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ATTACHMENT F

FAA Response to Comments
O'Hare OMP Phase 1 LOI

In February 2005, the City of Chicago (City) submitted a request for a Letter of Intent (LOI) for a multiyear commitment of Airport Improvement Program (AIP) funding for Phase 1 of the O'Hare Modernization Program (OMP). There is no statutory right for parties to submit comments during the LOI application process and review, nor a statutory obligation for FAA to review or respond to comments submitted to an LOI application. However during the course of the FAA review of the LOI, comments were submitted by Community, Religious, and Homeowner Objectors to the project in response to the LOI application, including a study by the firm of Campbell-Hill, Inc., challenging several aspects of the City's Benefit Cost Analysis. Congressman Henry Hyde also submitted comments on behalf of his constituents and the Department of Transportation Office of the Inspector General. These documents are listed below:

1. June 3, 2005 letter from Joseph Karaganis and Robert Cohn representing Community, Religious, and Homeowner Objectors to the project (Karaganis)[1]
2. June 6, 2005(errata) BCA from Campbell-Hill, Aviation Group, Inc. (Campbell-Hill)
3. July 5, 2005 letter from Congressman Henry Hyde on behalf of his constituents (Hyde)
4. July 21, 2005 Department of Transportation Office of Inspector General report titled, "Chicago's O'Hare Modernization Program", Report Number AV-2005-067 (OIG)
5. July 21, 2005, Presentation by Campbell-Hill in regard to the City of Chicago Benefit-Cost Analysis in support of its OMP.
6. October 12, 2005, The Alliance of Residents Concerning O'Hare, Inc. (AreCO) Letter.[2]
7. October 28, 2005 letter from Joseph Karaganis and Robert Cohn representing Community, Religious, and Homeowner Objectors to the project,
8. October 28, 2005 response to Supplemental BCA from Campbell-Hill, Aviation Group, Inc.
9. November 8, 2005 letter from Joseph Karaganis and Robert Cohn submitting affidavit of Robert Haveman.
10. November 8, 2005 Affidavit of Robert Haveman

Although not required by statute to respond to comments to an LOI application the FAA did consider the points raised in the comments during its review of the LOI application and prepared the following responses.

[1] Letter references August 23, 2004 letter and April 6, 2005 letter as previously filed objections to the City's LOI request.

[2] Comments submitted by the Alliance of Residents Concerning O'Hare, Inc. (AreCO) were duplicative in nature of comments submitted by the other commenters and are addressed in the responses to the other comments listed above.

The original (February 2005) LOI submittal included a Benefit/Cost Analysis (BCA) based primarily on the delay reduction benefits (measured in terms of changes in total aircraft travel time) anticipated to be produced by the project. While the City's original BCA focused on the quantification of travel timesavings benefits, there were other benefit categories that are more relevant than those calculated in the original BCA. Consequently, it was determined that enhancements to the original BCA methodology would be necessary. Since then, the City has submitted a September 27, 2005, Supplemental BCA using a consumer surplus approach which focuses the analysis on measuring the capacity benefits of the project, i.e. the airport's ability to process additional traffic and passengers as a result of the proposed project.

The documents numbered 1 through 6 referenced above were submitted objecting to the original February 2005 BCA. The Supplemental BCA arose in part as a response to these comments. The documents numbered 7 through 10 above relate to the September 27, 2005 Supplemental BCA. Our responses below reflect the fact that the Supplemental BCA was completed and was used as the basis of our LOI decision dated November 17,, 2005 Therefore, to the extent comments on the original BCA were superceded by the submission of comments on the Supplemental BCA, the FAA focused on responding to the latter set of comments. Many of the original comments did not require a response since the updated analysis rendered the comment moot. Where FAA determined that an original comment applied generically, the comment was addressed.

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Please be advised that there is no statutory right to comment to a Letter of Intent (LOI) application. Nor is there a statutory obligation to respond to comments submitted with respect to a LOI application. However due to the interest shown by various commenters in the LOI decision, FAA has compiled the following responses.

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June 3, 2005 Karaganis/Cohn Letter
FAA Response to Comments

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Comment #1:

None of the City's proposed "build" scenarios for Phase 1 or the full OMP-Master Plan would produce a benefit-cost ratio of 1.0 or higher; indeed, the BCA ratios for most of the proposed scenarios would produce NEGATIVE net benefits, much less a ratio above 1.0.

Commenter: Karaganis-Cohn. (p. 2)

FAA Response:

Phase 1
The FAA disagrees with the comment.

On September 27, 2005, the City submitted a supplemental BCA for Master Plan Phase 1 development that produced a benefit/cost ratio of 4.6. While the benefits are identical to those reported for OMP Airfield Phase 1, Master Plan Phase 1 includes the relevant set of costs (e.g. costs associated with the Lima-Lima taxiway, the Western Concourse, and the Concourse K extension) necessary for a proper evaluation of the proposed project

The Supplemental BCA methodology and results were reviewed by both FAA's Office of Policy and Plans(APO) and FAA's contractor, GRA, Inc., an aviation firm specializing in strategic advice and financial analysis relating to air transportation. APO determined that the benefits sufficiently exceeded the project costs over a range of parameters. A copy of the memos produced by APO accepting the City's use of the FAA suggested methodology and results are included as Attachment E to the "Analysis And Review of City of Chicago's Application For Letter of Intent". GRA concluded that the project appeared to show robust benefit-cost ratios over a range of parameter values. A letter accepting the methodology and results by GRA is included as Appendix D to the "Analysis and Review of City of Chicago's Application For Letter of Intent". Through these two reviews FAA concluded that the project is cost beneficial. .

See the response to the next comment for additional discussion of the Karaganis-Cohn critique of the City's initial BCA submission.

Total Master Plan

The City's supplemental analysis includes some data on the benefits and costs of the Total Master Plan. That data shows that the Total Master Plan is also cost beneficial, however, this information was not sufficient for the FAA to make a final decision on whether the Total Master Plan is cost beneficial.

A determination of OMP Phase 2's benefits and costs is not required to issue an LOI for OMP Phase 1. Our review of the City's supplemental analysis indicates that OMP Phase 1 will be cost beneficial on a stand-alone basis. In other words, the Federal investment in OMP Phase 1 would be justified even if OMP Phase 2 and the remainder of the master plan are not constructed. Therefore, a detailed analysis of OMP Phase 2's benefits and costs is not required to support our decision to issue an LOI for OMP Phase 1. Having found OMP Phase 1 provides significant improvement at one of the nation's most important airports, the FAA can be expected to continue to fund the overall OMP, assuming that the City is able to comply with the statutory and regulatory guidance on LOI/AIP funding, and that funds remain available when those applications are filed.

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Comment #2:

The City's BCA used a faulty model design which caps the operations for OMP Phase 1 and full OMP at 974,000 operations, computes the delay savings with the new capacity at that capped level of operations and then applies that delay savings throughout the entire 20 year BCA period. This approach creates unrealistic and fictional delay savings, dishonestly exaggerating delay savings, and is inconsistent with FAA's BCA guidance. Instead of capping the level of operations the BCA should cap the level of delay as the FAA Guidance instructs.

Commenter: Karaganis-Cohn. (p. 2)

FAA Response:

The FAA agrees that the City's methodology of capping operations was not appropriate for determining the benefits of the Master Plan Phase 1.

The FAA notes that the methodology developed in the original BCA to measure the benefits of the proposed project would have been appropriate if aircraft operations remained capped at 974,000 operations. Upon reviewing the methodology, FAA concluded that this assumption was not realistic since the base case and build scenarios both need to reflect realistic operating environments. This means the BCA should include constrained and unconstrained forecasts for the base case and Master Plan Phase –1 scenario, respectively. In each scenario, the level of operations should be capped at approximately the same level of average annual delay.

FAA also determined that the assumption that operations remained capped also meant that the original BCA did not fully account for consumer benefits attributable to the airport's ability to handle additional operations and enplanements. Based on discussions with the Sponsor and its contractor conducting the analysis, the FAA's concerns with the original analysis were recognized by the City. As a result, the City provided the FAA with a supplemental analysis, dated September 27, 2005, that utilized an alternative methodology to measuring benefits for the proposed project. Instead of maintaining a constant annual operational cap of 974,000, the alternative methodology allowed aircraft operations to grow until average annual delays were approximately equal to what was projected under the base case. At that point in time, aircraft operations would be capped. This methodology was not only consistent with the approach recommended in the Karaganis-Cohn comments, but also with the FAA's BCA guidance. This process is discussed in Appendix C to the FAA's BCA guidance, Adjustments of Benefits and Costs for Induced Demand, and relies on a standard economic approach that examines the "full price" of travel before and after the proposed project and then calculates changes in consumer surplus. The application of this methodology is entirely appropriate for the proposed project and provides a conservative measure of the economic value generated by Master Plan Phase 1.

It is important to note that the assumptions described above are solely for evaluating Master Plan Phase 1. Assuming future phases of OMP development occur as planned and as adopted by FAA's Record of Decision, the need to impose an operational cap would not exist since Phase-2 of the modernization program would be completed before 2016. At that point there would be enough capacity to accommodate unconstrained demand.

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Comment #3:

Chicago's BCA did not perform any alternatives analysis for the BCA, violating a central requirement of FAA's BCA Guidance and making the City's BCA analysis invalid. The FAA's Guidance states "a valid BCA must have at least one alternative identified for each possible course of action." FAA Guidance further states that "at a minimum, the following alternatives should be identified and discussed for any airport infrastructure project: . . . demand management strategies . . ." FAA BCA Guidance § 7.3, Page 18 (emphasis added). Other alternatives that should be assessed in the context of a valid BCA would include a range of non-development and development alternatives including use of the existing airport coupled with congestion management mechanisms at varying levels of "acceptable delay", incremental on-airport runway configurations shifting of some demand to other regional and hub airports, and any combination of the foregoing. These very types of alternatives were

recently adopted by the FAA in its ROD on the LAX Master Plan and were adopted by the City and the FAA with respect to O'Hare in the City's 1980s Master Plan and the FAA's 1984 ROD dealing with O'Hare expansion. Further, demand management is clearly an action that is currently in place at O'Hare and currently being proposed by FAA for O'Hare under its March 25, 2005 NPRM. Contrary to this central requirement the City's BCA states "the City believes that the OMP is the best development option and, therefore, ***alternatives are not analyzed as part of this BCA***." Chicago's BCA at IV-2 (emphasis added). This City's failure to evaluate alternatives to its preferred course of action makes the City's BCA analysis fatally invalid.

Commenter: Karaganis-Cohn. . (pp. 2-3)

FAA Response:

FAA disagrees with the commenters' interpretation of the BCA guidance on specification of alternatives.

Through the NEPA process, FAA rigorously explored and objectively evaluated all reasonable alternatives and discussed the reasons for those alternatives that were eliminated from detailed study.

As stated in the FEIS, congestion management was considered as an alternative, by itself, and as part of a blended alternative. In Chapter 3 of the EIS, the FAA analyzed the potential benefits of various congestion management strategies, including both administrative and market-based approaches. The conclusion of this analysis was that congestion management alone would not meet the purpose and need identified in the EIS. Moreover, congestion management was also included as one of several techniques in the Blended Alternative which was considered by the FAA as one of the alternatives that had the potential to substantially meet the purpose and need. The Blended Alternative, however, did not pass the secondary screening criteria; see EIS Chapter 3, Section 3.3.2.6.

