently at 18.5% for all projects presented in the Proposed LOI Projects list. The 18.5% soft cost factor is comprised of the following items:

- Program Management at 3%
- Construction Management at 5%
- AOA Escorts/Security at 0.5%
- OMP Administration at 4.5%

- Insurance/OCIP at 3.5%
- Design Review/Design Standards/ Composite Utilities at 2%

These percentages are based on cost data from OMP Phase 1 work.

The standard design process for each project of the Completion Phase starts at the Project Definition Document (PDD) stage and advances through to final, Issued for Construction documents. Estimates will be prepared and reconciled at each level of design development. Contingency is applied to each project based on type of work (as noted above), clarity of scope, assessment of unknown items and risk.

The unknown aspects of a particular scope are reduced over time as each level of the design development offers more refinement and detail. Contingency as a function of the design and construction is re-evaluated at each stage of development and adjusted accordingly. Upon award of the construction contract, the contingency is adjusted to equal 10% of the contract amount. Under certain circumstances, contingencies greater or less than 10% are assigned.

Comment 21: The contingency costs range in the 20% to 23% range. Please describe the methodology used to determine the estimated contingency costs and what types of items are included, and indicate when more refined cost estimates will be available based on advanced engineering design data,

Response 21: The contingency cost range varies based on the type and location of work to be performed. Each project presented in the Proposed LOI Projects list is comprised of various enabling projects, runway and taxiways construction, navigational aids installation and upgrades, site utilities installation and relocation and facilities relocations. In general contingency was applied to the subcomponents of each project as follows:

- Runway and Taxiways at 15%
- Infrastructure and Utilities at 35%
- Demolition Activities at 20%
- Facilities Relocation at 20-35% (depending on type, complexity, location and level of project definition)

ADDITIONAL DATA NEEDS

Comment 22: Using the best information available, it would be useful if the City would provide information on the average delays in the future after the cap is instituted in the Phase 1 case. So for example, if the average delay reaches 16 minutes in the first year of the cap, what would it be 5 years later given the changes in fleet mix?

Response 22: As part of the EIS, the Phase 1 airfield was simulated at three constrained demand levels which included schedules with the same number of operations but fleet mix and city pairs changed to reflect adjustments by the carriers. The constrained demand level used in the EIS was below that used in the March 1, 2009 BCA, but it is the best information available that

provides an example of the impact of a changing fleet mix within a constant operation level. The simulated EIS demand was for the 2007, 2009, and 2013 constrained years with 974,000 annual operations. The average PMAD delay for the 2007, 2009, and 2013 constrained schedules was 7.9, 7.8, and 8.2 minutes per operation respectively. Again, it is important to note that in these examples, the constrained operations level is far below that of the March 1, 2009 BCA which constrained operations level is far below that of the March 1, 2009 BCA which constrained annual operations at 1,150,000, but one may assume a similar increase in delay resulting from carrier change in fleet mix.

Comment 23: Please provide details on the flight schedules used in the Phase 1 and Completion Phase analysis including the following in each city pair:

a. Number of daily arrivals and departures by each aircraft type and airline,
b. Number of seats for each aircraft type and airline, and
c. Assumed number of passengers for each aircraft type and airline.

Response 22: See **Tables 6 through 9** attached.

Table 1
BCA Sensitivity 1

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	34.1	52.1	0.0	86.2	0.0	24.3	24.3	1.6058	53.7	15.2	38.5
2016	47.9	73.4	0.0	121.3	0.0	24.3	24.3	1.7182	70.6	14.2	56.4
2017	65.3	100.5	0.0	165.9	0.0	24.3	24.3	1.8385	90.2	13.2	77.0
2018	84.9	131.0	0.0	215.9	0.0	24.3	24.3	1.9672	109.8	12.4	97.4
2019	117.7	166.4	0.0	284.2	0.0	24.3	24.3	2.1049	135.0	11.6	123.4
2020	158.8	207.3	0.0	366.0	0.0	24.3	24.3	2.2522	162.5	10.8	151.7
2021	200.4	264.1	0.0	464.6	0.0	24.3	24.3	2.4098	192.8	10.1	182.7
2022	248.8	330.9	0.0	579.6	0.0	24.3	24.3	2.5785	224.8	9.4	215.3
2023	297.1	396.6	0.0	693.7	0.0	24.3	24.3	2.7590	251.4	8.8	242.6
2024	333.7	441.3	0.0	775.0	0.0	24.3	24.3	2.9522	262.5	8.2	254.3
2025	333.7	447.0	0.0	780.7	0.0	24.3	24.3	3.1588	247.2	7.7	239.5
2026	333.7	452.8	0.0	786.5	0.0	24.3	24.3	3.3799	232.7	7.2	225.5
2027	333.7	458.6	0.0	792.3	0.0	24.3	24.3	3.6165	219.1	6.7	212.4
2028	333.7	464.5	0.0	798.2	0.0	24.3	24.3	3.8697	206.3	6.3	200.0
2029	333.7	470.3	0.0	804.0	0.0	24.3	24.3	4.1406	194.2	5.9	188.3
2030	333.7	476.2	0.0	810.0	0.0	24.3	24.3	4.4304	182.8	5.5	177.3
2031	333.7	482.2	0.0	815.9	0.0	24.3	24.3	4.7405	172.1	5.1	167.0
2032	333.7	488.2	0.0	821.9	0.0	24.3	24.3	5.0724	162.0	4.8	157.2
2033	333.7	494.2	0.0	827.9	0.0	24.3	24.3	5.4274	152.5	4.5	148.1
2034	333.7	500.3	0.0	834.0	0.0	24.3	24.3	5.8074	143.6	4.2	139.4
Total	$4,925.9	$6,898.0	$0.0	$11,823.9	$2,748.5	$505.8	$3,254.3		$3,465.9	$2,358.3	$1,107.6
Present Value											
									$3,465.9	$2,358.3	$1,107.6

Benefit-Cost Ratio:	**1.47**

2008 project costs are a sunk costs and not included in the BCA analysis.

Table 2
BCA Sensitivity 2A

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)
Sensitivity 1 with Constrained Phase 1 Activity, Unconstrained Completion Phase Activity, and Benefits Applied to Constrained Activity

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	34.1	52.1	0.0	86.2	0.0	24.3	24.3	1.6058	53.7	15.2	38.5
2016	47.9	73.4	0.0	121.3	0.0	24.3	24.3	1.7182	70.6	14.2	56.4
2017	65.3	100.5	0.0	165.9	0.0	24.3	24.3	1.8385	90.2	13.2	77.0
2018	84.9	131.0	0.0	215.9	0.0	24.3	24.3	1.9672	109.8	12.4	97.4
2019	117.7	166.4	0.0	284.2	0.0	24.3	24.3	2.1049	135.0	11.6	123.4
2020	158.8	207.3	0.0	366.0	0.0	24.3	24.3	2.2522	162.5	10.8	151.7
2021	200.4	264.1	0.0	464.6	0.0	24.3	24.3	2.4098	192.8	10.1	182.7
2022	248.8	330.9	0.0	579.6	0.0	24.3	24.3	2.5785	224.8	9.4	215.3
2023	297.1	396.6	0.0	693.7	0.0	24.3	24.3	2.7590	251.4	8.8	242.6
2024	325.8	430.9	0.0	756.7	0.0	24.3	24.3	2.9522	256.3	8.2	248.1
2025	311.2	416.8	0.0	728.0	0.0	24.3	24.3	3.1588	230.5	7.7	222.7
2026	304.3	412.9	0.0	717.3	0.0	24.3	24.3	3.3799	212.2	7.2	205.0
2027	287.7	395.3	0.0	683.0	0.0	24.3	24.3	3.6165	188.9	6.7	182.1
2028	269.8	375.5	0.0	645.4	0.0	24.3	24.3	3.8697	166.8	6.3	160.5
2029	250.8	353.4	0.0	604.2	0.0	24.3	24.3	4.1406	145.9	5.9	140.0
2030	230.3	328.7	0.0	559.1	0.0	24.3	24.3	4.4304	126.2	5.5	120.7
2031	208.5	301.3	0.0	509.8	0.0	24.3	24.3	4.7405	107.5	5.1	102.4
2032	185.1	270.8	0.0	455.9	0.0	24.3	24.3	5.0724	89.9	4.8	85.1
2033	160.1	237.1	0.0	397.2	0.0	24.3	24.3	5.4274	73.2	4.5	68.7
2034	133.3	199.9	0.0	333.2	0.0	24.3	24.3	5.8074	57.4	4.2	53.2
Total	$3,922.0	$5,445.1	$0.0	$9,367.0	$2,748.5	$505.8	$3,254.3		$2,945.5	$2,358.3	$587.2
Present Value											
									$2,945.5	$2,358.3	$587.2

Benefit-Cost Ratio:	**1.25**

2008 project costs are a sunk costs and not included in the BCA analysis.

Table 3
BCA Sensitivity 2B

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)
Sensitivity 1 with Constrained Phase 1 Activity, Unconstrained Completion Phase Activity, and Benefits Applied to Unconstrained Activity

	Benefits				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings	Total Project Benefits	Project Construction Costs	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	68.4	0.0	68.4	1.0700	0.0	63.9	(63.9)
2010	0.0	0.0	0.0	0.0	432.6	0.0	432.6	1.1449	0.0	377.9	(377.9)
2011	0.0	0.0	0.0	0.0	925.9	0.0	925.9	1.2250	0.0	755.8	(755.8)
2012	0.0	0.0	0.0	0.0	809.1	0.0	809.1	1.3108	0.0	617.3	(617.3)
2013	0.0	0.0	0.0	0.0	367.5	7.5	375.0	1.4026	0.0	267.4	(267.4)
2014	0.0	0.0	0.0	0.0	145.0	11.4	156.4	1.5007	0.0	104.2	(104.2)
2015	34.1	52.1	0.0	86.2	0.0	24.3	24.3	1.6058	53.7	15.2	38.5
2016	47.9	73.4	0.0	121.3	0.0	24.3	24.3	1.7182	70.6	14.2	56.4
2017	65.3	100.5	0.0	165.9	0.0	24.3	24.3	1.8385	90.2	13.2	77.0
2018	84.9	131.0	0.0	215.9	0.0	24.3	24.3	1.9672	109.8	12.4	97.4
2019	117.7	166.4	0.0	284.2	0.0	24.3	24.3	2.1049	135.0	11.6	123.4
2020	158.8	207.3	0.0	366.0	0.0	24.3	24.3	2.2522	162.5	10.8	151.7
2021	200.4	264.1	0.0	464.6	0.0	24.3	24.3	2.4098	192.8	10.1	182.7
2022	248.8	330.9	0.0	579.6	0.0	24.3	24.3	2.5785	224.8	9.4	215.3
2023	297.1	396.6	0.0	693.7	0.0	24.3	24.3	2.7590	251.4	8.8	242.6
2024	325.8	431.1	0.0	756.9	0.0	24.3	24.3	2.9522	256.4	8.2	248.1
2025	311.2	420.6	0.0	731.7	0.0	24.3	24.3	3.1588	231.7	7.7	223.9
2026	304.3	415.9	0.0	720.3	0.0	24.3	24.3	3.3799	213.1	7.2	205.9
2027	287.7	401.4	0.0	689.1	0.0	24.3	24.3	3.6165	190.5	6.7	183.8
2028	269.8	384.3	0.0	654.1	0.0	24.3	24.3	3.8697	169.0	6.3	162.7
2029	250.8	364.3	0.0	615.1	0.0	24.3	24.3	4.1406	148.6	5.9	142.7
2030	230.3	341.3	0.0	571.6	0.0	24.3	24.3	4.4304	129.0	5.5	123.5
2031	208.5	314.9	0.0	523.4	0.0	24.3	24.3	4.7405	110.4	5.1	105.3
2032	185.1	284.9	0.0	470.0	0.0	24.3	24.3	5.0724	92.7	4.8	87.9
2033	160.1	251.0	0.0	411.1	0.0	24.3	24.3	5.4274	75.7	4.5	71.3
2034	133.3	212.9	0.0	346.2	0.0	24.3	24.3	5.8074	59.6	4.2	55.4
Total	$3,922.0	$5,545.1	$0.0	$9,467.1	$2,748.5	$505.8	$3,254.3		$2,967.6	$2,358.3	$609.3
Present Value											
									$2,967.6	$2,358.3	$609.3

Benefit-Cost Ratio:	**1.26**

2008 project costs are a sunk costs and not included in the BCA analysis.