Also reviewed in the EIS is the potential for future growth in air traffic at other airports in the region. The FAA recognizes that in the Chicago region O'Hare currently serves as the primary airport because of its origin-destination passenger base, connecting passenger hubs, and international gateway services. In addition, the state of Illinois has declared that modernizing O'Hare is a priority. FAA concluded that the projected needs of the Chicago region cannot be met without improvements at O'Hare. A detailed discussion on FAA's evaluation of a regional system approach is contained in Chapter 3, Section 3.2.2.2. of the FEIS.

Since these alternatives would not accomplish the agency's Purpose and Need as set forth in the Final EIS, there is a diminished interest in requiring the Sponsor to subject the eliminated alternatives to a formal economical evaluation in a BCA. Subjecting

alternatives to BCA review assists the Agency in identifying among competing alternatives if one proposal may be more cost beneficial than another. For the OMP, where the need to increase capacity is so evident, other alternatives that merely cap delay by constraining growth need not be subject to this provision.

Moreover, three build alternatives (Alternative C, D and G) were retained for detailed consideration that would best accomplish the objectives of the FEIS purpose and need statement. What is unique in this case is that Master Plan Phase 1 proposal is the same Phase 1 proposed development for all three alternatives. In addition, the Record of Decision has identified Alternative C as the Selected Alternative. Therefore, the BCA does effectively identify and analyze the most applicable alternative – the proposed project.

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Comment #4:

The City's BCA used as the "base case" a "do-nothing", no-action course of action, which is patently inconsistent with FAA's BCA Guidance. FAA BCA Guidance instructs that "the base case represents the best course of action that would be pursued in the absence of a major initiative to obtain the specified objectives" and FAA further directs that "the base case not be defined as a 'do-nothing' course of action where the current airport configuration and management are held static." There is good reason for this requirement because as FAA Guidance states a do-nothing course of action "will typically overstate the deterioration and delay, efficiency, safety, and other benefit measures as traffic grows. In reality, airport managers, airport users, and air traffic managers may make a variety of operational and procedural changes to mitigate delay and related problems as congestion builds beyond certain thresholds." [2]

Commenter: Karaganis-Cohn. (p. 3)

FAA Response:

The FAA disagrees with the comment and suggests that the commenter has confused the requirement under NEPA to consider the No Action (Do-Nothing) alternative with the FAA's BCA Guidance regarding "Base Case". FAA's BCA Guidance states that "the base case represents the best course of action that would be pursued in the absence of a major initiative to obtain the specified objectives" and that "the base case not be defined as a "do-nothing" course of action where the current airport configuration and management are held static."

FAA views the Sponsor's base case as conforming to these requirements. It depicts a "do-something" scenario, as opposed to the commenter's characterization to the contrary. Because O'Hare is presently subjected to a cap on operations, the base case used is one that essentially reflects an application of demand management. If Master Plan Phase-1 is not implemented, the application of demand management may represent the best course of action.

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Comment #5:

Chicago's BCA Analysis failed to analyze all of the evaluation periods required by the FAA's BCA Guidance. According to the FAA's BCA Guidance, traffic levels and the associated impact of those levels on delay for the proposed project and for alternatives should be analyzed for ***at least three time periods***: "Three time periods of concern in determining the evaluation: Requirement life; physical life; and economic life." See FAA BCA Guidance § 8.1, Page 21. FAA BAC Guidance says that at least three traffic levels should be simulated: at the beginning of the project's life, at the middle point of the project's life, and at the end or near the end of the project's life. See, FAA BCA Guidance at Page 37 (emphasis added). The City's BCA has failed to analyze these periods. Furthermore, FAA recommends that the 20 year evaluation period "be augmented by at least 5 years to accommodate the need to evaluate optimal timing of investment alternatives." See § 12.2, Page 75 of FAA BCA Guidance. The City's BCA failed to comply with this requirement as well.

Commenter: Karaganis-Cohn. (pp. 3-4)

FAA Response:

FAA disagrees with the commenters' interpretation.

The need to consider multiple points in time when conducting a simulation study is most applicable when capacity constraints are not binding. For Master Plan Phase 1, the BCA is based on forecast values that are identical to the 2002 TAF until 2016, the point where average annual delays reach existing capped levels, or the point where operations theoretically would be constrained consistent with the Federal Register Order Limiting Scheduled Operations. After 2016, annual operations are capped and forecasted passenger enplanements are expected to grow due to increased enplaned passengers per operation and an increase in originating passengers. Thus, the FAA has identified the three traffic levels called for by the commenter. What the commenter failed to recognize was that the

imposition of a cap on operations that occurred around the project's mid-life would continue through to the end of the projects life.

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Comment #6:

The City's BCA analysis is flawed because it used the outdated, understated 2002 Terminal Area Forecast (TAF). Relying on the out-of-date 2002 TAF completely undermines the analysis of OMP impacts, including in the current context the BCA analysis. The City had the 2003 TAF in its possession for a year, yet chose to ignore it. The 2003 TAF (or the 2004 TAF) showed much higher levels of traffic and operations than 2002 TAF and if used in the BCA analysis would have produced higher costs and fewer benefits for Phase 1 and OMP Master Plan. This is yet another illustration of the failure of the City's BCA to be in accordance with FAA's BCA Guidance which states: "Use of a forecast made in a prior year that conflicts with the recent traffic data and/or forecast will obviously ***undermine the credibility*** of a BCA based on it." FAA BCA Guidance, page 13 (emphasis added). Applying the 2003 TAF and the 15.9 delay cap produces a NEGATIVE BCA ratio of -1.87. Applying the 2004 TAF produces a NEGATIVE BCA ratio of -1.59.

Commenter: Karaganis-Cohn. (p. 4)

FAA Response:

FAA disagrees with the commenters' interpretation.

The 2002 (TAF), the most recent demand forecast available when the EIS analysis began, was used for the unconstrained scenarios in the EIS and BCA. As reported in the FEIS response to comments, since approximately 12 months were required to complete the comprehensive modeling used in the EIS, it was not possible to complete a new comprehensive modeling effort with an updated TAF. We accepted the use of the 2002 TAF in the BCA to avoid any criticism that might arise from using different forecasts in the BCA and EIS. For more discussion on the FAA's decision to use 2002 TAF, see FEIS response to comments #53 and #55 (pg. U.4-548).

FAA also notes the need for the BCA analysis to conduct a variety of sensitivity analyses. The sensitivity analyses included in the September 27, 2005, Supplemental BCA does consider higher and lower enplanement growth rates off of the 2002 TAF. Over a plausible range of price elasticities of demand (e.g., -0.8 to –2.0), the proposed project is

cost beneficial so long as the percentage reduction in passenger growth does not fall by more than approximately 5 percent from the 2002 Scenario Forecast.

While the City's initial BCA submittal used only the 2002 Terminal Area Forecast (TAF), the Supplemental BCA includes, at the FAA's request, a sensitivity analysis of the most current information in the 2004 TAF. This forecast evaluation, together with other sensitivity analyses performed in the BCA, suggests that the model results are robust with respect to changes in these parameter values.

Although not discussed in the supplemental BCA, FAA's review of the data also suggests that in the unlikely event that one of the two hub carriers serving O'Hare would exit the market, the benefits of the proposed project would continue to exceed the costs over the same range of parameter values.

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Comment #7:

Approval of the AIP funding request to support Phase 1 or full OMP will result in the destruction of two religious cemeteries in violation of the free exercise of religion guarantee of the First Amendment, the Equal Protection guarantees of the Constitution, and the federal Religious Freedom Restoration Act. Federal constitutional provisions and the federal Religious Freedom Restoration Act prohibit the FAA from taking federal action, including approval of the City's LOI request, that would result in the destruction of the religious cemeteries. Therefore, the FAA is prohibited from approving AIP funding for the full OMP or Phase I of the OMP. For the reasons set forth in our earlier correspondence to the FAA (and in the detailed uncontested affidavits accompanying those letters), the proposed destruction of these religious cemeteries would impose a "substantial burden" on the exercise of religion by the Religious Objectors. Approval by the FAA of the AIP funding would result in the destruction of the two religious cemeteries and would illegally discriminate against these religious cemeteries, by stripping them of the religious legal protections afforded all other religious institutions (including religious cemeteries) in the State of Illinois. Such destruction and discrimination would violate the substantive constitutional protections of the First Amendment Free Exercise Clause, the Equal Protection component of the Fifth Amendment and the federal Religious Freedom Restoration Act ("RFRA"). 42 U.S.C. §

2000bb *et seq.* In addition, the liberty and property interests of these Religious Objectors are protected by the procedural and substantive guarantees of the Due Process Clause.

Under the Constitution and the federal RFRA, the FAA must demonstrate:

1) a compelling governmental need to destroy the religious cemeteries, and
2) the absence of an alternative means to accomplish the governmental need

without destroying the religious cemeteries before:

As discussed in the Objectors' DEIS Comments and Objections filed on April 6, 2005, the FAA cannot make such determinations because there is no demonstrated compelling governmental need to destroy these religious cemeteries and there are alternatives (which the City and the FAA have either ignored or improperly rejected) to meet any asserted governmental need that would not destroy these religious cemeteries.

Unfortunately, FAA has refused to address this issue with the Religious Objectors and FAA has ignored its constitutional and statutory responsibility as to the religious rights of the Religious Objectors by hiding behind a stone wall of silence.

Commenter: Karaganis-Cohn. (pp. 4-5)

FAA Response:

With respect to all religious liberty concerns associated with the OMP, the FAA's analysis and findings of these matters is contained in the Record of Decision approved on September 29, 2005, pages 91-103 and represents the Agency's final conclusions on all of these issues.

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Comment #8

In addition, the City's application for LOI discretionary grant does not meet statutory requirements for AIP approval and must be denied. The FAA cannot award an LOI discretionary AIP grant for Phase I of the OMP. Section 47110(e) of Title 49 United States Code authorizes the Secretary to issue LOIs with respect to projects that meet the criteria of 49 U.S.C. § 47115(d). Section 49 U.S.C. § 47115(d) lists the criteria for granting AIP discretionary funds:

i. "the effect the project will have on the overall national air transportation system capacity";

ii. "the project benefit and cost"; and

iii. "the financial commitment from non-United States government sources to preserve or enhance airport capacity."

Commenter: Karaganis-Cohn. (p. 5)

FAA Response:

FAA disagrees with the comment.

The City's LOI application meets the requirements of the statute.

Please see "FAA's Analysis and Review of City of Chicago's Application for Letter of Intent AGL 05-01" dated Nov 17, 2005 which includes a detailed discussion of FAA's Considerations, Findings and Conclusions with Supporting Reasons or Bases, including specific consideration of:

i. the effect the project will have on the overall national air transportation system capacity, (Sec. 3.2.1)
ii. the project benefit and cost (Sec. 3.2.2), and
iii. the financial commitment from the non-United States government sources to preserve or enhance airport capacity" (Sec. 3.2.3).

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Comment #9

Chicago's March 1, 2004 LOI application for Phase I fails each and every one of these statutory requirements:

1. The Campbell-Hill Report demonstrates that neither Phase 1 nor full OMP will produce benefits that exceed costs. Indeed there will be negative benefits from the projects.

2. Phase 1 will produce delays on opening day that will exceed the high level of historic delays at O'Hare. In fact, Phase I configuration was actually rejected by the City as a viable alternative because it would result in "excessive delays and gridlocks." Thus, the City's own Master Plan states at Section 5.1.4, page V-42: "...Option 1 [which is LOI Phase 1] reaches excessive delays and gridlocks in certain configurations between PAL 1 and PAL 2 demand levels. <u>As a result, Option 1 was eliminated from further consideration</u>." (emphasis added). Clearly Phase I does not meet the statutory requirement that the proposed development "enhance system-wide airport capacity significantly."

3. It is clear from the record that the Phase I Airfield will not "enhance system-wide airport capacity significantly" as required by 49 U.S.C. §47110(e)(2)(C). The "acceptable" level of delay posited by FAA in the January 2005 DEIS — *i.e.,* 15 minutes Average Annual All Weather Delay (AAAW) is far above every formal FAA and DOT discussion of an appropriate delay standard for "acceptable" delay. Indeed, Chicago and the FAA's own modeling efforts demonstrate that at 14.2 minutes AAAW (less than the 15 minute standard suggested in the DEIS), the Phase I airfield will be plagued by average IFR delay under a primary airfield IFR configuration in excess of 95 minutes. Further, O'Hare controllers have advised our aviation experts (including the former Acting Administrator of the FAA, that Phase I would be an operational "catastrophe" and a "disaster" (the words actually used by the controllers) because of the massive delays and interference caused by the proposed use of the new northern runway during IFR conditions.

4. Phase I does not meet the requirements of the First Amendment Free Exercise Clause and federal RFRA as discussed above and in prior submissions.

Commenter: Karaganis-Cohn. . (pp. 5-6)

FAA Response:

FAA disagrees with the comments and will respond to each point separately.

1. See response to comment #1 (Karaganis).

2. OMP Phase 1 will not produce the delays ascribed to it by the commenter. Instead, forecasted operations are based upon the 2002 unconstrained TAF until 2016. At that point, the Phase 1 Only scenario projects average annual delays to reach a level where operations theoretically would be constrained again, in a manner consistent with the Federal Register Order Limiting Scheduled Operations. In 2016, O'Hare would experience an eighteen percent increase in traffic over the existing airfield without increasing average annual delays. By interpolating the demand curves developed for the preferred alternative, the City showed an increase from approximately 974,000 annual operations to 1,150,000 annual operations by 2016. This additional throughput in passengers resulting from the increased capacity of the new airfield configuration was the basis for the FAA's determination that the project will enhance system-wide airport capacity.

   It is important to note that the system benefits identified above are solely for evaluating OMP Phase 1 impacts. Assuming future phases of OMP development occur as planned and as adopted by FAA's Record of Decision, O'Hare would not face the types of limiting operational factors that exist today and are assumed to exist in an OMP Phase 1 scenario.

3. FAA discussed Average Annual Delay estaimtes and other delay metrics in the FEIS, see Response to Comment #45 on page Y.4-529.

4. See Response to Comment #7(Karaganis).

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Comment #10

> Nor can the FAA finesse approval of the flawed Phase 1 Airfield by relying on the so-called "full build" Master Plan-OMP (which includes the World Gateway Terminals). Neither Chicago, the major O'Hare airlines, nor the FAA can provide the necessary funding for the huge costs of the "full build" Master Plan-OMP — the full cost of which (to this day) Chicago and the FAA continue to refuse to disclose. It is clear that the "full build" Master Plan-OMP is nothing more than a "Chimera".[3]

Commenter: Karaganis-Cohn. (p. 6)

FAA Response:

FAA disagrees with the comment.

First, the FAA did not rely on the "full build" Master Plan OMP when evaluating the merits of the Phase-1 OMP airfield program. Second, Section 1.7 of the EIS discusses the financial feasibility of the Total Master Plan and in the September 29, 2005 ROD, the FAA adopted the conclusions therein. Third, as part of this LOI process the FAA hired John F. Brown Company to evaluate the financial feasibility of the Phase 1 OMP and the Total Master Plan. Thus, the FAA's analysis of OMP financial matters includes both careful scrutiny of Phase 1 and the reasonable foreseeable projections associated with the Total Master Plan.

Comment #11

> The FAA cannot approve AIP funds for the full OMP because the City has not demonstrated and cannot demonstrate the there is sufficient funding from non-federal sources for the project. Under the statute the FAA must make an affirmative determination that "enough money is available to pay the project costs that will not be paid by the United States Government under this subchapter." 49 U.S.C. § 47106. For the reasons discussed in the Objectors' DEIS comments the FAA cannot make that determination and its bald "assumption" that the project can be financed is not sufficient to meet the statutory requirement. Without a demonstration that there is sufficient funding from non-AIP sources to fund the full OMP, the FAA cannot approve the OMP for either AIP or PFC funds.

Commenter: Karaganis-Cohn. (p. 6)

FAA Response:

FAA disagrees with the comment, and refers the reader to the discussion of this subject in its Analysis and Review of the City of Chicago's Letter of Intent Application document.

Comment #12

Even at the misleading and unreasonably understated $14.2 billion cost of the "full build" Master Plan-OMP (cited by FAA in the DEIS) there are simply insufficient funding sources to build it. First, the airlines have refused to provide Majority In Interest (MII) approval required for the WGP terminals and are yet to provide MII approval for Terminal 7 (the western terminal) and the other runways of OMP beyond Phase 1. Moreover, the two major legacy carriers at O'Hare — United and American — clearly do not have the financial wherewithal to take on the more than $8 billion General Airport Revenue Bond (GARB) portion of the $14.2 billion cost. Second, there are insufficient PFC and AIP funds available to pay the huge PFC and AIP portions of the funding required by the understated $14.2 billion cost. Finally, there are no airlines or third parties willing (or even able) to provide the multi-billion chunk of "special facility financing" needed to pay for Terminals 6 and 7 under the Master Plan — especially in light of United's default on several hundred million dollars of special facility bonds for the existing United terminal.

Commenter: Karaganis-Cohn. (pp. 6-7)

FAA Response:

FAA disagrees with the comment, and refers the reader to the discussion of this subject in its Analysis and Review of the City of Chicago's Letter of Intent Application document.

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Comment #13

FAA and Chicago are putting forth this "Chimera" called the "full build" Master Plan-OMP — knowing full well that it cannot be funded and built — to hide the fact that (by FAA and Chicago's own admission) all of the lesser "Build" options will require use "demand management", *i.e.*, a use of "blended" alternatives. Once FAA admits to the fact that "blended" alternatives — using various airfield configurations in combination with demand management — are necessary, feasible and inevitable to address the region's aviation needs, a wide variety of blended alternatives become available for consideration, including those that use congestion management and other airports in combination with the use of the existing airfield or less expansive runway alternatives at O'Hare.

Commenter: Karaganis-Cohn. (pp. 7)

FAA Response:

FAA disagrees with the comment.

In Chapter 3 and Appendix E of the FEIS, the FAA carefully evaluated a Blended Alternative which included the use of other airports, congestion management, and limited airfield development. The Blended Alternative did not, however, pass the secondary screening criteria. The rationale for elimination is contained in Chapter 3, Section 3.3.2.6. This alternative was eliminated in the secondary screening of alternatives. The FAA notes that, even if the blended alternative were implemented, it would yield the least delay reduction, of those alternatives considered in secondary screening, while not serving the forecast demand.

In any event, the FAA has determined that OMP Phase 1 meets all statutory criteria for LOI approval on a stand-alone basis. Moreover, the OMP Phase 1 was the same for each of the three alternatives the FAA determined to meet the FEIS purpose and need in the EIS process. In these circumstances there was no requirement for the FAA to consider other blended alternatives as part of its decision to issue a LOI for OMP Phase 1.

In response to this comment and others like it, the FAA has evaluated other commenter's proposals, including various "blended alternatives", in a Section 3.6 in Chapter 3. [See pg. U.4-597 of response to comments #139 (EIS)]

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Please be advised that there is no statutory right to comment to a Letter of Intent (LOI) application, nor a statutory obligation that the agency respond to comments received concerning a LOI application. However, due to the interest shown by various commenters in the LOI decision, FAA has compiled the following responses.

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June 6, 2005 (errata) CAMPBELL HILL BCA Review
FAA Response to Comments

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Comment #1

The City's BCA benefit-cost ratios, based improperly on the 2002 TAF, are overstated by wide margins.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 3)

FAA Response:

The FAA disagrees with the comment. See Response to Comment # 6 of June 3, 2005, Karaganis letter (Karaganis)

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Comment #2

The City's BCA is not in accordance and fails to comply with every significant requirement established by the FAA Guidance as well as the requirements of Executive Order 12866 and related OMB directives and must be rejected. The City's BCA used a faulty model design which caps the operations for OMP-Phase 1 Airfield and Total Master Plan at 974,000 operations, computes the delay savings with the new capacity at that capped level of operations and then applies that delay savings throughout the entire 20 to 26 year BCA period. This creates unrealistic and fictional delay savings, falsely and dramatically overstating alleged savings — i.e. benefits, which Chicago and the FAA have said elsewhere will never occur. Based on extrapolation from the DEIS and TAAM modeling Chicago and the FAA have said that, after OMP-Phase 1 Airfield opens, projected traffic growth will rise so that OMP-Phase 1 Airfield will reach a delay level of 15.9 minutes in 2015 at a traffic level of 1.15 million operations (Exhibit 301, Forecast A-2). This means that by 2011 any delay savings attributable to OMP-Phase 1 Airfield will be completely exhausted due to its 4 minute taxi time penalty, and from that point forward, the OMP-Phase 1 Airfield at 15.9 minutes of delay will experience a greater level of total travel time (and a correspondingly greater level of dis-benefits) than the existing airfield at 15.9 minutes of delay. Chicago's BCA Study ignored this reality and assumed that with the OMP-Phase 1 Airfield, operations at the airport would stop for the entire evaluation period at 974,000 operations and as a result, delays

would stop rising when the OMP-Phase 1 Airfield experienced 974,000 operations — a delay level of approximately 7 to 8 minutes. This assumption is directly contrary to the computer modeling and delay claims put forward by Chicago and FAA in the modeling for the DEIS8. Chart 1-1 shows graphically what the total travel times would be each year under the no action case, compared to the OMP-Phase 1 Airfield build scenario. Campbell-Hill's model results demonstrate the complete failure of the OMP-Phase 1 Airfield proposal to deliver real delay benefits. In fact, it will be in a dis-benefit condition for almost all of its 20-year evaluation life. The City's Total Master Plan proposal would yield relatively minor time savings benefits that are swamped by the extraordinarily high costs to build the full plan.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 3-4)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA. See Response to Comment # 2 (Karaganis)

The FAA disagrees with the commenter's assertion that delays will increase as a result of OMP Phase 1. Please see discussion concerning delay and travel times as part of FAA's responses to the October 28, 2005 Karaganis/Cohn letter.

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Comment #3

The stark reality is that any and all portions of the OMP would increase the complexities of aircraft maneuvering, parallel runway crossing, and taxiway queuing so that average taxing times must increase. The City reflects this phenomenon in its BCA report. Then, as demand increases over time, average delay returns to its original maximum level of acceptability. At that point in time, and forever thereafter, airport passengers and airlines would have no delay benefits from the OMP, but they would have large taxi time dis-benefits. Campbell-Hill's study models precisely this problem – O'Hare users would be worse off as soon as, or soon after, OMP-Phase 1 Airfield and the Total Master Plan would be completed.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 4-5)

FAA Response:

Please see discussion concerning delay and travel times as part of FAA's responses to the October 28, 2005 Karaganis/Cohn letter.

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Comment #4

Chicago's action in its BCA Study not only ignores the delays Chicago's own modeling says will be experienced by the OMP-Phase 1 Airfield, it is also inconsistent with FAA's BCA guidance. Although FAA Guidance recommends the use of a cap (See BCA guidance page 39), the FAA BCA guidance refers to capping the level of minutes of delay, not the level of operations. To the extent a cap is appropriate, the cap should not be 974,000 operations, but the operations level experienced at the 15.9 minutes of delay for any option being compared — be it the existing airport, the OMP-Phase 1 Airfield or the full Total Master Plan. For each year under any scenario the BCA should determine the maximum level of operations that can be operated at 15.9 minutes delay. That level will be higher than 974,000 resulting in greater delay costs and less delay benefits than the City claims. Applying a delay-based cap, rather than an operations cap, will produce higher costs and fewer benefits. This adjustment alone will change the BCA from the City's claimed ratio of positive 2.13 to a NEGATIVE -1.06 for OMP-Phase 1 Airfield, and from a positive 1.04 ratio to only 0.27 for Total Master Plan (Table 1-1).[1]

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 5-6)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA. See Response to Comment #2 (Karaganis).