Table 5

OMP Federal Funding

Federal Funding Description				Amounts	Supported
1) AIP AGL-06-01					
Year	Project	Entitlement	Discretionary	Annual Total	
2006	Runway 9L-27R Construction	$9,300,000	$20,000,000	$29,300,000	Construction of Runway 9L-27R
2007	Runway 9L-27R Construction	$8,400,000	$20,000,000	$28,400,000	Construction of Runway 9L-27R
2008	Runway 9L-27R Construction	$6,500,000	$20,000,000	$26,500,000	Construction of Runway 9L-27R
2009	Runway 9L-27R Construction	$6,500,000	$20,000,000	$26,500,000	Construction of Runway 9L-27R
2010	Runway 9L-27R Construction	$6,500,000	$7,800,000	$14,300,000	Construction of Runway 9L-27R
2010	Runway 10L Extension Construction		$12,200,000	$12,200,000	Construction of Runway 10L Ext
2011	Runway 10L Extension Construction		$20,000,000	$20,000,000	Construction of Runway 10L Ext
2012	Runway 10L Extension Construction		$17,800,000	$17,800,000	Construction of Runway 10L Ext
2012	Runway 10C-28C Construction		$2,200,000	$2,200,000	Construction of Runway 10C-28C
2013	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2014	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2015	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2016	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2017	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2018	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2019	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
2020	Runway 10C-28C Construction		$20,000,000	$20,000,000	Construction of Runway 10C-28C
	TOTAL			**$337,200,000**	
2) AGL-08-00105					
Year	Project			Annual Amount	
2008	North Airport Traffic Control Tower (NATCT)			$88,125	Construction of the NATCT
2009	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2010	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2011	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2012	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2013	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2014	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2015	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2016	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2017	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2018	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2019	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2020	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2021	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2022	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2023	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2024	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2025	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2026	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2027	North Airport Traffic Control Tower (NATCT)			$2,115,000	Construction of the NATCT
2028	North Airport Traffic Control Tower (NATCT)			$1,938,750	Construction of the NATCT
2028	North Airport Traffic Control Tower (NATCT)			$88,125	Construction of the NATCT
				$42,300,000	
3) Residential Sound Insulation Program Grants					
Year	Grant			Annual Amount	
2006	03-17-0022-85			$5,963,551	Sound Insulation
2007	03-17-0022-90			$18,000,000	Sound Insulation
2007	03-17-0022-92			$2,256,928	Sound Insulation
2008	03-17-0022-95			$18,000,000	Sound Insulation
2009	03-17-0022-100			$18,000,000	Sound Insulation
				$62,220,479	
5) Lima Lima Fillets Grant AIP 3-17-0022-102- 2009				**$1,596,413**	Construction of T/W LL
			Total	**$443,316,892**	

Source: Federal Grants, 2002-2008.
Prepared by: OMP Project Management Office; Ricondo & Assocaites, Inc.; July 2009.

Appendix G. LOI Application Financial Tables

Sponsors requesting Letters of Intent (LOIs) are required to submit the information shown, in substantially the same format as this template. Sponsors are strongly encouraged to use this template, as it may help to expedite the review and approval process. Regardless, Sponsors should review the instructions contained in Appendix 29 carefully, because those instructions contain specific parameters for what to include on certain key lines of this template.

Airport Sponsor Information

1. O'Hare International Airport
2. ORD
3. Chicago, Illinois
4. Large Hub
5. City of Chicago
6. 2/27/2009

Capital Costs and Annual Cashflow Requirements - Proposed Action

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
7.	Professional Services	$0	0.0%												
8.	Land Acquisition	0	0.0%												
9.	Runway 9C-27C	1,739,784,000	53.1%	817,974	42,141,610	344,308,115	593,039,361	350,707,778	283,833,314	124,935,849					
10.	Runway 10R-28L	681,942,410	20.8%	817,974	16,752,061	87,269,045	276,712,306	205,821,846	85,757,353	8,811,825					
11.	Runway 9R-27L Extension	430,387,241	13.1%	817,974	11,561,926	38,763,064	74,365,859	208,784,662	66,593,697	29,500,059					
12.	Runway - World Gateway Taxiway Improvement	288,480,776	8.8%	745,189	1,409,196	6,606,880	96,413,935	183,305,576							
13.	Noise Mitigation Program	136,661,060	4.2%			2,674,575	35,093,089	36,764,410	38,519,297	23,609,689					
14.	Infrastructure	0	0.0%												
	Summary	**$3,277,255,487**	**100.0%**	**$3,199,111**	**$71,864,794**	**$479,621,679**	**$1,075,624,549**	**$985,384,273**	**$474,703,661**	**$186,857,421**					
	Cumulative Needs			$3,199,111	$75,063,904	$554,685,583	$1,630,310,133	$2,615,694,405	$3,090,398,066	$3,277,255,487					

Capital Funding Sources - Proposed Action

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
	Federal and State Grants														
15.	Entitlements - Grants Awarded	$0	0.0%												
16.	Entitlements - Future Grants	0	0.0%												
17.	Discretionary - LOI Request	500,000,000	15.3%			$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	50,000,000
18.	Discretionary - Other - Awarded	0	0.0%												
19.	Discretionary - Other - Future Grants	0	0.0%												
20.	Discretionary - Noise - Awarded	0	0.0%												
21.	Discretionary - Noise - Future Grants	0	0.0%												
22.	State Apportionment - Grants Awarded	0	0.0%												
23.	State Apportionment - Future Grants	0	0.0%												
24.	Other Federal (non-AIP) - Grants Awarded	0	0.0%												
25.	Other Federal (non-AIP) - Future Grants	0	0.0%												
26.	State - Grants Awarded	0	0.0%												
27.	State - Future Grants	0	0.0%												
	Subtotal - Federal/State Grants	**$500,000,000**	**15.3%**	**$0**	**$0**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**	**$50,000,000**
	Passenger Facility Charges														
28.	PFCs - $3.00 Application Approved	$0	0.0%												
29.	PFCs - $3.00 Application Submitted	0	0.0%												
30.	PFCs - $3.00 Future Application(s)	0	0.0%												
31.	PFCs - $4.50 Application Approved	0	0.0%												
32.	PFCs - $4.50 Application Submitted	0	0.0%												
33.	PFCs - $4.50 Future Application(s)	46,068,049	1.4%		46,068,049										
34.	PFCs - Future Level	954,760,711	29.1%			81,815,010	76,225,650	485,158,969	174,919,790	136,641,292					
	Subtotal - PFCs	**$1,000,828,760**	**30.5%**	**$0**	**$46,068,049**	**$81,815,010**	**$76,225,650**	**$485,158,969**	**$174,919,790**	**$136,641,292**	**$0**	**$0**	**$0**	**$0**	**$0**
	Debt														
35.	Revenue Bonds - MII Approved	$0	0.0%												
36.	Revenue Bonds - MII pending	$1,776,426,727	54.2%	$3,199,111	$25,796,745	$347,806,669	$949,398,899	$450,225,304	$0	$0	$0				
37.	General Obligation - Authority in Place	0	0.0%												
38.	General Obligation - Future GARBs	0	0.0%												
39.	Other Debt - Authority in Place	0	0.0%												
40.	Other Debt - Interim Funding	0	0.0%	0					249,783,871	216,129	-50,000,000	-50,000,000	-50,000,000	-50,000,000	-50,000,000
	Subtotal - Debt	**$1,776,426,727**	**54.2%**	**$3,199,111**	**$25,796,745**	**$347,806,669**	**$949,398,899**	**$450,225,304**	**$249,783,871**	**$216,129**	**-$50,000,000**	**-$50,000,000**	**-$50,000,000**	**-$50,000,000**	**-$50,000,000**
41.	Airport Funds	$0	0.0%												
42.	Tenant or Third-Party Funds	$0	0.0%												
			0.0%												
	Total - All Funding Sources	**$3,277,255,487**	**100.0%**	**$3,199,111**	**$71,864,794**	**$479,621,679**	**$1,075,624,549**	**$985,384,273**	**$474,703,661**	**$186,857,421**	**$0**	**$0**	**$0**	**$0**	**$0**
	Cumulative Sources			$3,199,111	$75,063,904	$554,685,583	$1,630,310,133	$2,615,694,405	$3,090,398,066	$3,277,255,487	$0	$0	$0	$0	$0

Totals		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
$0		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Capital Costs and Annual Cashflow Requirements - Other Capital Plans

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
43.	OMP Remaing Phase 1	$1,800,520,116	59.1%	$456,957,775	$561,856,117	$492,330,530	$202,359,033	$87,016,661							
44.	Airfield	474,857,414	15.6%	151,754,097	94,091,873	68,461,360	80,435,714	80,114,370							
45.	Terminal	258,331,931	8.5%	177,076,338	20,147,570	27,323,632	22,689,526	11,094,865							
46.	Noise Mitigation	95,184,983	3.1%	35,617,060	28,642,923	25,000,000	5,925,000								
47.	Safety and Security	64,553,472	2.1%	17,299,935	15,273,322	22,566,002	6,224,531	3,189,682							
48.	Parking and Roadway	262,490,278	8.6%	28,305,924	25,820,579	77,071,876	33,150,000	98,141,899							
49.	Other [1/]	6,462,148	0.2%	1,719,948	4,742,200										
50.	Implementation	37,689,074	1.2%	23,293,194	14,395,880										
51.	Planning other projects	946,395	0.0%	946,395											
52.	H&R	44,361,609	1.5%	13,360,490	31,001,119										
	Summary	**$3,045,397,420**	**100.0%**	**$906,331,156**	**$795,971,583**	**$712,753,400**	**$350,783,804**	**$279,557,477**							
	Cumulative Needs			$906,331,156	$1,702,302,739	$2,415,056,139	$2,765,839,943	$3,045,397,420							

Capital Funding Sources - Other Capital Plans

0

		Totals	as %	FFY-2008	FFY-2009	FFY-2010	FFY-2011	FFY-2012	FFY-2013	FFY-2014	FFY-2015	FFY-2016	FFY-2017	FFY-2018	FFY-2019
	Federal and State Grants														
53.	Entitlements - Grants Awarded	$19,500,000	0.6%	6,500,000	6,500,000	6,500,000									
54.	Entitlements - Future Grants	0	0.0%												
55.	Discretionary - LOI Request[2/]	260,000,000	8.5%	112,885,000	37,391,000	87,609,000	22,115,000								
56.	Discretionary - Other - Awarded[3/]	32,030,745	1.1%	23,030,745	9,000,000										
57.	Discretionary - Other - Future Grants	0	0.0%												
58.	Discretionary - Noise - Awarded	0	0.0%												
59.	Discretionary - Noise - Future Grants	0	0.0%												
60.	State Apportionment - Grants Awarded	0	0.0%												
61.	State Apportionment - Future Grants	0	0.0%												
62.	Other Federal (non-AIP) - Grants Awarded[4/]	68,610,828	2.3%	68,541,821	69,007										
63.	Other Federal (non-AIP) - Future Grants	0	0.0%												
64.	State - Grants Awarded	0	0.0%												
65.	State - Future Grants	0	0.0%												
	Subtotal - Federal/State Grants	**$380,141,573**	**12.5%**	**$210,957,566**	**$52,960,007**	**$94,109,000**	**$22,115,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
			0.0%												
	Passenger Facility Charges		0.0%												
66.	PFCs - $3.00 Application Approved	$0	0.0%												
67.	PFCs - $3.00 Application Submitted	0	0.0%												
68.	PFCs - $3.00 Future Application(s)	0	0.0%												
69.	PFCs - $4.50 Application Approved	871,715,062	28.6%	636,652,399	142,161,154	92,901,509									
70.	PFCs - $4.50 Application Submitted	0	0.0%												
71.	PFCs - $4.50 Future Application(s)	29,870,000	1.0%			29,870,000									
72.	PFCs - Future Level	111,412,958	3.7%				57,162,500	54,250,458							
	Subtotal - PFCs	**$1,012,998,020**	**33.3%**	**$636,652,399**	**$142,161,154**	**$122,771,509**	**$57,162,500**	**$54,250,458**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	Debt														
73.	Revenue Bonds - MII Approved	$865,193,669	28.4%	$510,140,913	$352,169,006	$1,733,750	$1,150,000								
74.	Revenue Bonds - MII pending	787,064,158	25.8%			291,168,162	304,307,360	191,588,636							
75.	General Obligation - Authority in Place	0	0.0%												
76.	General Obligation - Authority Pending	0	0.0%												
77.	Other Debt - Authority in Place	0	0.0%												
78.	Other Debt - Authority Pending	0	0.0%												
	Subtotal - Debt	**$1,652,257,827**	**54.3%**	**$510,140,913**	**$352,169,006**	**$292,901,912**	**$305,457,360**	**$191,588,636**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
79.	Airport Funds	$0	0.0%												
80.	Tenant or Third-Party Funds	0	0.0%												
	Total - All Funding Sources	**$3,045,397,420**	**100.0%**	**$1,357,750,878**	**$547,290,167**	**$509,782,421**	**$384,734,860**	**$245,839,094**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	Cumulative Sources			$1,357,750,878	$1,905,041,045	$2,414,823,466	$2,799,558,326	$3,045,397,420	$0	$0	$0	$0	$0	$0	$0

Totals	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
$0	**-$451,419,722**	**$248,681,416**	**$202,970,979**	**-$33,951,056**	**$33,718,383**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Notes:

[1/] Includes Western Terminal Planning.

[2/] Reflecccts use of proceeds from borrowing in anticipation of future repayment from AIP Discretionary LOI grants

[3/] Consists of AIP and MPEA Grants

[4/] TSA Grants

*Cost reflect the City's 5-year Capital Improvement Program as of July 2008. The City is in the process of updating the 5-year CIP

Table 6

EIS 2009 Constrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
AAL	738	84	84	168	11,928	11,928	23,856	8,805	8,623	17,428
	739	30	30	60	5,400	5,400	10,800	3,916	4,104	8,020
	763	16	17	33	3,392	3,604	6,996	2,811	2,630	5,441
	772	7	7	14	1,715	1,715	3,430	1,525	1,257	2,782
	M80	187	189	376	24,123	24,381	48,504	17,593	17,776	35,369
AAL Total		324	327	651	46,558	47,028	93,586	34,650	34,389	69,039
ACA	319	10	9	19	1,120	1,008	2,128	739	718	1,457
	320	1	1	2	132	132	264	87	94	181
	CRJ	6	6	12	300	300	600	198	214	412
ACA Total		17	16	33	1,552	1,440	2,992	1,025	1,025	2,050
AFL	763	1	1	2	232	232	464	201	201	402
AFL Total		1	1	2	232	232	464	201	201	402
AFR	343	1	1	2	252	252	504	239	224	463
AFR Total		1	1	2	252	252	504	239	224	463
AJM	320	1	1	2	150	150	300	134	125	259
AJM Total		1	1	2	150	150	300	134	125	259
AMX	M87	2	2	4	218	218	436	147	147	294
AMX Total		2	2	4	218	218	436	147	147	294
ANA	773	1	1	2	305	305	610	264	264	528
ANA Total		1	1	2	305	305	610	264	264	528
ASA	737	1	1	2	120	120	240	111	105	216
ASA Total		1	1	2	120	120	240	111	105	216
AUA	343	1	1	2	257	257	514	223	223	445
AUA Total		1	1	2	257	257	514	223	223	445
AWE	319	4	4	8	496	496	992	448	454	902
	320	4	4	8	600	600	1,200	543	549	1,091
AWE Total		8	8	16	1,096	1,096	2,192	991	1,003	1,994
AWI	CR7	27	27	54	1,890	1,890	3,780	1,324	1,310	2,633
	CR9	11	11	22	990	990	1,980	694	686	1,379
	CRJ	40	40	80	2,000	2,000	4,000	1,401	1,385	2,787
AWI Total		78	78	156	4,880	4,880	9,760	3,418	3,381	6,799
AZA	763	1	1	2	223	223	446	188	188	376
AZA Total		1	1	2	223	223	446	188	188	376
BAW	772	3	3	6	681	681	1,362	579	500	1,079
BAW Total		3	3	6	681	681	1,362	579	500	1,079
BLR	CR7	41	42	83	2,870	2,940	5,810	2,165	2,254	4,419
	CR9	15	14	29	1,350	1,260	2,610	1,018	966	1,984
	CRJ	61	61	122	3,050	3,050	6,100	2,301	2,338	4,639
BLR Total		117	117	234	7,270	7,250	14,520	5,484	5,557	11,041
BMA	332	1	1	2	244	244	488	165	138	303
BMA Total		1	1	2	244	244	488	165	138	303
CAA	CR7	2	2	4	140	140	280	111	111	223
	CR9	1	2	3	90	180	270	72	143	215
CAA Total		3	4	7	230	320	550	183	255	438
CHP	737	1	1	2	120	120	240	104	104	208
CHP Total		1	1	2	120	120	240	104	104	208
COA	737	10	10	20	1,240	1,240	2,480	1,011	989	2,000
	738	5	5	10	775	775	1,550	632	618	1,250
	739	1	1	2	189	189	378	154	151	305
	CR7	8	8	16	560	560	1,120	402	422	824
COA Total		24	24	48	2,764	2,764	5,528	2,199	2,179	4,379

Table 6

EIS 2009 Constrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
COM	CR7	5	5	10	350	350	700	333	302	634
COM Total		5	5	10	350	350	700	333	302	634
CRX	332	1	1	2	196	196	392	182	182	364
CRX Total		1	1	2	196	196	392	182	182	364
DAL	738	11	11	22	1,628	1,628	3,256	1,148	1,139	2,287
	739	6	6	12	1,080	1,080	2,160	761	756	1,517
DAL Total		17	17	34	2,708	2,708	5,416	1,909	1,895	3,804
DLH	320	1	1	2	48	48	96	46	44	89
	343	2	2	4	494	494	988	469	449	918
	380	1	1	2	555	555	1,110	527	504	1,031
DLH Total		4	4	8	1,097	1,097	2,194	1,042	997	2,039
EGF	CR7	100	101	201	7,000	7,070	14,070	5,090	5,255	10,345
	CR9	3	4	7	270	360	630	196	268	464
	E140	17	18	35	748	792	1,540	544	589	1,133
	E145	78	74	152	3,900	3,700	7,600	2,836	2,750	5,586
EGF Total		198	197	395	11,918	11,922	23,840	8,666	8,862	17,528
EIN	332	1	1	2	275	275	550	261	261	523
EIN Total		1	1	2	275	275	550	261	261	523
GWY	320	2	2	4	336	336	672	270	270	540
GWY Total		2	2	4	336	336	672	270	270	540
IBE	346	1	1	2	342	342	684	325	277	602
IBE Total		1	1	2	342	342	684	325	277	602
JAL	744	1	1	2	384	384	768	308	301	609
	773	1	1	2	300	300	600	241	235	476
JAL Total		2	2	4	684	684	1,368	549	536	1,085
KAC	343	1	1	2	280	280	560	212	212	424
KAC Total		1	1	2	280	280	560	212	212	424
KAL	744	1	1	2	384	384	768	301	301	602
KAL Total		1	1	2	384	384	768	301	301	602
KLM	74M	1	1	2	278	278	556	264	264	528
KLM Total		1	1	2	278	278	556	264	264	528
LAN	763	1	1	2	216	216	432	187	187	374
LAN Total		1	1	2	216	216	432	187	187	374
LOT	763	2	2	4	486	486	972	403	380	783
LOT Total		2	2	4	486	486	972	403	380	783
LRC	320		1	1		150	150		130	130
LRC Total			1	1		150	150		130	130
MXA	319	2	2	4	248	248	496	228	201	429
	320	6	6	12	900	900	1,800	827	730	1,556
	757	3	3	6	549	549	1,098	504	445	949
MXA Total		11	11	22	1,697	1,697	3,394	1,559	1,376	2,935
NKS	M80	9	9	18	1,404	1,404	2,808	1,013	1,071	2,084
NKS Total		9	9	18	1,404	1,404	2,808	1,013	1,071	2,084
NWA	319	16	16	32	1,984	1,984	3,968	1,319	1,290	2,608
	320	6	6	12	888	888	1,776	590	577	1,167
NWA Total		22	22	44	2,872	2,872	5,744	1,909	1,867	3,776
RJA	342	1	1	2	254	254	508	241	241	483
RJA Total		1	1	2	254	254	508	241	241	483
SAB	333	1	1	2	260	260	520	225	225	450
SAB Total		1	1	2	260	260	520	225	225	450

Table 6

EIS 2009 Constrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
SAS	333	1	1	2	261	261	522	232	216	449
	343	1	1	2	261	261	522	232	216	449
SAS Total		2	2	4	522	522	1,044	465	432	897
SIA	773	1	1	2	332	332	664	223	223	445
SIA Total		1	1	2	332	332	664	223	223	445
THY	343	1	1	2	271	271	542	235	235	469
THY Total		1	1	2	271	271	542	235	235	469
UAL	319	128	124	252	15,360	14,880	30,240	11,652	11,372	23,024
	320	102	104	206	14,076	14,352	28,428	10,544	10,902	21,446
	321	87	88	175	15,832	16,016	31,848	12,262	12,190	24,452
	733	52	51	103	6,240	6,120	12,360	4,863	4,600	9,463
	744	5	5	10	1,735	1,735	3,470	1,388	1,353	2,741
	763	15	15	30	3,354	3,303	6,657	2,588	2,488	5,075
	772	17	16	33	4,746	4,578	9,324	3,828	3,618	7,446
UAL Total		406	403	809	61,343	60,984	122,327	47,125	46,522	93,647
USA	319	9	10	19	1,080	1,200	2,280	709	768	1,478
	320	7	6	13	994	852	1,846	653	546	1,198
USA Total		16	16	32	2,074	2,052	4,126	1,362	1,314	2,676
VIR	744	1	1	2	386	386	772	334	334	669
VIR Total		1	1	2	386	386	772	334	334	669
ABX	D8F	2	2	4	0		0	0		0
ABX Total		2	2	4	0		0	0		0
AFR	74F	1		1	0		0	0		0
AFR Total		1		1	0		0	0		0
CAL	74F	1	1	2	0		0	0		0
CAL Total		1	1	2	0		0	0		0
CCA	74F	1		1	0		0	0		0
CCA Total		1		1	0		0	0		0
CHY	M1F		1	1	0		0	0		0
CHY Total			1	1	0		0	0		0
CPA	74F	1	1	2	0		0	0		0
CPA Total		1	1	2	0		0	0		0
DHL	72F	1	1	2	0		0	0		0
	A3F	1	1	2	0		0	0		0
DHL Total		2	2	4	0		0	0		0
EIA	LJ35	1	1	2	0		0	0		0
EIA Total		1	1	2	0		0	0		0
EJA	C560	3	3	6	0		0	0		0
	C56X	2	2	4	0		0	0		0
	C650	2	2	4	0		0	0		0
	C750	4	4	8	0		0	0		0
	F2TH	2	2	4	0		0	0		0
	H25C	4	4	8	0		0	0		0
EJA Total		17	17	34	0		0	0		0
EWW	A3F	1	1	2	0		0	0		0
EWW Total		1	1	2	0		0	0		0
FDX	31F	1	1	2	0		0	0		0
	72F	1	1	2	0		0	0		0
	A3F	3	3	6	0		0	0		0
	D1F	1	1	2	0		0	0		0
	M1F	3	3	6	0		0	0		0
FDX Total		9	9	18	0		0	0		0