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Comment #5

Chicago's BCA Analysis failed to analyze all of the evaluation periods required by the FAA's BCA Guidance. According to the FAA's BCA Guidance, traffic levels and the associated impact of those levels on delay for the proposed project and for alternatives should be analyzed for ***at least three time periods***. The FAA's BCA Guidance says that at least three traffic levels should be simulated: at the beginning of the project's life, at the middle point of the project's life, and at the end or near

the end of the project's life. See, FAA BCA Guidance at Page 37. The BCA Guidance provides that for major airport infrastructure projects BAC analysis should use "an economic life span of 20 years beyond the completion of construction." Id., § 8.1.4 , Page 21. Thus, under the FAA's BCA Guidance the project life for analysis of OMP-Phase 1 Airfield should be 20 years from the beginning of operation, or 2028. For the Total Master Plan, the project life for BCA analysis should be 2032. Chicago failed to disclose and analyze the demand, capacity and delay characteristics of either OMP-Phase 1 Airfield or for the Total Master Plan at each of the three key points in the operational life of these projects. Such disclosure would have revealed that each of the projects (both the OMP-Phase 1 Airfield and the full Total Master Plan) would result in massive delays. Furthermore, FAA recommends that the 20 year evaluation period "be augmented by at least 5 years to accommodate the need to evaluate optimal timing of investment alternatives." See also § 12.2, Page 75 of FAA BCA Guidance. The City's BCA failed to comply with this requirement as well.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 6-7)

FAA Response:

The FAA disagrees with these comments.

See Response to Comment # 5 (Karaganis) for FAA's discussion on the proper evaluation of time periods in the BCA.

The FAA disagrees with the commenter's assertion that there is a need to conduct an evaluation in which the evaluation period "be augmented by at least 5 years." As noted in the BCA guidance, the need to undertake project timing evaluation is particularly important when the major benefits develop late in the project's life. In this case, since the benefit stream is at least $400 million upon completion of Phase 1 and it is spread out evenly throughout the projects life, the FAA determined that this additional evaluation was not required.

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Comment #6

Chicago's BCA did not perform any alternatives analysis for the BCA, violating a central requirement of FAA's BCA Guidance and making the City's BCA analysis invalid. The FAA's Guidance states "a valid BCA must have at least one alternative identified for each possible course of action." FAA Guidance further states that "at a minimum , the following alternatives should be identified and discussed for any airport infrastructure project: . . . demand management strategies . . ." FAA BCA Guidance § 7.3, Page 18. Other alternatives that should be assessed in the context of a valid BCA would include a range of non-development and development

alternatives including use of the existing airport coupled with congestion management mechanisms at varying levels of "acceptable delay", incremental on airport runway configurations shifting of some demand to other regional and hub airports, and any combination of the foregoing. These very types of alternatives were recently adopted by the FAA in its ROD on the LAX Master Plan and were adopted by the City and the FAA with respect to O'Hare in the City's 1980s Master Plan and the FAA's 1984 ROD dealing with O'Hare expansion. Further, demand management is clearly an action that is currently in place at O'Hare and currently being proposed by FAA for O'Hare under its March 25, 2005 NPRM. Contrary to this central requirement the City's BCA states "the City believes that the OMP is the best development option and, therefore, ***alternatives are not analyzed as part of this BCA.***" Chicago's BCA at IV-2 (emphasis added). The City's arrogant rejection of alternatives to its preferred course of action makes its BCA analysis invalid.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 7-8)

FAA Response:

The FAA disagrees with the comment.

For the consideration of alternatives for use in the BCA, see Response to Comment # 3 (Karaganis).

For additional discussion of FAA's alternative analysis in the EIS, see Response to Comment #13 (Karaganis).

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Comment #7

The City's BCA used as the "base case" a "do-nothing", no-action course of action, which is patently inconsistent with FAA's BCA Guidance. FAA BCA Guidance instructs that "the base case represents the best course of action that would be pursued in the absence of a major initiative to obtain the specified objectives" and FAA further directs that "the base case not be defined as a 'do-nothing' course of action where the current airport configuration and management are held static." There is good reason for this requirement because as FAA observed a do-nothing course of action: "will typically overstate the deterioration and delay, efficiency, safety, and other benefit measures as traffic grows. In reality, airport managers, airport users, and air traffic managers may make a variety of operational and procedural changes to mitigate delay and related problems as congestion builds beyond certain thresholds." The various "corrective actions by airport managers, users and air traffic managers in response to build ups in delay" cited by FAA in the BCA Guidance include the following: "voluntary arrangements with users to spread demand outside of peak periods" *(i.e.,* congestion management mechanisms that are currently being used at O'Hare and LaGuardia); Airlines "mak[ing] use of larger aircraft, modify[ing] schedules to take advantage of less congested periods, cancel[ing] marginal flights,"

FAA BCA Guidance § 6.2 at Page17.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 8)

FAA Response:

The FAA disagrees with the comment.

For the consideration of the base case in the BCA, see Response to Comment # 4 (Karaganis).

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Comment #8

The City's BCA analysis is flawed because it used the seriously outdated, low-growth 2002 Terminal Area Forecast (TAF). For the reasons stated in Campbell-Hill's DEIS comments filed April 6, 2005, relying on the out of date 2002 TAF completely undermines the analysis of OMP impacts, including in the current context the BCA analysis. The City had the 2003 TAF in its possession for a year, yet chose to ignore it. The 2003 TAF (or the 2004 TAF) showed much higher levels of traffic and operations than the 2002 TAF and if used in the BCA analysis would have produced higher costs and fewer benefits[15] for OMP-Phase 1 Airfield and Total Master Plan. This is yet another illustration of the failure of the City's BCA to be in accordance with FAA's BCA Guidance which states: "Use of a forecast made in a prior year that conflicts with the recent traffic data and/or forecast will obviously ***undermine the credibility*** of a BCA based on it." FAA BCA Guidance, page 13 (emphasis added).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 8-9)

FAA Response:

The FAA disagrees with the response. See Response to Comment # 6 (Karaganis).

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Comment #9

Contrary to FAA BCA Guidance Chicago's BCA failed to use proper sensitivity analysis by failing to include the possible failure of one of the O'Hare hub airlines. FAA BCA Guidance states that: "Clearly, if there is a reasonable possibility that the hub operation will be discontinued . . . the impact of this event on the forecast should be quantified. Contingencies such as this must be specifically addressed in BCA sensitivity analysis." FAA BCA Guidance at 13. Therefore, inclusion of the potential failure of United, required under FAA's BCA Guidance, would have an

effect on the BCA ratios of both OMP-Phase 1 Airfield and Total Master Plan. Most significantly, it would demonstrate, as Campbell-Hill has done, that O'Hare's current capacity is more than sufficient for the next 20 years or more. 16

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 8-9)

FAA Response:

The FAA disagrees with the comment.

See Response to Comment #6 (Karaganis).

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Comment #10: In all of its BCA analysis the City understated the costs, overstated the benefits and ignored the cost impacts (price elasticity effect) on the passenger forecasts. Campbell-Hill made these corrections and adjustments.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 9)

FAA Response:

The FAA disagrees with the comment.

The FAA is satisfied that the BCA includes all relevant capital and operational and maintenance cost elements associated with the benefits derived under Master Plan Phase 1. This included all projects covered under Phase 1 as defined in the Master Plan Study and EIS, including but not limited to the costs of the Western Concourse, Concourse K extension, and Taxiway LL. All relevant costs were included in the BCA regardless of whether the projects were eligible for AIP funding. The FAA reviewed the OMP costs that were provided by the City of Chicago's construction management team.

For the BCA, the City denominates costs (and benefits) in terms of a "constant dollar" (2001 in this case) in accordance with generally accepted governmental benefit/cost analysis (BCA) principles. The BCA includes cost estimates for Master Plan Phase 1 (approximately $4.0 billion) and OMP Phase 1 (approximately $2.8 billion), and these cost estimates are attached as Appendix B, Phase 1 Project Costs, in the Supplemental BCA dated, September 27, 2005. The Master Plan included a contingency factor of 13% for OMP listed projects. In addition, the Concourse K extension was included in the World Gateway Program (WGP) project list and World Gateway Program contingency factor was 14%. The FAA determined that the cost contingency established for the OMP, WGP and Capital Improvement Program (CIP) identified in the Master Plan were reasonable, and consistent with FAA's guidance. Please see Section 1.7 of the Final Environmental Impact Statement. Therefore, the FAA does not agree that the project costs were understated.

To assist FAA in determining costs reasonableness, FAA hired Crawford, Murphy & Tilly, Inc. (CMT), a nationally recognized airport engineering and planning firm that devotes key resources to detailed cost estimating. CMT was asked to analyze the completeness and comprehensiveness of the OMP and Master Plan work components and then validate the estimated cost data. CMT provided the FAA with the results of their analysis in a report titled, "Analysis of the 2004 O'Hare Master Plan Cost Estimates for the O'Hare Modernization Environmental Impact Statement". This is included in the Supplemental BCA in Appendix B as well.

CMT's analysis reviewed the cost components of the OMP, Master Plan and World Gateway Program. CMT conducted side-by-side comparisons of key construction cost components and comparisons of estimated costs for similar runway and terminal projects at other large airports. Overall, CMT indicated that the City's estimated costs appear to be reasonable and representative. Since all the Master Plan Phase 1 components are included in the analysis, FAA is satisfied that the costs used in the BCA are reasonable and appropriate.

As for the benefits, the Supplemental BCA methodology and results were reviewed by both FAA's Office of Policy and Programs (APO) and FAA's contractor, GRA, Inc., an aviation firm specializing in strategic advice and financial analysis relating to air transportation. Both determined that the benefits sufficiently exceeded the project costs over a range of parameters, confirming that the project was cost beneficial. The analysis conducted in the Supplemental BCA uses the price elasticity of demand as a fundamental parameter for quantifying the benefits of Master Plan Phase 1 and OMP Phase 1. This analysis is consistent with basic principals of economics and is specifically discussed in Appendix C to the FAA's BCA guidance.

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Comment #11: The City's BCA methodology ignores every sensible real-world strategy for satisfying future demand in the Chicago region by utilizing congestion management, differential pricing (by ORD and the airlines), and market-based principles for accommodating demand contrary to FAA's recent decision with respect to the LAX Master Plan which incorporated those approaches.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 9)

FAA Response:

The FAA disagrees with the comment.

For the consideration of alternatives for use in the BCA, see Response to Comment # 3 (Karaganis).

For additional discussion of FAA's alternative analysis in the EIS, see Response to

Comment #13 (Karaganis).

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Comment #12: The City's BCA inappropriately used "Constrained" passenger and operations forecasts (a cap of 974,000 total operations for both the no action and the build cases) rather than being based on the FAA's TAF forecasts for OMP-Phase 1 Airfield, Master Plan Phase 1, and OMP Total Airfield. However, when the City came to justify the Total Master Plan, it discovered that its benefit and cost numbers produced only a 0.93 ratio. To rectify the problem it simply adopted the "unconstrained" passenger forecasts while at the same time freezing total operations to the same 974,000 annual number. With this unjustified and internally inconsistent "fix" the City was able to manipulate its ratio just over the requirement threshold to 1.04

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 10)

FAA Response :

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

For further clarification, see Response to Comment # 2(Karaganis).

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Comment #13: OMP-Phase 1 Airfield, for which City funding from the FAA is currently sought, cannot be justified even under assumptions that are highly advantageous to the City. The BCA ratios for OMP-Phase 1 Airfield are **all negative** and fail to meet by wide margins the FAA 1.0 threshold (Table 1-2). Even if the FAA decides to accept the City's inappropriate operations based limit, Campbell-Hill's evaluation of a scenario that uses this constraint, along with Campbell-Hill's benefit and cost adjustments, fails the BCA tests and produces a ratio below 1.0 and costs which exceed benefits. This is shown as the last line on Table 1-2 entitled "Benefit & Cost Adjustments Only."

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 14)

FAA Response :

The FAA disagrees with the comment.
See Response to Comment #1 & #2 (Karaganis).

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Comment #14: The Total Master Plan is the build scenario of greatest relevance to the FAA since it represents the complete project, except for some vital elements that are left unaddressed in all of the City's reports. The City's report includes data for the Total Master Plan only in Appendix E (Table E-13). Campbell-Hill's evaluation shows that

under both of its models using the 2002 TAF, the 2003 TAF and the 2004 TAF, funding for the Total Master Plan cannot be justified on the basis of benefit-cost analysis. And the results are not even close to a ratio of 1.0 as shown in Table 1-3 below. Once again, if the FAA should accept the improper use of 974,000 operations as the limiting constraint, Campbell-Hill's BCA evaluation shows the Total Master Plan would fail with a benefit-cost ratio of 0.38 and costs that exceed benefits by $5.5 billion in NPV terms.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 16)

FAA Response :

The FAA has addressed issues related to the Total Master Plan costs in the "FAA response to DOT Office of the Inspector General July 21, 2005 Report" (also included in Attachment F).

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Comment #15: **The BCA Does Not Define Project Objectives** - The OMP's stated objective (in the DEIS) is to provide adequate infrastructure to handle projected levels of regional demand at acceptable levels of delay. The City's BCA analysis ignores the projected levels of demand and delay by using an artificial "constrained" operations cap, thereby avoiding the issue of future demand, future delay levels and capacity.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 19)

FAA Response :

The FAA disagrees with the comment. First, the OMP EIS purpose and need is defined in Chapter 2. The purpose and need of the EIS is to:

- 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.

The FAA determined that, amongst other things, the City's original BCA submission did not use an appropriate operations cap for the With Project scenario. The FAA suggested alternative methodologies for the City to consider for revising its BCA. The FAA provided guidance to ensure correct application of the alternative methodologies. The supplemental BCA measures the benefit to the consumer resulting from a capacity expansion project, despite the fact that delays at the airport return to current conditions during the period of the proposed project. Further it permits operations to grow until the level of delay equals that experienced under the base case. This methodology produces reliable results.

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Comment #16: **The BCA Does Not Specify Assumptions** - The BCA report fails to fulfill its obligation to state explicitly all of the key assumptions affecting the analysis.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 19)

FAA Response :

The FAA disagrees with the comment.

Throughout the BCA review process, the City provided supporting information for all of its key assumptions and data sources. These data exchanges were necessary and allowed FAA to render a final BCA determination. This process is entirely consistent with the BCA guidance which clearly indicates that the FAA retains the option to review BCAs, request further documentation or analysis by the Sponsor and/or conduct an independent BCA. Key assumptions are included in Table V-1, Summary of BCA Data Sources and Assumptions, in the Supplemental BCA, dated September 27, 2005. Other assumptions and data sources are referenced throughout the report.

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Comment #17: **The City's "Do Nothing" Base Case Fails to Comply with FAA's BCA Requirements** – Despite clear direction in the FAA BCA Guidance not to apply a "do nothing" approach for the Base Case, the City's "Base Case" represents a static "No Action" scenario, rather than "the best course of action that would be pursued in the absence of a major initiative." The FAA's BCA Guidance directs that the "Base Case" must "not be defined as a 'do nothing' course of action," but rather it must assume "optimal use of existing and planned airport infrastructure." The City's BCA fails to comply with this directive.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 19)

FAA Response :

The FAA disagrees with the comment.

See Response to Comment # 4 (Karaganis)

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Comment #18: **The BCA Fails to Identify and Screen Reasonable Alternatives** - The City has only one pre-ordained "recommendation" in mind, so it did not evaluate any other reasonable alternatives, including airline strategies, congestion management and

market-based solutions. The FAA Guidance demands that a BCA first decide whether an investment is necessary and then select the best alternative. The City short-cut this process by first deciding on its preferred alterative, assumed it was necessary, and then established the framework to portray benefit-cost ratios that support their foregone conclusions. This is completely inconsistent with the FAA's BCA Guidance which requires that "a valid BCA must have at least one alternative identified for each possible course of action" and "at a minimum, the following alternatives should be identified and discussed for any airport infrastructure project:...demand management strategies." FAA Guidance Section 7.3. As noted above, the various alternatives include "corrective actions by airport managers, users and air traffic managers in response to build ups in delay" cited by FAA in the BCA Guidance include the following: "voluntary arrangements with users to spread demand outside of peak periods" (i.e. congestion management mechanisms that are currently being used at O'Hare and LaGuardia); airlines "mak[ing] use of larger aircraft, modify[ing] schedules to take advantage of less congested periods, cancel[ing] marginal flights," FAA BCA Guidance § 6.2 at Page17.
Indeed the FAA Guidance makes it clear that identification and analysis of alternatives "is critical because only those alternatives that are identified will be evaluated in the BCA. FAA BCA Guidance Section 3.4. The City's BCA is limited to the largest, most expensive, most damaging, and most disruptive alternative. It ignores other sensible realistic and achievable solutions, including congestion management—solutions which have been accepted by FAA in the LAX ROD and with respect to O'Hare in the 1980s Master Plan and the FAA's 1983 ROD on O'Hare expansion.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 19-20)

FAA Response :

The FAA disagrees with the comment.

For the consideration of alternatives for use in the BCA, see Response to Comment # 3 (Karaganis).

For additional discussion of FAA's alternative analysis in the EIS, see Response to Comment #13 (Karaganis).

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Comment #19: **The BCA Does Not Determine an Appropriate Evaluation Period** – The BCA contains no evaluation of the useful or economic life for the OMP projects. The FAA's BCA Guidance requires at least three evaluation periods: the beginning, the midpoint and the end of the useful life (20 years); plus the Guidance recommends that the 20 year evaluation period "be augmented by at least 5 years." Section 12.2 of the FAA's BCA Guidance.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 20)

FAA Response :

The FAA disagrees with the comment.

See Response to Comment # 5 (Karaganis) and previous Response to Comment # 5 (Campbell).

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Comment #20: **Contrary to the BCA Guidance, The BCA is Not Conducted with a Reasonable Level of Effort** – The City of Chicago has produced a simplistic analysis that fails to "test" the OMP options while ignoring many suitable options that have lower costs and less community impact. Section 9.0 of the FAA's BCA Guidance.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 20)

FAA Response :

FAA disagrees with this comment. As noted in response to other comments, the City's initial BCA submittal was not appropriate. The FAA provided guidance to the City to ensure the correct application of the alternative methodologies in a series of exchanges with the City. This process is entirely consistent with the BCA guidance which clearly indicates that the FAA retains the option to review BCAs, request further documentation or analysis by the Sponsor and/or conduct an independent BCA. The level of effort provided by the City was commensurate to the level needed to satisfy the BCA requirement.

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Comment #21: **The BCA Does Not Identify, Quantify, and Evaluate Benefits and Costs** - Campbell-Hill's DEIS comments document the lack of full and detailed cost estimates for the OMP/Master Plan. In the benefit analysis the City fails to incorporate the impacts of high Master Plan costs on the forecast traffic; it overstates the travel time benefits to aircraft operators and passengers; and it assumes excessive downstream benefits that are neither supported nor documented. Sections 10 and 11 of the FAA's BCA Guidance.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 20-21)

FAA Response :

The FAA disagrees with the comment. All of Campbell-Hills comments on the Draft and Final EIS, including those relating to costs, have been considered and responded to in the Final EIS and/or Record of Decision. For more discussion on FAA's consideration of costs, see Response to Comment # 10 (Campbell).

The Supplemental BCA document properly measures the benefits to the consumer resulting from the OMP Phase 1 capacity expansion project. This approach relies on a standard economic model that examines the "full price" of travel before and after the proposed project and then calculates changes in consumer surplus. The application of this model is entirely appropriate for the proposed project and provides a conservative measure of the economic value generated by OMP Phase 1. As noted above in response to Comment #14 and the FAA's Response to the Office of Inspector General (also included in this document), the FAA is not required to consider the costs or benefits of the full Master Plan to approve the City's current LOI request, which covers only OMP Phase 1. We have concluded that OMP Phase 1 is cost beneficial on a stand-alone basis, i.e. it will be cost beneficial even if the full Master Plan is never constructed. This determination is sufficient to support approval of the LOI request before us, which covers only OMP Phase 1.

Downstream Benefits

The 1997 Lincoln Laboratory paper provided a very generalized methodology developed for a single month (December 1993) and all airports. The paper noted that the results were preliminary and anticipated future enhancements that would be necessary for airport-specific evaluations. Also, the Lincoln Lab paper only applied to multi-stop flights where the delay occurs at an intermediate airport, whereas the original BCA applies the multiplier to all delays projected for O'Hare including non-stop flights and flights terminating their daily operations at O'Hare. The original BCA also mistakenly applied the multiplier to arrival delay at O'Hare.

The FAA BCA Guidance permits a claim for downstream savings, but any applicant who elects to take credit for such benefits is expected to support it with analysis and justification. In the past, FAA has not accepted downstream benefits as "hard" benefits. Rather, they have been used to suggest greater utility for the project (e.g., as in a sensitivity analysis), but should not be the basis of a B/C ratio. Modeling of these benefits is, as yet, speculative. The FAA BCA Guidance for section 10.6 supports this interpretation. The FAA Guidance suggests deriving estimates using the paper's probability factors and project-specific simulation results, not the blanket application of a theoretical multiplier that was not calibrated to O'Hare.

The City did not attempt to quantify either the downstream or system-wide ripple effect benefits associated with the proposed project in its Supplemental Analysis. Therefore, the FAA believes the quantified BCA results are understated.

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Comment #22: The BCA Fails to Measure the Impact of Alternatives on Airport Usage – By using the hypothetical and irrelevant "constrained" forecasts, the BCA does not measure the actual impact of the OMP/Master Plan projects on ORD usage, and it ignores the high probability that airlines could efficiently adjust to operating constraints at ORD and the availability of alternative airports. The City also ignores completely the impact of increased traffic levels on all other elements of the airport's infrastructure including airspace, terminals and ground access systems. Section 3.8 of

the FAA's BCA Guidance.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 21)

FAA Response :

The FAA disagrees with the comment on the BCA consideration of alternate airports as noted in Response to Comment # 3 (Karaganis) and #13 (Karaganis).

Impact of Increased Traffic Levels on Airspace

Each of the Build Alternatives, including the preferred alternative, includes identification and assessment of the requisite airspace improvements along with proposed airfield improvements. These proposed airspace changes are documented in **Appendix E, Section E.5** of the Final Environmental Impact Statement (FEIS).

Throughout the development of the Build Alternatives, the FAA Air Traffic workgroup coordinated closely with airport planners and have proposed terminal airspace expansions and procedures specifically designed to serve the proposed airfield. Several potential airspace bottlenecks have been identified and advance planning has occurred to correct them. For example, real-time simulation have been conducted to test the feasibility of adding two new departure routes to the east through Chicago Center airspace, which would address one of the most significant bottlenecks. Specific plans have been developed for expanding the terminal airspace and adding new arrival and departure routes into and out of the Chicago TRACON airspace and the adjacent ARTCC airspace. All airspace modifications discussed above were included in the detailed simulation modeling conducted to support the FEIS.