Table 6

EIS 2009 Constrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
GEC	74F	1	1	2	0		0	0		0
GEC Total		1	1	2	0		0	0		0
JAL	74F	1	1	2	0		0	0		0
JAL Total		1	1	2	0		0	0		0
JDC	C650	1	1	2	0		0	0		0
JDC Total		1	1	2	0		0	0		0
KAL	74F	1	1	2	0		0	0		0
KAL Total		1	1	2	0		0	0		0
NCA	74F	1	1	2	0		0	0		0
NCA Total		1	1	2	0		0	0		0
NWA	74F	1	1	2	0		0	0		0
NWA Total		1	1	2	0		0	0		0
PAC	74F	2	4	6	0		0	0		0
PAC Total		2	4	6	0		0	0		0
UPS	74F	1		1	0		0	0		0
	75F	1	1	2	0		0	0		0
	76F	1	1	2	0		0	0		0
	D8F	2	2	4	0		0	0		0
UPS Total		5	4	9	0		0	0		0
GIA	BE30	3	3	6	0		0	0		0
	BE40	1	1	2	0		0	0		0
	BE58	1	1	2	0		0	0		0
	C210	2	2	4	0		0	0		0
	C550	1	2	3	0		0	0		0
	C560	1	1	2	0		0	0		0
	C650	3	3	6	0		0	0		0
	C750	3	3	6	0		0	0		0
	CL60	1	1	2	0		0	0		0
	F900	1	2	3	0		0	0		0
	FA20	1	1	2	0		0	0		0
	FA50	1		1	0		0	0		0
	G2	1		1	0		0	0		0
	G4	1	1	2	0		0	0		0
	G5	3	3	6	0		0	0		0
	LJ30	2	1	3	0		0	0		0
	LJ35	1	1	2	0		0	0		0
	LJ45	1	1	2	0		0	0		0
	LJ55	4	2	6	0		0	0		0
	LJ60	1	4	5	0		0	0		0
GIA Total		33	33	66	0		0	0		0
Grand Total		1,375	1,375	2,750	158,117	158,318	316,435	119,899	118,904	238,803

Source: OMP Environmental Impact Statement, 2004.
Prepared by: Ricondo & Associates, Inc.

Table 7

EIS 2009 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
AAL	738	46	46	92	6,532	6,532	13,064	4,729	4,815	9,544
	739	30	33	63	5,400	5,940	11,340	3,932	4,472	8,404
	763	18	18	36	3,816	3,816	7,632	3,102	2,808	5,910
	772	7	7	14	1,715	1,715	3,430	1,525	1,257	2,782
	M80	242	241	483	31,218	31,089	62,307	22,987	22,618	45,605
AAL Total		343	345	688	48,681	49,092	97,773	36,274	35,970	72,245
ACA	319	10	9	19	1,120	1,008	2,128	739	718	1,457
	320	1	1	2	132	132	264	87	94	181
	CRJ	6	6	12	300	300	600	198	214	412
ACA Total		17	16	33	1,552	1,440	2,992	1,025	1,025	2,050
AFL	763	1	1	2	232	232	464	201	201	402
AFL Total		1	1	2	232	232	464	201	201	402
AFR	343	1	1	2	252	252	504	239	224	463
AFR Total		1	1	2	252	252	504	239	224	463
AJM	320	1	1	2	150	150	300	134	125	259
AJM Total		1	1	2	150	150	300	134	125	259
AMX	M87	2	2	4	218	218	436	147	147	294
AMX Total		2	2	4	218	218	436	147	147	294
ANA	773	1	1	2	305	305	610	264	264	528
ANA Total		1	1	2	305	305	610	264	264	528
ASA	737	1	1	2	120	120	240	111	105	216
ASA Total		1	1	2	120	120	240	111	105	216
AUA	343	1	1	2	257	257	514	223	223	445
AUA Total		1	1	2	257	257	514	223	223	445
AWE	319	4	4	8	496	496	992	448	454	902
	320	4	4	8	600	600	1,200	543	549	1,091
AWE Total		8	8	16	1,096	1,096	2,192	991	1,003	1,994
AWI	CR7	25	25	50	1,750	1,750	3,500	1,226	1,213	2,438
	CR9	12	12	24	1,080	1,080	2,160	757	748	1,505
	CRJ	56	56	112	2,800	2,800	5,600	1,962	1,940	3,901
AWI Total		93	93	186	5,630	5,630	11,260	3,944	3,900	7,844
AZA	763	1	1	2	223	223	446	188	188	376
AZA Total		1	1	2	223	223	446	188	188	376
BAW	772	3	3	6	681	681	1,362	579	500	1,079
BAW Total		3	3	6	681	681	1,362	579	500	1,079
BLR	CR7	36	35	71	2,520	2,450	4,970	1,901	1,878	3,779
	CR9	12	12	24	1,080	1,080	2,160	815	828	1,643
	CRJ	97	98	195	4,850	4,900	9,750	3,659	3,756	7,414
BLR Total		145	145	290	8,450	8,430	16,880	6,374	6,462	12,836
BMA	332	1	1	2	244	244	488	165	138	303
BMA Total		1	1	2	244	244	488	165	138	303
CAA	CR7	5	5	10	350	350	700	279	279	557
CAA Total		5	5	10	350	350	700	279	279	557
CHP	737	1	1	2	120	120	240	104	104	208
CHP Total		1	1	2	120	120	240	104	104	208
COA	737	10	10	20	1,240	1,240	2,480	1,011	989	2,000
	738	5	5	10	775	775	1,550	632	618	1,250
	739	1	1	2	189	189	378	154	151	305
	CR7	8	8	16	560	560	1,120	402	422	824
COA Total		24	24	48	2,764	2,764	5,528	2,199	2,179	4,379
COM	CR7	5	5	10	350	350	700	333	302	634
COM Total		5	5	10	350	350	700	333	302	634
CRX	332	1	1	2	196	196	392	182	182	364

Table 7

EIS 2009 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
CRX Total		1	1	2	196	196	392	182	182	364
DAL	738	11	11	22	1,628	1,628	3,256	1,148	1,139	2,287
	739	6	6	12	1,080	1,080	2,160	761	756	1,517
	757	2	2	4	398	398	796	281	279	559
DAL Total		19	19	38	3,106	3,106	6,212	2,189	2,174	4,363
DLH	320	1	1	2	48	48	96	46	44	89
	343	2	2	4	494	494	988	469	449	918
	380	1	1	2	555	555	1,110	527	504	1,031
DLH Total		4	4	8	1,097	1,097	2,194	1,042	997	2,039
EGF	CR7	84	86	170	5,880	6,020	11,900	4,276	4,475	8,750
	E140	34	36	70	1,496	1,584	3,080	1,089	1,177	2,266
	E145	114	110	224	5,700	5,500	11,200	4,145	4,087	8,232
EGF Total		232	232	464	13,076	13,104	26,180	9,509	9,739	19,248
EIN	332	1	1	2	275	275	550	261	261	523
EIN Total		1	1	2	275	275	550	261	261	523
GWY	320	2	2	4	336	336	672	270	270	540
GWY Total		2	2	4	336	336	672	270	270	540
IBE	346	1	1	2	342	342	684	325	277	602
IBE Total		1	1	2	342	342	684	325	277	602
JAL	744	1	1	2	384	384	768	308	301	609
	773	1	1	2	300	300	600	241	235	476
JAL Total		2	2	4	684	684	1,368	549	536	1,085
KAC	343	1	1	2	280	280	560	212	212	424
KAC Total		1	1	2	280	280	560	212	212	424
KAL	744	1	1	2	384	384	768	301	301	602
KAL Total		1	1	2	384	384	768	301	301	602
KLM	74M	1	1	2	278	278	556	264	264	528
KLM Total		1	1	2	278	278	556	264	264	528
LAN	763	1	1	2	216	216	432	187	187	374
LAN Total		1	1	2	216	216	432	187	187	374
LOT	763	2	2	4	486	486	972	403	380	783
LOT Total		2	2	4	486	486	972	403	380	783
LRC	320		1	1		150	150		130	130
LRC Total			1	1		150	150		130	130
MXA	319	2	2	4	248	248	496	228	201	429
	320	6	6	12	900	900	1,800	827	730	1,556
	757	3	3	6	549	549	1,098	504	445	949
MXA Total		11	11	22	1,697	1,697	3,394	1,559	1,376	2,935
NKS	M80	9	9	18	1,404	1,404	2,808	1,013	1,071	2,084
NKS Total		9	9	18	1,404	1,404	2,808	1,013	1,071	2,084
NWA	319	20	20	40	2,480	2,480	4,960	1,648	1,612	3,260
	320	4	4	8	592	592	1,184	393	385	778
NWA Total		24	24	48	3,072	3,072	6,144	2,042	1,997	4,039
RJA	342	1	1	2	254	254	508	241	241	483
RJA Total		1	1	2	254	254	508	241	241	483
SAB	333	1	1	2	260	260	520	225	225	450
SAB Total		1	1	2	260	260	520	225	225	450
SAS	333	1	1	2	261	261	522	232	216	449
	343	1	1	2	261	261	522	232	216	449
SAS Total		2	2	4	522	522	1,044	465	432	897
SIA	773	1	1	2	332	332	664	223	223	445
SIA Total		1	1	2	332	332	664	223	223	445

Table 7

EIS 2009 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
THY	343	1	1	2	271	271	542	235	235	469
THY Total		1	1	2	271	271	542	235	235	469
UAL	319	182	177	359	21,840	21,240	43,080	16,631	16,184	32,814
	320	80	84	164	11,040	11,592	22,632	8,196	8,855	17,051
	321	55	55	110	10,010	10,010	20,020	7,792	7,608	15,401
	733	64	64	128	7,680	7,680	15,360	5,990	5,790	11,780
	744	5	5	10	1,735	1,735	3,470	1,388	1,353	2,741
	763	15	15	30	3,354	3,303	6,657	2,588	2,488	5,075
	772	19	19	38	5,442	5,622	11,064	4,321	4,525	8,846
UAL Total		420	419	839	61,101	61,182	122,283	46,906	46,802	93,708
USA	319	12	12	24	1,440	1,440	2,880	946	922	1,868
	320	6	6	12	852	852	1,704	559	546	1,105
USA Total		18	18	36	2,292	2,292	4,584	1,505	1,468	2,973
VIR	744	1	1	2	386	386	772	334	334	669
VIR Total		1	1	2	386	386	772	334	334	669
ABX	D8F	2	2	4	0	0	0	0	0	0
ABX Total		2	2	4	0	0	0	0	0	0
AFR	74F	1		1	0	0	0	0	0	0
AFR Total		1		1	0	0	0	0	0	0
CAL	74F	1	1	2	0	0	0	0	0	0
CAL Total		1	1	2	0	0	0	0	0	0
CCA	74F	1		1	0	0	0	0	0	0
CCA Total		1		1	0	0	0	0	0	0
CHY	M1F		1	1	0	0	0	0	0	0
CHY Total			1	1	0	0	0	0	0	0
CPA	74F	1	1	2	0	0	0	0	0	0
CPA Total		1	1	2	0	0	0	0	0	0
DHL	72F	1	1	2	0	0	0	0	0	0
	A3F	1	1	2	0	0	0	0	0	0
DHL Total		2	2	4	0	0	0	0	0	0
EWW	A3F	1	1	2	0	0	0	0	0	0
EWW Total		1	1	2	0	0	0	0	0	0
FDX	31F	1	1	2	0	0	0	0	0	0
	72F	1	1	2	0	0	0	0	0	0
	A3F	3	3	6	0	0	0	0	0	0
	D1F	1	1	2	0	0	0	0	0	0
	M1F	3	3	6	0	0	0	0	0	0
FDX Total		9	9	18	0	0	0	0	0	0
GEC	74F	1	1	2	0	0	0	0	0	0
GEC Total		1	1	2	0	0	0	0	0	0
JAL	74F	1	1	2	0	0	0	0	0	0
JAL Total		1	1	2	0	0	0	0	0	0
JDC	C650	1	1	2	0	0	0	0	0	0
JDC Total		1	1	2	0	0	0	0	0	0
KAL	74F	1	1	2	0	0	0	0	0	0
KAL Total		1	1	2	0	0	0	0	0	0
NCA	74F	1	1	2	0	0	0	0	0	0
NCA Total		1	1	2	0	0	0	0	0	0
NWA	74F	1	1	2	0	0	0	0	0	0
NWA Total		1	1	2	0	0	0	0	0	0
PAC	74F	2	4	6	0	0	0	0	0	0
PAC Total		2	4	6	0	0	0	0	0	0
UPS	74F	1		1	0	0	0	0	0	0

Table 7

EIS 2009 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats				Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total		Arrivals	Departures	Total
	75F	1	1	2	0	0	0	0	0	0	0
	76F	1	1	2	0	0	0	0	0	0	0
	D8F	2	2	4	0	0	0	0	0	0	0
UPS Total		5	4	9	0	0	0	0	0	0	0
GIA	BE30	3	3	6	0	0	0	0	0	0	0
	BE40	1	1	2	0	0	0	0	0	0	0
	BE58	1	1	2	0	0	0	0	0	0	0
	C210	2	2	4	0	0	0	0	0	0	0
	C550	1	2	3	0	0	0	0	0	0	0
	C560	1	1	2	0	0	0	0	0	0	0
	C650	3	3	6	0	0	0	0	0	0	0
	C750	3	3	6	0	0	0	0	0	0	0
	CL60	1	1	2	0	0	0	0	0	0	0
	F900	1	2	3	0	0	0	0	0	0	0
	FA20	1	1	2	0	0	0	0	0	0	0
	FA50	1		1	0	0	0	0	0	0	0
	G2	1		1	0	0	0	0	0	0	0
	G4	1	1	2	0	0	0	0	0	0	0
	G5	3	3	6	0	0	0	0	0	0	0
	LJ30	2	1	3	0	0	0	0	0	0	0
	LJ35	1	1	2	0	0	0	0	0	0	0
	LJ45	1	1	2	0	0	0	0	0	0	0
	LJ55	4	2	6	0	0	0	0	0	0	0
	LJ60	1	4	5	0	0	0	0	0	0	0
GIA Total		33	33	66	0	0	0	0	0	0	0
EIA	LJ35	1	1	2	0	0	0	0	0	0	0
EIA Total		1	1	2	0	0	0	0	0	0	0
EJA	C560	3	3	6	0	0	0	0	0	0	0
	C56X	2	2	4	0	0	0	0	0	0	0
	C650	2	2	4	0	0	0	0	0	0	0
	C750	4	4	8	0	0	0	0	0	0	0
	F2TH	2	2	4	0	0	0	0	0	0	0
	H25C	4	4	8	0	0	0	0	0	0	0
EJA Total		17	17	34	0	0	0	0	0	0	0
Grand Total		1,493	1,494	2,987	164,022	164,560	328,582		124,216	123,652	247,868

Source: OMP Environmental Impact Statement, 2004.
Prepared by: Ricondo & Associates, Inc.

Table 8

EIS 2013 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
AAL	738	293	294	587	41,606	41,748	83,354	30,661	30,590	61,251
	739	31	32	63	5,580	5,760	11,340	4,076	4,345	8,421
	763	22	22	44	4,664	4,664	9,328	3,876	3,401	7,277
	772	7	7	14	1,715	1,715	3,430	1,527	1,259	2,786
AAL Total		353	355	708	53,565	53,887	107,452	40,140	39,595	79,735
ACA	319	10	10	20	1,120	1,120	2,240	741	799	1,539
	320	1	1	2	132	132	264	87	94	181
	CRJ	6	6	12	300	300	600	198	214	412
ACA Total		17	17	34	1,552	1,552	3,104	1,026	1,107	2,133
AFL	763	2	2	4	464	464	928	402	402	805
AFL Total		2	2	4	464	464	928	402	402	805
AFR	343	2	2	4	504	504	1,008	479	448	927
AFR Total		2	2	4	504	504	1,008	479	448	927
AJM	320	1	1	2	150	150	300	134	126	260
AJM Total		1	1	2	150	150	300	134	126	260
AMX	737	2	2	4	250	250	500	169	169	338
AMX Total		2	2	4	250	250	500	169	169	338
ANA	773	1	1	2	305	305	610	264	264	529
ANA Total		1	1	2	305	305	610	264	264	529
ASA	737	1	1	2	120	120	240	111	105	216
ASA Total		1	1	2	120	120	240	111	105	216
AUA	343	1	1	2	257	257	514	223	223	446
AUA Total		1	1	2	257	257	514	223	223	446
AWE	319	4	4	8	496	496	992	449	454	904
	320	4	4	8	600	600	1,200	543	550	1,093
AWE Total		8	8	16	1,096	1,096	2,192	993	1,004	1,997
AWI	CR7	38	38	76	2,660	2,660	5,320	1,926	1,906	3,832
	CR9	14	14	28	1,260	1,260	2,520	913	903	1,815
	CRJ	50	50	100	2,500	2,500	5,000	1,811	1,791	3,602
AWI Total		102	102	204	6,420	6,420	12,840	4,650	4,600	9,250
AZA	763	1	1	2	223	223	446	188	188	376
AZA Total		1	1	2	223	223	446	188	188	376
BAW	772	3	3	6	681	681	1,362	579	501	1,080
BAW Total		3	3	6	681	681	1,362	579	501	1,080
BLR	CR7	62	61	123	4,340	4,270	8,610	3,377	3,374	6,751
	CR9	18	18	36	1,620	1,620	3,240	1,260	1,280	2,541
	CRJ	68	69	137	3,400	3,450	6,850	2,661	2,726	5,387
BLR Total		148	148	296	9,360	9,340	18,700	7,298	7,381	14,679
BMA	332	1	1	2	244	244	488	165	138	303
BMA Total		1	1	2	244	244	488	165	138	303
CAA	CR7	5	5	10	350	350	700	287	287	574
CAA Total		5	5	10	350	350	700	287	287	574
CAL	744	1	1	2	397	397	794	344	344	689
CAL Total		1	1	2	397	397	794	344	344	689
CHP	737	1	1	2	120	120	240	104	104	208
CHP Total		1	1	2	120	120	240	104	104	208

Table 8

EIS 2013 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
COA	737	10	10	20	1,240	1,240	2,480	1,013	991	2,004
	738	5	5	10	775	775	1,550	633	619	1,253
	739	1	1	2	189	189	378	154	151	305
	CR7	8	8	16	560	560	1,120	415	435	850
COA Total		24	24	48	2,764	2,764	5,528	2,216	2,196	4,412
COM	CR7	5	5	10	350	350	700	333	310	643
COM Total		5	5	10	350	350	700	333	310	643
CPA	744	1	1	2	343	343	686	297	297	595
CPA Total		1	1	2	343	343	686	297	297	595
CRX	332	1	1	2	196	196	392	182	182	364
CRX Total		1	1	2	196	196	392	182	182	364
CSN	772	1	1	2	292	292	584	253	253	506
CSN Total		1	1	2	292	292	584	253	253	506
DAL	738	11	11	22	1,628	1,628	3,256	1,150	1,142	2,292
	739	12	12	24	2,274	2,274	4,548	1,606	1,595	3,201
DAL Total		23	23	46	3,902	3,902	7,804	2,756	2,737	5,493
DLH	320	4	4	8	192	192	384	182	175	357
	343	1	1	2	247	247	494	235	225	459
	346	1	1	2	340	340	680	323	309	632
	380	1	1	2	555	555	1,110	527	505	1,032
DLH Total		7	7	14	1,334	1,334	2,668	1,267	1,213	2,480
EGF	CR7	86	85	171	6,020	5,950	11,970	4,520	4,564	9,084
	CR9	24	26	50	2,160	2,340	4,500	1,622	1,795	3,417
	E145	141	140	281	7,050	7,000	14,050	5,294	5,368	10,663
EGF Total		251	251	502	15,230	15,290	30,520	11,437	11,727	23,164
EIN	332	1	1	2	275	275	550	261	261	523
EIN Total		1	1	2	275	275	550	261	261	523
ELY	772	1	1	2	298	298	596	148	148	295
ELY Total		1	1	2	298	298	596	148	148	295
FIN	343	1	1	2	261	261	522	226	226	453
FIN Total		1	1	2	261	261	522	226	226	453
GWY	320	2	2	4	336	336	672	270	270	541
GWY Total		2	2	4	336	336	672	270	270	541
IBE	346	1	1	2	342	342	684	325	277	602
IBE Total		1	1	2	342	342	684	325	277	602
JAL	744	1	1	2	384	384	768	309	301	610
	773	1	1	2	300	300	600	241	235	477
JAL Total		2	2	4	684	684	1,368	550	537	1,087
JBU	320	8	8	16	1,248	1,248	2,496	1,004	1,004	2,008
JBU Total		8	8	16	1,248	1,248	2,496	1,004	1,004	2,008
KAC	343	1	1	2	280	280	560	212	212	424
KAC Total		1	1	2	280	280	560	212	212	424
KAL	744	1	1	2	384	384	768	301	301	603
KAL Total		1	1	2	384	384	768	301	301	603
KLM	74M	1	1	2	278	278	556	264	264	528
KLM Total		1	1	2	278	278	556	264	264	528
LAN	763	1	1	2	216	216	432	187	187	375
LAN Total		1	1	2	216	216	432	187	187	375
LOT	763	2	2	4	486	486	972	403	381	784
LOT Total		2	2	4	486	486	972	403	381	784
LRC	320	1	1	2	150	150	300	130	130	260
LRC Total		1	1	2	150	150	300	130	130	260

Table 8

EIS 2013 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
MXA	319	2	2	4	248	248	496	228	201	429
	320	7	7	14	1,050	1,050	2,100	966	852	1,818
	321	3	3	6	549	549	1,098	505	446	951
MXA Total		12	12	24	1,847	1,847	3,694	1,699	1,499	3,198
NKS	M80	11	11	22	1,716	1,716	3,432	1,241	1,311	2,552
NKS Total		11	11	22	1,716	1,716	3,432	1,241	1,311	2,552
NWA	319	20	20	40	2,480	2,480	4,960	1,652	1,616	3,268
	320	4	4	8	592	592	1,184	394	386	780
NWA Total		24	24	48	3,072	3,072	6,144	2,046	2,001	4,048
OAL	343	1	1	2	295	295	590	256	256	512
OAL Total		1	1	2	295	295	590	256	256	512
OT1	717	8	2	10	936	234	1,170	753	188	941
OT1 Total		8	2	10	936	234	1,170	753	188	941
OT2	319	4	1	5	528	132	660	425	106	531
OT2 Total		4	1	5	528	132	660	425	106	531
OTH	319		3	3		396	396		319	319
	717		6	6		702	702		565	565
OTH Total			9	9		1,098	1,098		883	883
RJA	342	1	1	2	254	254	508	241	241	483
RJA Total		1	1	2	254	254	508	241	241	483
SAB	333	1	1	2	260	260	520	225	225	451
SAB Total		1	1	2	260	260	520	225	225	451
SAS	333	2	2	4	522	522	1,044	465	433	898
	343	1	1	2	261	261	522	233	216	449
SAS Total		3	3	6	783	783	1,566	698	649	1,347
SIA	773	1	1	2	332	332	664	223	223	446
SIA Total		1	1	2	332	332	664	223	223	446
TAP	343	1	1	2	280	280	560	243	243	486
TAP Total		1	1	2	280	280	560	243	243	486
THY	343	1	1	2	271	271	542	235	235	470
THY Total		1	1	2	271	271	542	235	235	470
UAL	319	181	178	359	21,726	21,360	43,086	16,576	16,311	32,887
	320	149	151	300	20,562	20,838	41,400	15,651	15,838	31,489
	321	55	55	110	10,010	10,010	20,020	7,777	7,654	15,431
	744	5	5	10	1,735	1,735	3,470	1,390	1,355	2,745
	763	17	17	34	3,740	3,689	7,429	2,915	2,784	5,699
	772	19	19	38	5,460	5,622	11,082	4,343	4,468	8,811
UAL Total		426	425	851	63,233	63,254	126,487	48,652	48,410	97,062
USA	319	12	12	24	1,440	1,440	2,880	948	924	1,872
	321	6	6	12	1,014	1,014	2,028	667	651	1,318
USA Total		18	18	36	2,454	2,454	4,908	1,615	1,575	3,190
VIR	380	1	1	2	555	555	1,110	481	481	963
VIR Total		1	1	2	555	555	1,110	481	481	963
ABX	76F	2	2	4	0		0	0		0
ABX Total		2	2	4	0		0	0		0
AFR	74F	1		1	0		0	0		0
AFR Total		1		1	0		0	0		0
CAL	74F	1	1	2	0		0	0		0
CAL Total		1	1	2	0		0	0		0
CCA	74F	1		1	0		0	0		0
CCA Total		1		1	0		0	0		0
CHY	M1F		1	1	0		0	0		0
CHY Total			1	1	0		0	0		0