Impact of Increased Traffic Levels on Terminals and Ground Access Systems

It is FAA's position that the BCA has adequately weighed the quantifiable benefits and costs of the Master Plan Phase 1 program as detailed in FAA's BCA review memo dated October 5, 2005.

Furthermore, the need to conduct a "detailed" terminal and ground access evaluation is not applicable for Master Plan Phase 1 development. First, the requirement for conducting detailed landside/terminal side evaluations would be more applicable where you do not have the type of phased development program that exists at O'Hare. For Master Plan Phase 1 development, the most pressing demand is runway capacity and the heavy emphasis is on runway construction and airside development while the majority of the landside terminal side developments come on line during Phase 2.

Second, the cost estimate for Master Plan Phase 1 includes all relevant capital and operational and maintenance cost elements associated with the benefits derived under Master Plan Phase 1. This included all project costs covered under Phase 1 including some costs for the Western Concourse and Concourse K extension. All relevant costs

were included in the BCA regardless of whether the projects were eligible for AIP funding.

Third, the City included modest terminal infrastructure in Master Plan Phase 1 that allow it to meet future passenger demands expected under Master Plan Phase 1. FAA performed an evaluation of the impacts of future passengers in the terminal system. Under the base case scenario, O'Hare currently processes passengers through approximately 4.8 million sq. ft. of terminal space. Under the Master Plan Phase 1 scenario, passengers are projected to pass through 5.3 million sq. ft. of space. The Phase 1 scenario includes a slight reduction in Terminal 3 (K extension) but includes the addition of the western satellite concourse for a total increase of 0.6 million sq. ft. If one simply compares the current and forecasted enplanements in the base and scenario cases in relation to the available sq. footage, there are projected decreases in the enplanements per square foot ratio for the Phase 1 scenario case in each forecasted year (see Table 1). The results indicate projected level of service improvements based strictly on passenger and size relationship. This minimal impact did not require further quantitative analysis given the robust BCA results.

Table 1

	Year	Base Case	Phase 1 Master Plan
Terminal Sq Footage*		4,757,000	5,338,000
Enplanements**	2005	34,696,477	N/A
	2016	43,284,845	47,181,000
	2028	51,937,000	57,842,000
Enplanements/sq. ft	2005	7.29	N/A
	2016	9.10	8.84
	2028	10.92	10.84

Source:
* O'Hare Master Plan (Page VI-14 of Volume 2)
** Ref: O'Hare BCA

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Comment #23: **The BCA Fails to Compare Benefits and Costs of Alternatives** - The City's BCA, based on a flawed design, compares understated costs with significantly overstated benefits derived using an artificial forecast. By calculating benefits under a forecast that ignores the whole purpose and need of the project, the City's net present value calculations of benefit overstate significantly all measures of OMP/Master Plan merit. Campbell-Hill's analysis shows that none of the City's build scenarios comes close to producing a supportable benefit-cost ratio under a wide range of forecasts and estimation assumptions. Sections 3.9 and 12 of the BCA Guidance.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 21)

FAA Response :

The FAA disagrees with the comment.

See Response to Comment # 1 and #6 (Karaganis).

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Comment #24: **The City's BCA Ignores Relevant Uncertainty Analysis** – The City's BCA is fundamentally flawed because it fails to include the possibility of the failure of one of the hub airlines. FAA BCA Guidance states that "Clearly, if there is a reasonable possibility that the hub operation will be discontinued . . . the impact of this event on the forecast should be quantified. **Contingencies such as this must be specifically addressed in BCA sensitivity analysis**." FAA BCA Guidance at 13 (emphasis added). The City's BCA report presents very little risk assessment for OMP- Phase I Airfield, and none for OMP-Total Airfield, or either of the two Master Plan scenarios. The City restricts its consideration of "uncertainty" to generalized variances to its own assumptions, rather than the FAA-mandated evaluation of distinctly plausible outcomes such as the loss of a hub carrier (e.g., United Airlines) or changes to airlines' use of ORD. This significant flaw reflects a general lack of realism and accuracy in the City's analysis.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 21-22)

FAA Response :

The FAA disagrees with the comment.
See Response to Comment # 6 (Karaganis).

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Comment #25: **The BCA Cannot Make Recommendations from Considered Alternatives** – The City has only one pre-ordained "recommendation" in mind, so it did not evaluate any other reasonable alternatives, including airline strategies, congestion management and market-based solutions. The FAA Guidance demands that a BCA first decide whether an investment is necessary and then select the best alternative. The City short-cut this process by first deciding on its preferred alterative, assumed it was necessary, and then established the framework to portray benefit-cost ratios that support its foregone conclusions.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 22)

FAA Response :

The FAA disagrees with the comment.

For the consideration of alternatives for use in the BCA, see Response to Comment # 3 (Karaganis).

For additional discussion of FAA's alternative analysis in the EIS, see Response to Comment #13 (Karaganis).

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Comment #26: It ignores airline strategies to improve operating efficiency (i.e., larger aircraft and higher load factors) by carriers at ORD under a constrained environment, which if considered, would show limited diversion of passengers from ORD during the forecast period, and the ability of ORD to handle all local passengers projected in the 2002 TAF forecasts.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 23)

FAA Response :

FAA disagrees with the comment. Both the unconstrained and constrained-no project forecasts assumed airlines would use larger aircraft and higher load factors. In the unconstrained forecast, average seat size increased from 107.7 in 2007 to 131.2 in 2028 while at the same time increasing average load factor from 70.8 percent to 76.5 percent. In the constrained-no project forecast, average seat size increased from 109.5 in 2007 to 140.7 in 2028 while at the same time increasing average load factor from 72.0 percent to 79.9.

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Comment #27: It ignores the "No Action" airport system's ability to handle operations at alternative regional or mid-continent hub airports.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 23)

FAA Response :

FAA disagrees with this comment.

In **Chapter 3** of the EIS, the FAA did evaluate the use of other airports in the EIS and acknowledged that other mid-continent hub airports could potentially be used to accommodate connecting passengers forecast for O'Hare. However, the use of other airports was eliminated in the initial screening of alternatives since they it did not meet the purpose and need. The FAA justification is presented within the EIS and the Agency has not been presented with a persuasive reason to alter that rationale.

For additional discussion on FAA's consideration of alternatives for use in the BCA, see Response to Comment # 3 (Karaganis).

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Comment #28: It constrains operations based on a hypothetical demand limit (974,000 annual operations) and then it imputes varying delay values. Instead, it should use the supply constraint (15.9 minutes of maximum delay) and deduce the traffic throughput.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 23)

FAA Response :

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See Response to Comment # 2 (Karaganis).

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Comment #29: It lacks consideration of the high probability that one of the existing hub carrier will fail, eliminating the need to expand the existing airfield for the next 20 years, or more.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 23)

FAA Response :

FAA disagrees with the comment. See Response to Comment # 6 (Karaganis).

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Comment #30: The use of the DEIS constrained forecast only "tests" the OMP/Master Plan at the artificially fixed operating levels for which the "No Action" alternative is at its maximum level of delay, while at the same time it ignores the requirement to accommodate the 2003 or 2004 TAF traffic level.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 23)

FAA Response :

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See Response to Comment # 2 and #6 (Karaganis)

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Comment #31: The use of unconstrained passenger levels to derive benefits for the Total Master Plan is unexplained, totally inconsistent with the entire BCA constrained methodology, and it should be rejected.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 23)

FAA Response :

The FAA disagrees with the comment.

As discussed in response to Comment #1 (Karaganis), the supplemental BCA analysis submitted by the City establishes that OMP Phase 1 is cost beneficial, and the City is requesting an LOI only for OMP Phase 1 at this time. As noted above in response to Comment #14 (Campbell), the FAA is not required to consider the costs or benefits of the Total Master Plan to approve the City's current LOI request, which covers only OMP Phase 1. We have concluded that OMP Phase 1 is cost beneficial on a stand-alone basis, i.e. it will be cost beneficial even if the Total Master Plan is never constructed. This determination is sufficient to support approval of the LOI request before us, which covers only OMP Phase 1.

The City's supplemental analysis includes some data on the benefits and costs of the Total Master Plan. That data shows that the Total Master Plan is also cost beneficial, however, this information was not sufficient for the FAA to make a final decision on whether the Total Master Plan is cost beneficial.

A full BCA review will be conducted before FAA commits AIP funding to Phase 2.

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Comment #32: Delay estimates for the OMP Total Airfield and Total Master Plan options were based on unreasonably flat delay curves. Instead they must be based on reasonable delay curves as specified in the DEIS comments of Campbell-Hill.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 24)

FAA Response :

FAA disagrees with the comment.

See Response to Comment # 31 (Campbell).

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Comment #33: At reasonable levels of traffic growth, the OMP Phase 1 and Total Master Plan airfields will both hit maximum delay soon after completion requiring a re-institution of constraints on operations.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 24)

FAA Response :

Under OMP Phase 1 and Master Plan Phase 1 scenarios, the BCA allows aircraft operations to grow until average annual delays were equal to what was projected under the base case. At that point in time, aircraft operations are capped. See Response to Comment # 2 (Karaganis)

See Campbell #31 for a discussion of the Total Master Plan.

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Comment #34: The City did not account for the decrease in passengers that would result from the increased costs per enplanement that the airlines would have to pay if the OMP proceeds.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 24)

FAA Response :

FAA disagrees with the comment.

The City's BCA provided sensitivity analyses that evaluated a range of forecasts including reduced enplanements from the 2002 TAF scenario case as well as reduced enplanements estimated in the 2004 forecast. As discussed in Response to Comment # 6 (Karaganis), over a plausible range of price elasticities of demand (e.g., -0.8 to –2.0), the proposed project is cost beneficial so long as the percentage reduction in passenger growth does not fall by more than approximately 5 percent from the 2002 Scenario Forecast. For the 2004 TAF, enplanements are forecast to grow at a lower rate than those found in the 2002 TAF. However, the decreased growth rate for enplanements only minimally impact the BCA results. Taking this forecast evaluation together with other sensitivity analyses performed in the BCA suggest that the model results are robust with respect to changes in these parameter values.

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Comment #35: The failure of an existing hub carrier would eliminate most of the delay benefits projected for the OMP options, particularly since the high OMP investment costs will be absorbed by fewer passengers.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 24)

FAA Response :

FAA disagrees with the response. See Response to Comment # 6 (Karaganis)

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Comment #36: **1.8.2 Cost Adjustments**
The BCA analysis fails to associate projected benefits with the full costs of the Master Plan projects, and it also excludes legitimate cost elements. Several elements of third party costs, especially environmental, were not discussed or quantified in the City's BCA, yet the FAA's BCA Guidance requires them to be included. This oversight by the City could have serious implications for the BCA when delay and disruption costs especially during construction, and vehicular congestion on access roadway are factored into the analysis. Campbell-Hill made two costs adjustments: (1) a construction cost contingency is increased and (2) interest expense during the construction period is capitalized.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 25)

FAA Response :

FAA disagrees with the comment

The FAA has addressed issues related to the Total Master Plan costs in the "FAA response to DOT Office of the Inspector General July 21, 2005 Report" (also included in Attachment F).

See previous Response to Comment #10 (Campbell) on FAA's consideration of the costs estimates. As noted, the cost contingencies established for the O'Hare capital program appear reasonable, and consistent with FAA's BCA guidance, and does not need to be increased for any alternative financial analysis.