Table 8

EIS 2013 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
CPA	74F	1	1	2	0		0	0		0
CPA Total		1	1	2	0		0	0		0
DHL	A3F	2	2	4	0		0	0		0
DHL Total		2	2	4	0		0	0		0
EWW	A3F	1	1	2	0		0	0		0
EWW Total		1	1	2	0		0	0		0
FDX	31F	2	2	4	0		0	0		0
	A3F	4	4	8	0		0	0		0
	M1F	4	4	8	0		0	0		0
FDX Total		10	10	20	0		0	0		0
GEC	74F	1	1	2	0		0	0		0
GEC Total		1	1	2	0		0	0		0
JAL	74F	1	1	2	0		0	0		0
JAL Total		1	1	2	0		0	0		0
JDC	C650	1	1	2	0		0	0		0
JDC Total		1	1	2	0		0	0		0
KAL	74F	1	1	2	0		0	0		0
KAL Total		1	1	2	0		0	0		0
NCA	74F	1	1	2	0		0	0		0
NCA Total		1	1	2	0		0	0		0
NWA	74F	1	1	2	0		0	0		0
NWA Total		1	1	2	0		0	0		0
PAC	74F	2	4	6	0		0	0		0
PAC Total		2	4	6	0		0	0		0
UPS	74F	1		1	0		0	0		0
	75F	2	2	4	0		0	0		0
	76F	2	2	4	0		0	0		0
UPS Total		5	4	9	0		0	0		0
GIA	BE30	3	3	6	0		0	0		0
	BE40	1	1	2	0		0	0		0
	BE58	1	1	2	0		0	0		0
	C210	2	2	4	0		0	0		0
	C550	2	2	4	0		0	0		0
	C560	1	1	2	0		0	0		0
	C650	3	3	6	0		0	0		0
	C750	3	3	6	0		0	0		0
	CL60	1	1	2	0		0	0		0
	F900	1	2	3	0		0	0		0
	FA20	1	1	2	0		0	0		0
	FA50	2	1	3	0		0	0		0
	G4	1	1	2	0		0	0		0
	G5	4	3	7	0		0	0		0
	LJ30	1	2	3	0		0	0		0
	LJ35	1	1	2	0		0	0		0
	LJ45	1	1	2	0		0	0		0
	LJ55	3	3	6	0		0	0		0
	LJ60	3	3	6	0		0	0		0
GIA Total		35	35	70	0		0	0		0
EIA	LJ35	1	1	2	0		0	0		0
EIA Total		1	1	2	0		0	0		0
EJA	C560	3	3	6	0		0	0		0
	C56X	2	2	4	0		0	0		0
	C650	2	2	4	0		0	0		0
	C750	4	4	8	0		0	0		0
	F2TH	2	2	4	0		0	0		0

Table 8

EIS 2013 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
	H25C	4	4	8	0		0	0		0
EJA Total		17	17	34	0		0	0		0
Grand Total		1,584	1,585	3,169	182,523	182,906	365,429	139,616	138,630	278,245

Source: OMP Environmental Impact Statement, 2004.
Prepared by: Ricondo & Associates, Inc.

Table 9

EIS 2018 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
AAL	738	297	298	595	42,174	42,316	84,490	32,067	32,210	64,277
	739	31	32	63	5,580	5,760	11,340	4,222	4,496	8,718
	763	21	21	42	4,452	4,452	8,904	3,834	3,415	7,250
	772	13	13	26	3,185	3,185	6,370	2,796	2,475	5,271
AAL Total		362	364	726	55,391	55,713	111,104	42,920	42,596	85,515
AAR	772	1	1	2	310	310	620	280	280	559
AAR Total		1	1	2	310	310	620	280	280	559
ACA	319	11	11	22	1,232	1,232	2,464	857	921	1,778
	320	1	1	2	132	132	264	92	99	191
	CRJ	10	10	20	500	500	1,000	348	374	722
ACA Total		22	22	44	1,864	1,864	3,728	1,297	1,394	2,691
AFL	763	2	2	4	464	464	928	418	418	837
AFL Total		2	2	4	464	464	928	418	418	837
AFR	343	2	2	4	504	504	1,008	479	466	944
	380	1	1	2	555	555	1,110	527	513	1,040
AFR Total		3	3	6	1,059	1,059	2,118	1,006	978	1,984
AJM	320	1	1	2	150	150	300	139	131	270
AJM Total		1	1	2	150	150	300	139	131	270
AMX	737	8	8	16	1,000	1,000	2,000	710	710	1,421
AMX Total		8	8	16	1,000	1,000	2,000	710	710	1,421
ANA	773	1	1	2	305	305	610	275	275	550
ANA Total		1	1	2	305	305	610	275	275	550
ASA	737	1	1	2	120	120	240	114	108	222
ASA Total		1	1	2	120	120	240	114	108	222
AUA	343	1	1	2	257	257	514	232	232	463
AUA Total		1	1	2	257	257	514	232	232	463
AWE	319	4	4	8	496	496	992	462	467	929
	320	4	4	8	600	600	1,200	559	565	1,124
AWE Total		8	8	16	1,096	1,096	2,192	1,021	1,033	2,054
AWI	CR7	52	52	104	3,640	3,640	7,280	2,757	2,729	5,486
	CR9	15	15	30	1,350	1,350	2,700	1,023	1,012	2,035
	CRJ	38	38	76	1,900	1,900	3,800	1,439	1,424	2,864
AWI Total		105	105	210	6,890	6,890	13,780	5,219	5,166	10,384
AZA	763	2	2	4	446	446	892	392	392	783
AZA Total		2	2	4	446	446	892	392	392	783
BAW	772	3	3	6	681	681	1,362	603	524	1,127
BAW Total		3	3	6	681	681	1,362	603	524	1,127
BLR	CR7	63	63	126	4,410	4,410	8,820	3,578	3,631	7,209
	CR9	37	36	73	3,330	3,240	6,570	2,701	2,668	5,369
	CRJ	51	52	103	2,550	2,600	5,150	2,101	2,141	4,242
BLR Total		151	151	302	10,290	10,250	20,540	8,380	8,440	16,821
BMA	332	1	1	2	244	244	488	174	147	320
BMA Total		1	1	2	244	244	488	174	147	320
CAA	CR7	5	5	10	350	350	700	299	299	597
CAA Total		5	5	10	350	350	700	299	299	597
CAL	744	1	1	2	397	397	794	358	358	716
CAL Total		1	1	2	397	397	794	358	358	716
CCA	343	1	1	2	287	287	574	259	259	518
CCA Total		1	1	2	287	287	574	259	259	518
CES	346	1	1	2	322	322	644	290	290	581
CES Total		1	1	2	322	322	644	290	290	581
CHP	737	1	1	2	120	120	240	108	108	216
CHP Total		1	1	2	120	120	240	108	108	216

Table 9

EIS 2018 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
COA	737	10	10	20	1,240	1,240	2,480	1,045	1,023	2,068
	739	6	6	12	1,134	1,134	2,268	956	935	1,891
	CR9	8	8	16	720	720	1,440	558	583	1,141
COA Total		24	24	48	3,094	3,094	6,188	2,559	2,541	5,100
COM	CR7	3	4	7	210	280	490	200	258	457
	CR9	2	1	3	180	90	270	171	83	254
COM Total		5	5	10	390	370	760	371	340	711
CPA	744	1	1	2	343	343	686	309	309	619
CPA Total		1	1	2	343	343	686	309	309	619
CRX	332	1	1	2	196	196	392	186	186	372
CRX Total		1	1	2	196	196	392	186	186	372
CSN	772	1	1	2	292	292	584	263	263	527
CSN Total		1	1	2	292	292	584	263	263	527
DAL	738	10	10	20	1,480	1,480	2,960	1,084	1,076	2,160
	739	13	13	26	2,454	2,454	4,908	1,797	1,785	3,582
DAL Total		23	23	46	3,934	3,934	7,868	2,881	2,861	5,742
DLH	320	4	4	8	192	192	384	182	181	364
	346	2	2	4	682	682	1,364	648	644	1,292
	380	1	1	2	555	555	1,110	527	524	1,051
DLH Total		7	7	14	1,429	1,429	2,858	1,358	1,349	2,707
EGF	CR7	80	79	159	5,600	5,530	11,130	4,391	4,425	8,816
	CR9	62	64	126	5,580	5,760	11,340	4,375	4,609	8,984
	E145	127	126	253	6,350	6,300	12,650	4,980	5,041	10,020
EGF Total		269	269	538	17,530	17,590	35,120	13,745	14,075	27,820
EIN	332	1	1	2	275	275	550	261	261	523
EIN Total		1	1	2	275	275	550	261	261	523
ELY	772	1	1	2	298	298	596	158	158	316
ELY Total		1	1	2	298	298	596	158	158	316
FIN	343	1	1	2	261	261	522	235	235	471
FIN Total		1	1	2	261	261	522	235	235	471
GWY	320	2	2	4	336	336	672	279	279	558
GWY Total		2	2	4	336	336	672	279	279	558
IBE	343	1	1	2	249	249	498	237	210	447
	346	1	1	2	342	342	684	325	289	614
IBE Total		2	2	4	591	591	1,182	561	499	1,061
JAL	744	1	1	2	384	384	768	322	315	637
	773	2	2	4	600	600	1,200	503	492	995
JAL Total		3	3	6	984	984	1,968	825	806	1,631
JBU	320	14	14	28	2,184	2,184	4,368	1,813	1,813	3,627
JBU Total		14	14	28	2,184	2,184	4,368	1,813	1,813	3,627
KAC	343	1	1	2	280	280	560	222	222	444
KAC Total		1	1	2	280	280	560	222	222	444
KAL	744	1	1	2	384	384	768	315	315	629
KAL Total		1	1	2	384	384	768	315	315	629
KLM	74M	1	1	2	278	278	556	264	264	528
KLM Total		1	1	2	278	278	556	264	264	528
LAN	763	1	1	2	216	216	432	195	195	390
LAN Total		1	1	2	216	216	432	195	195	390
LOT	763	2	2	4	486	486	972	420	398	818
LOT Total		2	2	4	486	486	972	420	398	818
LRC	320	1	1	2	150	150	300	135	135	271
LRC Total		1	1	2	150	150	300	135	135	271

Table 9

EIS 2018 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
MXA	319	2	2	4	248	248	496	237	210	447
	320	7	7	14	1,050	1,050	2,100	1,002	889	1,891
	321	3	3	6	549	549	1,098	524	465	989
MXA Total		12	12	24	1,847	1,847	3,694	1,763	1,563	3,326
NKS	737	11	11	22	1,716	1,716	3,432	1,285	1,356	2,641
NKS Total		11	11	22	1,716	1,716	3,432	1,285	1,356	2,641
NWA	319	20	20	40	2,480	2,480	4,960	1,716	1,680	3,396
	320	4	4	8	592	592	1,184	410	401	811
NWA Total		24	24	48	3,072	3,072	6,144	2,126	2,081	4,207
OAL	343	1	1	2	295	295	590	266	266	532
OAL Total		1	1	2	295	295	590	266	266	532
OTH	319	5	5	10	660	660	1,320	548	548	1,096
	717	15	15	30	1,755	1,755	3,510	1,457	1,457	2,914
	737	30	30	60	4,110	4,110	8,220	3,413	3,413	6,825
OTH Total		50	50	100	6,525	6,525	13,050	5,418	5,418	10,836
RJA	342	1	1	2	254	254	508	241	241	483
RJA Total		1	1	2	254	254	508	241	241	483
SAB	333	1	1	2	260	260	520	234	234	469
SAB Total		1	1	2	260	260	520	234	234	469
SAS	333	2	2	4	522	522	1,044	484	451	934
	343	1	1	2	261	261	522	242	225	467
SAS Total		3	3	6	783	783	1,566	725	676	1,401
SIA	380	1	1	2	555	555	1,110	392	392	784
SIA Total		1	1	2	555	555	1,110	392	392	784
TAP	343	1	1	2	280	280	560	252	252	505
TAP Total		1	1	2	280	280	560	252	252	505
THA	744	1	1	2	389	389	778	351	351	702
THA Total		1	1	2	389	389	778	351	351	702
THY	343	1	1	2	271	271	542	244	244	489
THY Total		1	1	2	271	271	542	244	244	489
UAE	380	1	1	2	555	555	1,110	500	500	1,001
UAE Total		1	1	2	555	555	1,110	500	500	1,001
UAL	319	181	178	359	21,720	21,360	43,080	17,146	16,880	34,026
	320	154	156	310	21,252	21,528	42,780	16,598	16,911	33,509
	321	55	55	110	10,010	10,010	20,020	8,037	7,916	15,953
	744	5	6	11	1,735	2,082	3,817	1,441	1,681	3,122
	763	8	8	16	1,595	1,595	3,190	1,279	1,245	2,525
	772	29	28	57	8,742	8,574	17,316	7,135	6,975	14,110
UAL Total		432	431	863	65,054	65,149	130,203	51,637	51,609	103,246
USA	321	18	18	36	3,042	3,042	6,084	2,081	2,031	4,112
USA Total		18	18	36	3,042	3,042	6,084	2,081	2,031	4,112
VIR	380	1	1	2	555	555	1,110	500	500	1,001
VIR Total		1	1	2	555	555	1,110	500	500	1,001
VRG	763	1	1	2	221	221	442	199	199	399
VRG Total		1	1	2	221	221	442	199	199	399
ABX	76F	2	2	4	0		0	0		0
ABX Total		2	2	4	0		0	0		0
AFR	74F	1		1	0		0	0		0
AFR Total		1		1	0		0	0		0
CAL	74F	1	1	2	0		0	0		0
CAL Total		1	1	2	0		0	0		0
CCA	74F	1		1	0		0	0		0

Table 9

EIS 2018 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
CCA Total		1		1	0		0	0		0
CHY	M1F		1	1	0		0	0		0
CHY Total			1	1	0		0	0		0
CPA	74F	1	1	2	0		0	0		0
CPA Total		1	1	2	0		0	0		0
DHL	A3F	2	2	4	0		0	0		0
DHL Total		2	2	4	0		0	0		0
EWW	A3F	1	1	2	0		0	0		0
EWW Total		1	1	2	0		0	0		0
FDX	31F	2	2	4	0		0	0		0
	38F	1	1	2	0		0	0		0
	A3F	4	4	8	0		0	0		0
	M1F	3	3	6	0		0	0		0
FDX Total		10	10	20	0		0	0		0
GEC	74F	1	1	2	0		0	0		0
GEC Total		1	1	2	0		0	0		0
JAL	74F	1	1	2	0		0	0		0
JAL Total		1	1	2	0		0	0		0
JDC	C650	1	1	2	0		0	0		0
JDC Total		1	1	2	0		0	0		0
KAL	74F	1	1	2	0		0	0		0
KAL Total		1	1	2	0		0	0		0
NCA	74F	1	1	2	0		0	0		0
NCA Total		1	1	2	0		0	0		0
NWA	74F	1	1	2	0		0	0		0
NWA Total		1	1	2	0		0	0		0
PAC	74F	2	4	6	0		0	0		0
PAC Total		2	4	6	0		0	0		0
UPS	74F	1		1	0		0	0		0
	75F	2	2	4	0		0	0		0
	76F	2	2	4	0		0	0		0
UPS Total		5	4	9	0		0	0		0
GIA	BE40	1	1	2	0		0	0		0
	BE58	1	1	2	0		0	0		0
	C210	2	2	4	0		0	0		0
	C550	2	2	4	0		0	0		0
	C560	1	1	2	0		0	0		0
	C650	3	3	6	0		0	0		0
	C750	3	3	6	0		0	0		0
	CL60	2	2	4	0		0	0		0
	F900	1	2	3	0		0	0		0
	FA20	1	1	2	0		0	0		0
	FA50	2	1	3	0		0	0		0
	G4	1	1	2	0		0	0		0
	G5	4	3	7	0		0	0		0
	LJ30	1	2	3	0		0	0		0
	LJ35	1	1	2	0		0	0		0
	LJ45	1	1	2	0		0	0		0
	LJ55	3	3	6	0		0	0		0
	LJ60	4	3	7	0		0	0		0
GIA Total		34	33	67	0		0	0		0
EIA	LJ35	1	1	2	0		0	0		0
EIA Total		1	1	2	0		0	0		0
EJA	C560	3	3	6	0		0	0		0
	C56X	2	2	4	0		0	0		0

Table 9

EIS 2018 Unconstrained Schedule
Peak Month Average Day Summary

		Operations			Available Seats			Passengers		
Carrier	Equipment	Arrivals	Departures	Total	Arrivals	Departures	Total	Arrivals	Departures	Total
	C650	2	2	4	0		0	0		0
	C750	4	4	8	0		0	0		0
	F2TH	2	2	4	0		0	0		0
	H25C	4	4	8	0		0	0		0
EJA Total		17	17	34	0		0	0		0
Grand Total		1,687	1,687	3,374	201,648	202,065	403,713	160,067	159,558	319,625

Source: OMP Environmental Impact Statement, 2004.
Prepared by: Ricondo & Associates, Inc.

Appendix D

REVISED FIGURES

Chicago O'Hare International Airport
Weighted Average Operating Costs per Block Minute
For Unconstrained Forecast Planning Years

Year	Number of Operations [1]	Total Number of Seats	Average Number of Seats per Aircraft	Weighted Average Operating Cost per Block Minute [2]	Weighted Average Enroute Cost per Block Minute [2]	Weighted Average Ground Cost per Block Minute [2]
2002	2,602	286,829	110.2	$ 46.56	$ 52.73	$ 24.96
2007	2,797	310,860	111.1	$ 55.70	$ 63.13	$ 29.70
2009	2,883	328,582	114.0	$ 55.48	$ 62.96	$ 29.29
2013	3,061	365,435	119.4	$ 53.57	$ 60.93	$ 27.80
2018	3,269	403,713	123.5	$ 54.32	$ 61.84	$ 27.96

[1] Operations are based on unconstrained forecast simulation planning levels and only include major passenger and cargo air carriers.
[2] Aircraft operating expenses for 2002 are based on 2008 dollars and converted to 2002 values using the BLS CPI Inflation Calculator. Aircraft operating expenses are in 2008 dollars for 2007, 2009, 2013 and 2018.

Source: U.S. Department of Transportation, Form 41 air carrier data (block hours and aircraft operating expenses) obtained through BACK Aviation Solutions and Database Products for the period TME September 2008.
Prepared by: Ricondo & Associates, Inc.

Percent Share of Total Airport Operations for Aircraft Category

	Regional Jet	Narrow Body	Wide Body
2002	28.8%	63.9%	7.3%
2007	34.2%	58.3%	7.5%
2009	34.3%	57.6%	8.1%
2013	34.3%	56.6%	9.1%
2018	33.8%	56.7%	9.5%

Total Operating Expense for Aircraft Category (000,000)

	Regional Jet	Narrow Body	Wide Body
2002	1,631,559	20,898,821	2,625,001
2007	2,206,450	21,817,076	3,183,805
2009	2,197,850	19,285,953	3,610,338
2013	2,187,698	17,475,850	4,435,454
2018	2,173,857	17,381,937	4,871,825

Total Enroute Operating Expense for Aircraft Category (000,000)

	Regional Jet	Narrow Body	Wide Body
2002	1,725,674	23,792,851	3,018,069
2007	2,348,575	24,900,823	3,660,864
2009	2,356,651	21,827,556	4,151,386
2013	2,374,050	19,703,987	5,102,280
2018	2,379,944	19,534,375	5,605,959

Total Ground Operating Expense for Aircraft Category (000,000)

	Regional Jet	Narrow Body	Wide Body
2002	1,360,168	12,255,983	1,434,450
2007	1,795,052	12,580,759	1,739,091
2009	1,736,261	10,922,243	1,972,031
2013	1,642,462	9,868,775	2,414,852
2018	1,568,289	9,784,420	2,646,520

Appendix E

City of Chicago's Request for Letter of Intent for a Multi-Year Commitment Of Airport Improvement Program Grant-In-Aid funding

Application Dated March 1, 2009

BCA SENSITIVITY REQUEST

On July 7, 2009 the City of Chicago (the City) responded to FAA comments on the City's request for Letter of Intent for a Multi-Year Commitment of Airport Improvement Program Grant-In-Aid funding submitted March 1, 2009. As part of that response, the City included three sensitivity Benefit Cost Analyses; Sensitivity 1, 2a, and 2b. Upon review of the City's BCA sensitivities and subsequent discussions, the FAA requested an additional BCA sensitivity. This response summarizes the prior sensitivities included in the July 7, 2009 response to FAA comments and provides information on the additional BCA sensitivity.

SUMMARY OF BCA SENSITIVITIES

Sensitivity 1: Sensitivity 1 was based on the BCA included in the March 1, 2009 Request for Letter of intent for a Multi-Year Commitment of Airport Improvement Program (AIP) Grant-in-Aid Funding. The sensitivity incorporated 1) revised Variable Operating Costs (VOCs) that consider the source of travel time benefits (airborne versus ground), and 2) a revised delay curve equation that utilized Average Annual Day data. Sensitivity 1 assumed operations were capped at the level of 1,150,000 annual operations under both the base, and alternative scenario. More detailed information on Sensitivity 1 is included in the July 7, 2009 response to FAA comments. Sensitivity 1 resulted in a Benefit Cost Ratio (BCR) of 1.47.

Sensitivity 2a: Sensitivity 2a was developed in order to assess the assertion that operations at the Airport are constrained when airfield delays reach unacceptable levels. Sensitivity 2a was based on Sensitivity 1 as described above, however, OMP Completion Phase activity was assumed to grow unconstrained, while the OMP Phase 1 base condition was assumed capped at 1,150,000 annual operations. Under this scenario, more activity is accommodated under the OMP Completion Phase alternative than under the base condition.

Delay benefits under Sensitivity 2a were assumed equal to the difference in travel time between the base case (Phase 1 constrained activity) and the Completion Phase unconstrained activity. These delay benefits were applied to the constrained activity levels of the base case. The value of the additional passengers accommodated under the OMP Completion Phase was not quantified in monetary terms as part of the BCA benefits. No additional gate costs were included in Sensitivity 2a[1].

[1] The cost of additional gates was not included in Sensitivity 2a for multiple reasons; 1) the assumption that to the extent the capacity of contact gates at the Airport proves insufficient to accommodate all of the operations that airlines schedule, passengers will be accommodated at aircraft parking positions that are not in direct contact with the terminal, so-called "hardstand" positions, until gates can be built to catch up to passenger levels, and 2) because the OMP Phase 1 BCA that supported LOI Number AGL-06-01 included the costs of the Western Terminal Concourse, a 45-gate facility that could accommodate the unconstrained activity forecasted during the timeframe of the BCA, and therefore was already justified as part of the OMP Phase 1 BCA.

More detailed information on Sensitivity 2a is included in the July 7, 2009 response to FAA comments.
Sensitivity 2a resulted in a Benefit Cost Ratio (BCR) of 1.25.