In addition, the FAA will be involved in the review of planning, design, and construction related activities of the OMP. Weekly planning and programming sessions have been held (and will continue to be held through the duration of construction) with the FAA, airlines, and City of Chicago staff members and construction consultants in order to determine the most expedient methods for implementing the program without degradation of existing operational capability. These forums include, but are not limited to, the Phasing Operational Evaluation Team (POET) meetings and the Construction Operations Working Group (COWG) sessions. The efforts in these forums have thus far determined that is it possible to implement a large portion of the project landside; thus, allowing the construction activity to occur "off-airport." To the extent that construction activity must be performed on the active airport, significant attention has been (and will continue to be) paid to minimize disruptions to existing operations. These detailed planning sessions have proven successful in preparing for construction of the OMP.

FAA disagrees with the comment on applying an interest expense during the construction period. FAA's BCA Guidance states the following at para. 11.2.5:

"11.2.5 Principal and Interest Expense: As in the case of depreciation, the resource costs associated with project construction are considered directly in BCA. Interest and principal costs payable on the capital funds required to implement a project should therefore not be included in a BCA. Both of these cost items are implicitly taken into account by means of the discount rate in the computation of present value."

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Comment #37: The City's BCA report for OMP-Phase I Airfield includes zero contingency allowance and its Total Master Plan contains only a 6% contingency. Campbell-Hill increased the unreasonably low contingency assumed by the City to a more realistic contingency of 27.6%. The 27.6% contingency is the average cost overrun of documented transportation infrastructure projects[38], and is within the range of 17% to 35% recommend by the FAA in its BCA Guidance.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 25)

FAA Response :

FAA disagrees with this comment.

See response to comment #10 (Karaganis). In addition, FAA responded to similar comments by Campbell-Hill in the Final EIS regarding costs. See, for example, comment response #95 on page U.4-561. Also, the FAA has addressed cost issues in the "FAA response to DOT Office of the Inspector General July 21, 2005 Report" (also included in Attachment F).

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Comment #38: The City's BCA report ignores completely the interest expense that will be incurred during construction. These are real and unavoidable costs of the project. This adjustment accounts for the fact that the Airport will have to increase its debt load to pay for interest on debt issued since the airlines do not pay for projects until they are available for use. Interest on this additional debt is capitalized, and it increases the principal that the airlines will owe to the Airport. This additional cost is not covered by the 7% discount rate, and therefore it must be added to the total project costs. Part of the capitalized interest comes from funds that will be needed due to a shortfall in PFC revenues. This capitalized interest varies with traffic forecasts and causes the cost estimates to vary as well.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 25-26)

FAA Response :

FAA disagrees with the comment on applying an interest expense during the construction period. See FAA's BCA Guidance recited in comment #36 above. FAA also considered and responded to a similar Campbell-Hill comment regarding capitalized interest in the FEIS. See, for example, FAA response to comments #96 and #97 on page U.4-562, which concluded that Campbell-Hills method represented an inappropriate "double-count".

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Comment #39: In addition to the cost adjustments discussed above the City has failed equally to assess and forecast future increases in roadway access/egress times, terminal facilitation times (including inter-terminal connections), and in-terminal processing times. Given the size and complexity of this project, this level of BCA analysis must be provided. The FAA's fiduciary responsibility cannot accept less.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 26)

FAA Response :

See previous Response to Comment #22 (Campbell)

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Comment #40: The primary problems with the City's simplified methods for measuring benefits involved the unrealistic forecasts for traffic and delay (see above). Some of the City's assumptions were also flawed, and they were adjusted. For example, the City based its value of passenger time estimate on old 1997 survey data, rather than the value used by FAA in its most recent O'Hare scheduling order[39] ($28.60 per hour)

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 27)

FAA Response :

FAA disagrees with the comment. As the commenter states, FAA's regulatory evaluation of the recent O'Hare scheduling order did apply $28.60 per hour as the value of passenger time, based on the chart reproduced below from FAA guidance documents. Note that the $28.60 is a national average value based on the national average weighting distributions of air carrier-personal and air-carrier business. However, the applicant's original BCA and supplemental BCA actually refines this calculation (as permitted by the FAA Guidance) as described on p. 17 of the applicant's Supplemental BCA report:

> *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.[6] 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.

Recommended Hourly Values of Travel Time Savings (2000 U.S. dollar per person)*

		Sensitivity Range	
Category	Recommendation	Low	High
Air Carrier			
Personal	$23.30	$20.00	$30.00
Business	$40.10	$32.10	$48.10
All Purposes	$28.60	$23.80	$35.60
General Aviation			
Personal	$31.50	n.r.	n.r.
Business	$45.00	n.r.	n.r.
All Purposes	$37.20	n.r.	n.r.

* Sources: "APO Bulletin APO-03-01 – Treatment of Values of Travel Time in Economic Analysis," FAA Office of Aviation Policy and Plans, March 2003, and "Revised Departmental Guidance – Valuation of Travel Time in Economic Analysis," Office of the Secretary of Transportation Memorandum, February 11, 2003.

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Comment #41: Without explanation, analysis, or justification the City claimed 80% of the amount it computed for passenger time savings as downstream passenger delay savings. The FAA Guidelines permit a claim for downstream savings, but the City provides no analysis or justification as required by the FAA. Downstream delays would only apply to delays for aircraft departing ORD so Campbell-Hill limited the "downstream" delay factor to 15% based on the DEIS modeling results.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 27 [

FAA Response:

The City's initial BCA submittal did not apply the Lincoln Laboratory Paper as the BCA specifies. The City's Supplemental BCA did not attempt to quantify either the downstream or system-wide ripple effect benefits associated with the proposed project. Therefore, the FAA believes the quantified BCA results are understated. See Response to Comment # 21 (Campbell) for a further discussion of this issue.

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Comment #42: The operations forecast used in the applicant's BCA to evaluate benefits for the OMP Total Airfield (Table E-4) incorporated different values than the other benefit analyses (and the stated forecast). It is apparent that the values were one year off (e.g., values shown for 2007 were 2006 values).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 43)

FAA Response :

Noted. This was addressed in the Supplemental BCA

See Response to Comment #14 Campbell-Hill.

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Comment #43: The passenger forecast used in evaluating benefits for the Total Master Plan inappropriately uses the unconstrained levels for the "Build" estimates and the constrained levels for the "No Action" estimates. The constrained values (same as the OMP Total Airfield) must be used for consistency and methodological integrity.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 43)

FAA Response:

Noted . See FAA Response to Comment #10 and Comment #14 in Campbell-Hill.

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Comment #44: The delay estimates for the "No Action" scenario vary significantly over the 2007-2018 period despite no change in operating levels. It is logical that a single "constraining" value be selected. The value of 15.9 minutes (occurring in 2009 when Phase 1 would open) was utilized for all of the forecast years.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 43)

FAA Response:

See Response to Comment # 2 (Karaganis)

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Comment #45: The City's O&M costs for Master Plan Phase 1 uses the BCA Summary Table (Table E-11) differ from the O&M costs listed in the O&M cost table (Table E-2).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 43)

FAA Response:

Noted. This was addressed in the City of Chicago's Supplemental BCA.

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Comment #46: OMP-Phase 1 Airfield represents a very small increase in capacity over the existing airfield, and yet Chicago claims in its BCA Study that the OMP-Phase 1 Airfield will have a significantly positive impact on delays in the City's BCA analysis for both the "Airfield" and "Master Plan" scenarios.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 44)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See Response to Comment # 2 (Karaganis) for a discussion on the revised methodological approach for evaluating Master Plan Phase 1.

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Comment #47: In its BCA the City erroneously estimated that OMP-Phase 1 Airfield would produce $4.1 billion in benefits (in NPV terms) compared to $1.9 billion in net costs, yielding a benefit cost ratio of 2.13. As a result of the defects and flaws discussed in detail below this estimate is wrong and must be rejected. Using a forecast that combines a rational future use of ORD capacity with actual traffic levels for the OMP airfield, the benefits are shown to be negative (disbenefits). A net increase i.e. disadvantage in unimpeded travel time for the Build scenario applies for the entire forecast period, ranging from 1.6 minutes in 2008 to 4.0 minutes from 2013-2015. This disadvantage offsets the minimal aircraft delay improvements that peak at 5.2 minutes in 2009 and is eliminated entirely by 2015 (See Chart 1-1).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 47)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #2 (Karaganis) on discussion of methodology that allows aircraft operations to grow until average annual delays were equal to what was projected under the base case. At that point in time, aircraft operations would be capped.

See Response to Comment #6 (Karaganis) on discussion of FAA's use of forecasts and Response to Comment #3 (Campbell) for the reasons why FAA used total travel time calculations.

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Comment #48: As stated in Section 5.0, the City of Chicago has designed its BCA analysis in order to justify the OMP-Phase 1 Airfield without recognizing that OMP-

Phase 1 Airfield is merely an element of the Total Master Plan that cannot be justified on its own. Accordingly, the City attempted to over-allocate benefits to OMP-Phase 1, while minimizing the overall costs that would be required if the Total Master Plan is truly analyzed as a complete project. The analysis provided in Section 3.0 shows that the OMP-Phase 1 Airfield, on its own, would produce a very large negative economic impact (*i.e.,* economic costs far exceed economic benefits) under its expected (and required) utilization due to its limited operating capacity and increased airfield taxi times. As shown in this section, the Total Master Plan similarly fails to produce benefits sufficient to justify the enormous investment using realistic forecasts and estimating methods.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 65)

FAA Response:

FAA disagrees with the comment. The FAA did not rely on the Total Master Plan when evaluating the merits of the Phase-1 OMP airfield program. See Response to Comment #1 (Karaganis) for discussion on FAA's review of OMP Phase 1. See Response to Comment #3 (Campbell) for discussion of total travel time.

See FAA Response to Comments #10 and #14 (Campbell-Hill).

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Comment #49: Once open in 2013, the Total Master Plan airfield would allow increased operating levels at ORD, but there is no reason to assume that this would significantly improve throughput productivity (as measured in passenger levels) when compared to the existing airfield operated under rationalized patterns for aircraft size and load factors. While there would initially be some short-term benefits in terms of reduced delay levels, these benefits are immediately offset by the significantly higher taxi times required to navigate the enlarged airfield with a much greater proportion of parallel runway crossings. With no constraint on airline operating patterns, the growth in traffic levels quickly obliterates the initial delay benefits.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 65)

FAA Response:

See FAA Response to Comments #10 and #14 (Campbell-Hill).

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Comment #50: The Total Master Plan fails to produce an adequate benefit-cost ratio, even if the basic adjustments to the cost and benefit methodologies are applied using the City's inappropriate limit of 974,000 annual operations instead of 15.9 minutes of delay. In this analysis, the adjustments to the passenger delay benefits[74] reduces net benefits

from $6.43 billion in the City's calculations to $3.36 billion, while the incorporation of contingency and construction period interest expense increases net costs to $8.90 billion from $6.19 billion (see Table 4-9). As a result of these adjustments, the net benefits of the proposed project are negative (-$5.54 billion), and the benefit cost ratio falls to 0.38. Even without any changes to the forecast methodology (change to the limiting constraint), the Total Master Plan does not qualify for approval.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 77-78)

FAA Response:

See FAA Response to Comments #10 and #14 (Campbell-Hill).

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Comment #51: The City's BCA analysis portrays the fundamental problem with the whole OMP project – OMP-Phase 1 Airfield produces no long-term benefits without the Total Master Plan, and the Total Master Plan cannot be justified on its own.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 80)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #10 (Karaganis).