Sensitivity 2b: Sensitivity 2b was identical to Sensitivity 2a described above except the delay benefits were applied to unconstrained activity projections under the OMP Completion Phase scenario. This methodology assumes that the minimum delay benefit to the additional passengers accommodated under the OMP Completion Phase is equal to the delay benefit experienced by the individual base case passengers. More detailed information on Sensitivity 2b is included in the July 7, 2009 response to FAA comments.

Sensitivity 2b resulted in a Benefit Cost Ratio (BCR) of 1.26.

Sensitivity 3: Sensitivity 3 is based on Sensitivity 2a, a scenario with capped OMP Phase 1 activity and unrestricted OMP Completion Phase activity. Sensitivity 3 is the subject of this response and was developed to demonstrate that the program remains cost beneficial even under the conservative assumption that additional gate costs included in the Supplemental OMP Phase 1 BCA[2] must be duplicated under the OMP Completion Phase BCA. This sensitivity represents the extreme boundary for facility costs (i.e. it assumes maximum development of gate and related facilities, and thus their costs but it does not include quantification of their benefits) as part of the Completion Phase. As discussed below in more detail, Scenario 3 significantly underestimates project benefits and therefore the resulting BCR. The assumptions and results associated with Sensitivity 3 are described in the following section.

SENSITIVITY 3 ASSUMPTIONS & RESULTS

Sensitivity 3 was requested by the FAA to assess the ability of the OMP Completion Phase benefits to offset additional gate costs if they become necessary. The City calculated incremental gates that would be required to accommodate the unconstrained activity during the timeframe of the BCA should the City choose not to utilize hardstand positions to accommodate passenger demand. As part of this analysis the City determined the number of gates and the timing gate development would be implemented based on the FAA Terminal Area Forecast (TAF) operations forecast being used for this analysis. The analysis determined that the number of incremental gates was similar to the total gates included for the Western Terminal Concourse as planned in the Master Plan. Therefore, the City assumed incremental construction and use (consistent with the TAF operations forecasts being used in this BCA analysis) of the Western Terminal Concourse in Sensitivity 3. A summary of the gate analysis and cost assumptions follows.

Gate Requirements: Additional gate development was estimated recognizing that the current gate facilities can at a minimum accommodate the EIS 2013 level of activity (1,120,600 annual operations/3169 peak month average day (PMAD) operations) as determined by FAA as part of the OMP EIS.

[2] The Supplemental BCA considered the OMP Phase 1 Master Plan development which included the West Terminal Satellite development along with certain terminal elements of the World Gateway Program.

Table 1 presents the gate utilization based on the existing number of gates and the EIS 2013 activity. As shown, the gate utilization for the existing facilities would be approximately 16 operations (8 aircraft turns) per gate for the 2013 PMAD, or an average of one operation per hour over a 16-hour operating day.

Table 1

Gate Utilization Rate

	EIS 2013
Total Annual Operations	1,120,600
Annual Commercial Passenger Operations	1,047,200
PMAD Commercial Passenger Operations	2,999
Ratio Annual to PMAD	349
Gates	189
Annual Operations per gate	5,541
PMAD Operations per gate	15.9

Source: O'Hare Environmental Impact Statement, 2004.
Prepared by: Ricondo & Associates, Inc.

Table 2 presents the additional gate development for analysis years beginning in 2022 under the assumption that the 16-operations per gate utilization defined in Table 1 will continue. As shown, the existing gate facility capabilities are exceeded in 2022 under this methodology, suggesting the need for new gates to open in that year. At the 2034 end of the analysis period, 44 additional gates are required under this methodology, roughly equal to the gate capacity of the West Terminal Satellite Concourse. For the purposes of the Sensitivity 3 BCA, 22 additional gates were assumed to open in 2022 with the remaining gates opening in 2028.

Table 2

Additional Gate Development

Year	Total Annual Operations, 2008 TAF	Annual Commercial Passenger Operations (95.7% of total)	PMAD Commercial Passenger Operations	Ratio Annual to PMAD	PMAD Operations per gate	Gates (189 Available)	Additional Gates needed
2021	1,088,058	1,041,696	2,983	349	16	186	(3)
2022	1,112,451	1,065,050	3,050	349	16	191	2
2023	1,136,833	1,088,393	3,117	349	16	195	6
2024	1,161,700	1,112,200	3,185	349	16	199	10
2025	1,182,375	1,131,995	3,242	349	16	203	14
2026	1,191,552	1,140,781	3,267	349	16	204	15
2027	1,212,884	1,161,204	3,325	349	16	208	19
2028	1,234,216	1,181,626	3,384	349	16	211	22
2029	1,255,548	1,202,049	3,442	349	16	215	26
2030	1,276,879	1,222,472	3,501	349	16	219	30
2031	1,298,211	1,242,895	3,559	349	16	222	33
2032	1,319,543	1,263,318	3,618	349	16	226	37
2033	1,340,875	1,283,740	3,676	349	16	230	41
2034	1,362,206	1,304,163	3,735	349	16	233	44

Source: FAA Terminal Area Forecast, 2008; City of Chicago Activity Statistics, 2008; O'Hare Environmental Impact Statement, 2004.
Prepared by: Ricondo & Associates, Inc.

Gate Costs: The capital costs and incremental Operating & Maintenance (O&M) costs of the gates included in Sensitivity 3 are based on costs and methodologies included in O'Hare Master Plan.

Costs included design and construction of Western Airside Concourse, energy plant, fuel storage and distribution improvements associated with the Western Airside Concourse, and the On-Airport Circulation or Automated People Mover System. The costs included in the Master Plan were escalated at four percent per year from 2001 dollars to 2008 dollars and condensed into a single year for design in 2018 and two three years stages of construction ending in 2021 and 2027.

The incremental O&M was based on the incremental square feet of terminal space the Western Terminal Concourse added to the airport. The current O&M costs were increased by 35 percent of the additional square feet.

Non-Quantified Benefits: Similar to the BCA included in the March 1, 2009 document and subsequent sensitivities, Sensitivity 3 does not include any downstream delay benefits. Although various methods of calculating downstream benefits exist in literature and research, the FAA has not agreed upon an accepted methodology. Until the FAA provides an accepted methodology, project benefits and the resulting BCR will continue to be significantly understated. When the FAA provides guidance for the calculation of downstream benefits, the City can incorporate the downstream benefits into the BCA which will result in an increase in the BCR.

Additionally, the BCA does not assign monetary value to the incremental increase in passengers accommodated under the OMP Completion Phase compared to the base case. In total, 36,769,926 additional passengers are accommodated over the BCA analysis period under the OMP Completion Phase development. In the context of this Scenario 3, not quantifying the value of the incremental passengers accommodated under the OMP Completion Phase compared to the base case significantly undermines the real-world validity of this scenario since terminal/gate facilities would only be built to serve that demand. Thus, this Scenario 3 includes the cost of terminal/gate facilities but not their primary benefit and therefore it significantly understates project benefits and the resulting BCR.

Results: As shown in **Table 3**, Sensitivity 3 produced a BCR of 1.0 without consideration of the significant downstream benefits or value of additional passengers accommodated under the Completion Phase development. As such, this BCR represents the extreme lower limit, and any reasonable sensitivity test quantifying the full benefits and probable costs would produce a greater ratio.

Table 3
BCA Sensitivity 3

Benefit Cost Ratio
OMP Completion Phase Airfield (million of 2008 dollars)
Sensitivity 2a with Constrained Phase 1 Activity, Unconstrained Completion Phase Activity, and Benefits Applied to Constrained Activity
Includes OMP Airfield (2014 completion), Western Concourse and On-Airport Circulation (2022 and 2028 completion[1])

	Benefits[2]				Costs			Present Value			
Year	Aircraft Delay Savings	Passenger Delay Savings	Downstream Passenger Delay Savings[3]	Total Project Benefits	Project Construction Costs[4]	Incremental O&M Expenses	Total Project Costs	Discount Rate Factor	Total Project Benefits	Total Project Costs	Annual Net Present Value (Benefits-Costs)
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	73.1	0.0	73.1	1.0700	0.0	68.3	(68.3)
2010	0.0	0.0	0.0	0.0	459.6	0.0	459.6	1.1449	0.0	401.5	(401.5)
2011	0.0	0.0	0.0	0.0	927.6	0.0	927.6	1.2250	0.0	757.2	(757.2)
2012	0.0	0.0	0.0	0.0	806.2	0.0	806.2	1.3108	0.0	615.0	(615.0)
2013	0.0	0.0	0.0	0.0	365.0	7.5	372.4	1.4026	0.0	265.5	(265.5)
2014	0.0	0.0	0.0	0.0	121.8	11.4	133.2	1.5007	0.0	88.8	(88.8)
2015	34.1	52.1	0.0	86.2	0.0	24.3	24.3	1.6058	53.7	15.2	38.5
2016	47.9	73.4	0.0	121.3	0.0	24.3	24.3	1.7182	70.6	14.2	56.4
2017	65.3	100.5	0.0	165.9	0.0	24.3	24.3	1.8385	90.2	13.2	77.0
2018	84.9	131.0	0.0	215.9	50.8	24.3	75.1	1.9672	109.8	38.2	71.6
2019	117.7	166.4	0.0	284.2	157.0	24.4	181.3	2.1049	135.0	86.2	48.9
2020	158.8	207.3	0.0	366.0	157.0	24.3	181.3	2.2522	162.5	80.5	82.0
2021	200.4	264.1	0.0	464.6	157.0	24.3	181.3	2.4098	192.8	75.2	117.5
2022	248.8	330.9	0.0	579.6	0.0	33.9	33.9	2.5785	224.8	13.1	211.6
2023	297.1	396.6	0.0	693.7	0.0	33.9	33.9	2.7590	251.4	12.3	239.2
2024	325.8	430.9	0.0	756.7	0.0	33.9	33.9	2.9522	256.3	11.5	244.8
2025	311.2	416.8	0.0	728.0	380.5	33.9	414.4	3.1588	230.5	131.2	99.3
2026	304.3	412.9	0.0	717.3	347.6	33.9	381.5	3.3799	212.2	112.9	99.3
2027	287.7	395.3	0.0	683.0	238.5	33.9	272.4	3.6165	188.9	75.3	113.5
2028	269.8	375.5	0.0	645.4	0.0	43.5	43.5	3.8697	166.8	11.2	155.5
2029	250.8	353.4	0.0	604.2	0.0	43.5	43.5	4.1406	145.9	10.5	135.4
2030	230.3	328.7	0.0	559.1	0.0	43.5	43.5	4.4304	126.2	9.8	116.4
2031	208.5	301.3	0.0	509.8	0.0	43.5	43.5	4.7405	107.5	9.2	98.4
2032	185.1	270.8	0.0	455.9	0.0	43.5	43.5	5.0724	89.9	8.6	81.3
2033	160.1	237.1	0.0	397.2	0.0	43.4	43.4	5.4274	73.2	8.0	65.2
2034	133.3	199.9	0.0	333.2	0.0	43.4	43.4	5.8074	57.4	7.5	49.9
Total	$3,922.0	$5,445.1	TBD	$9,367.0	$4,241.6	$696.9	$4,938.5		$2,945.5	$2,940.0	$5.5
Present Value											
									$2,945.5	$2,940.0	$5.5

Benefit-Cost Ratio: 1.00

Notes:
[1] For purposes of this analysis development of theses facilities is assumed to coincide with demand growth projected under the 2008 TAF which results in 2022 and 2028 completion
[2] Does not include benefit of accommodating additional passengers under the OMP Completion Phase scenario.
[3] Downstream benefit assumptions to be provided by FAA.
[4] 2008 project costs are a sunk costs and not included in the BCA analysis. Western Terminal Concourse assumed to open with half the total gates in 2022 and the remaining gates in 2028. Costs were distributed assuming all design completed in 2018, half the construction costs of the concourse and fuel storage and distribution improvements and the full construction costs of the energy plant in 2018 through 2021. Remaining construction costs of the concourse and fuel storage and distribution improvements, and full cost of the on-airport circulation distributed in 2025 through 2027.