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Comment #52: The City of Chicago is seeking immediate approval for the LOI Phase 1 of the OMP. Its BCA is superficial and flawed, ignores the FAA's BCA Guidance requirements and must be rejected. The City established a BCA analytical framework that is unrelated to the OMP/Master Plan purpose and need as articulated in the FAA's DEIS.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 87)

FAA Response:

FAA disagrees with the comment.

See Response to Comments #1 and #2 (Karaganis).

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Comment #53: The BCA sets up a simple comparison of a single action alternative (the City's preferred Alternative C) to the baseline "No Action" ("do-nothing") case. In both instances it selects (1) a limit of 974,000 annual operations as the level of traffic, (2) the

exact same airport choice behavior of passengers, and (3) identical airline scheduling behavior in terms of aircraft size (and maximum load factor). Then it simply computes the 20 years of delay saving benefits it expects will accrue from the OMP alternative. On page IV-12 of the BCA report the City claims that this is the comparison ordered by the FAA Guidance. The City is wrong. The FAA Guidance (at pages 17 and 39) reveals that the requirement to utilize similar forecasts for "No Action" and "Build" scenarios is intended to avoid over-estimating delay benefits, it does not suggest the BCA should be based on unrealistic scenarios that ignore: 1) Chicago's and the FAA's own modeling claims as to what the growth of the proposed "Build" projects (*e.g.,* OMP-Phase 1 Airfield) will be at a given level of delay, and 2) real-world "alternative" patterns of airport use. The FAA Guidance for defining the base case (page 17) expressly implores against using a "do nothing" construct (Section 6.1). Rather airline strategies and passenger choice (as well as the alternative of FAA demand management such as is now in place at O'Hare) must be integral considerations in dealing with a congested environment.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 87)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See Response to Comment #2, #4, #6, and #26 (Karaganis).

As for airport choice, the analysis conducted in the Supplemental BCA uses the price elasticity of demand as a fundamental parameter for quantifying the benefits of Master Plan Phase 1 and OMP Phase 1.

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Comment #54: The limiting delay value computed in the DEIS for the "No Build" alternative is 15.9 minutes based on 974,000 total operations in 2009. Operations will be constrained by regulation or market forces, not by a hypothetical operations limit. Without regard to whether the DEIS correctly sets these limits (and it does not, as Campbell-Hill discusses in its comments to the DEIS), the City's use of the constrained DEIS forecast (974,000 maximum annual operations) totally ignores the issue of whether the OMP/Master Plan provides adequate future capacity, while also ignoring the clear probability that current capacity at ORD would be more efficiently used under the "No Build" (constrained) conditions. It also ignores the fact that alternative airports and strategies will be readily available to reduce delays at ORD while maintaining high productivity at that airport (free market decisions).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 88)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See Response to Comment # 2, #3 and #13 (Karaganis).

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Comment #55: Nothing in the structure of the City's BCA addresses the adequacy of airside and landside capacities to accommodate future regional demand, or to effectively enhance NAS capacity. The BCA simply provides a hypothetical delay comparison between two scenarios; neither of which resembles reality.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 88)

FAA Response:

See Response to Comment #22 (Campbell).

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Comment #56: The City's BCA evaluates only a single build option, so there is no way of knowing whether it is the best among feasible and sensible alternatives.[79] Nor has the City's Alternative C been evaluated in such a way as to demonstrate merit of its own. These facts alone must disqualify the City's BCA from further consideration by the FAA.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 89)

FAA Response:

The FAA disagrees with the comment.

See Response to Comments # 3 and #13 (Karaganis)

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Comment #57: The following quotation from the City's BCA shows how Chicago ignored the FAA's Guidance regarding evaluation of alternatives . . . "The City believes that the OMP is the best development option and, therefore, alternatives are not analyzed as part of this BCA." (Emphasis supplied.)[82]

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 89)

FAA Response:

The FAA disagrees with the comment.

See Response to Comment # 3 and #13 (Karaganis).

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Comment #58: The City has front-loaded the benefits into Phase 1 and back-loaded the costs into the remaining Master Plan projects.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 90)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #1 (Karaganis) and Response to Comment #10 (Campbell)

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Comment #59: **5.3.1 The BCA Fails to Define Project Objectives**
As discussed in Section 5.2 above the City has misstated the objectives of the OMP project. It is not about reducing delay at some hypothetical level of current operating capacity. It is all about finding the optimum way to accommodate future regional demand, given the wide variety of strategies and options available to the planner and decision-maker. Furthermore, the City is seeking immediate FAA funding approval for an initial set of LOI projects plus the supporting program-wide requirements projects. This is termed OMP-Phase 1 Airfield. The total cost of OMP-Phase 1 Airfield is estimated by the City to be $2.8 billion. The City has front-loaded the benefits into Phase 1 and back-loaded the costs into the remaining Master Plan projects. Yet the FAA's decision-making process must include a full examination of all aspects of the City's plan for O'Hare. In the DEIS, the Agency was correct in analyzing the Total Master Plan. One consequence of the City's approach is that the benefit-cost ratio of the Master Plan excluding OMP-Phase 1 Airfield projects using the City's own figures (unadjusted) is 0.55 or less. According to the FAA Guidance, . . . "The BCA cannot proceed until the exact objectives of the project under consideration are precisely stated" (Emphasis supplied. The City of Chicago's BCA report fails to articulate clearly, responsibly, and accurately its true objective.)

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 90-91)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #15 (Campbell).

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Comment #60: **5.3.2 The BCA Fails to Specify Assumptions**
The BCA report does not explain or fully document its assumptions upon which the

analysis is predicated. On the demand side, the City adopts the FAA-produced TAF traffic estimates which reflect "unconstrained" growth under status quo conditions. The benefit-cost study is supposed to examine all reasonable alternatives to the forecasts that would be occasioned by additional constraints, changes expected in airline scheduling behavior, significant risk of the loss of a hub carrier, growth and development of other regional reliever airports, implementation of new air traffic management systems (e.g. free-flight, and/or ADS-B systems), and many other future developments that have a realistic potential to alter current airport capacity and mitigate delay, or to alter fundamental future needs.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 91)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #16 (Campbell) and Response to Comments # 3 and #13 (Karaganis).

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Comment #61: The capacity/delay analysis underpinning the BCA report is based upon the use of the TAAM model. However, the BCA Guidance states that the Agency uses three models for this purpose (SIMMOD, ADSIM, and RDSIM), none of which is TAAM. The City's BCA report is completely silent with respect to a justification for the TAAM model.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 92)

FAA Response:

FAA disagrees with this comment. TAAM is a proven and appropriate modeling tool to analyze capacity and delay. The rationale for using the TAAM are described in Appendix D, Section D.2.2 of the EIS.

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Comment #62: **5.3.3 The City Erred in Its Definition of the Base Case**
The City's BCA fails this directive as well. It assumes status quo operations by and large, with only modest TAF-related increases in passengers per operation. Then, without justification, it caps both the base case (no action) and the build case to 974,000 annual operations through the year 2032. The realistic future scenarios developed by Campbell-Hill in Sections 2.0 - 4.0 above allow operations to increase to a maximum level of delay for each ORD airfield, and then invoke other airline strategies to accommodate further growth in passengers. These strategies include the utilization of larger average aircraft sizes and some increase in average load factor, the accommodation of some local O&D at

other regional airports (e.g. Milwaukee, Rockford, Gary and South Suburban), and the diversion of some connecting passengers to other underutilized hubs. These are all sensible cost-efficient strategies that do not distort the free market system of airline competition. The City's BCA does not remotely consider realistic changes to something that is a hypothetical base case definition using 2002 modeled results. It did not even consider a scenario defined by actual data or plausible congestion management strategies in the future[97].

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 92-93)

FAA Response:

FAA disagrees with the comment.

See Response to Comments #2, #3, #4 and #13 (Karaganis) and #27 (Campbell).

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Comment #63: 5.3.4 The BCA Does Not Identify and Screen Reasonable Investment Alternatives

The City's BCA analyzes just a single alternative. The alternative put forward by Chicago is the largest, most expensive, most damaging and most disruptive alternative the City considered in its planning studies. However, Alternative C is the only option subjected to benefit-cost analysis. None of the earlier set of congestion management alternatives were considered, and none were considered that would avoid the taking of two sacred cemeteries. This is an extremely important step in the BCA process. Without a sensible set of alternatives, it is a virtual certainty that a decision to proceed would be sub-optimal, and one that could lead to highly adverse economic and environmental consequences. The City's BCA report fails completely to examine reasonable alternatives, especially solutions involving other airports and congestion management at O'Hare. These alternative solutions hold the promise of benefit cost efficiencies orders of magnitude better than Alternative C. Since only one alternative was analyzed in the BCA report, the technique of benefit-cost analysis was never used to screen alternatives which is one of its powerful attributes. Screening by BCA analysis has been a long-standing requirement in federal funding. It is also in widespread use in private finance and has been for decades. The City's proposal before the FAA should not be approved without a comprehensive BCA that incorporates all reasonable solutions.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 93-94)

FAA Response:

FAA disagrees with the comment.

See Response to Comments # 3 and #13 (Karaganis).

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Comment #64: 5.3.5 The BCA Fails to Determine an Appropriate Evaluation Period
The FAA's BCA Guidance suggests an evaluation period of 20 years as a proxy for the "useful life" of large infrastructure projects. Consequently, the City's BCA used a 20 year "period" for all OMP/Master Plan project investments, but failed to "evaluate" those projects relative to their actual "use" over that period. In FAA BCA analysis, the useful life and the "economic life" of the project are the same. The FAA Guidance defines economic life as . . . "that period over which the asset itself can be expected to meet the requirements for which it was acquired in a costeffective manner."[98] As demonstrated in the Campbell-Hill report filed on April 6, 2005, both the Phase 1 and the Full Build-out airfield (OMP Total Airfield) will reach delay levels that necessitate operations constraints long before 20 years of useful life.[99] These projects therefore do not "meet the requirements" for a 20-year period, and could only be shown to do so by restricting operating levels. It is incorrect to attribute any increase in future benefits to OMP investment beyond the point when the acceptable delay limit is reached.[100] BAC Guidance also says that at least three traffic levels should be simulated: at the beginning of the project's life, at the middle point of the project's life, and at the end or near the end of the project's life. See, FAA BCA Guidance at Page 37. The City failed to comport with this requirement. Furthermore, FAA recommends that the 20 year evaluation period "be augmented by at least 5 years to accommodate the need to evaluate optimal timing of investment alternatives." See also § 12.2, Page 75 of FAA BCA Guidance. The City's BCA also failed to comply with this requirement as well.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 94-95)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #5 (Karaganis) and Response to Comment # 5 (Campbell).

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Comment #65: 5.3.6 The BCA Does Not Reflect a Reasonable Level of Effort
The City's BCA report ignores many significant costs, risks and other attributes that must be an integral part of an economic evaluation of the OMP/Master Plan. As stated above, the City's analysis ignores completely (1) the costs or added delays on the access roadway systems at future "unconstrained" levels of passenger demand, (2) increased terminal facilitation times at future levels of "unconstrained" demand, (3) delays and disruption costs during the 10-year construction period, (4) third party environmental costs, (5) adverse property value impact, and (6) lost community tax revenues. Furthermore, the BCA report does not justify the choice of delay models, or any other models used in the analysis, nor does it compare the differences in results that alternative

FAA-approved models would produce. The BCA contains no risk assessment as required for a situation where the fate of United Airlines is so much in question.[102]

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 95-96)

FAA Response:

FAA disagrees with the comment that the BCA does not reflect a reasonable level of effort. See FAA Response to Comments #20, #22, #36 (Campbell).

The FAA disagrees with the commenter's assertion regarding what is necessary in a benefit cost analysis. The FAA has already completed a comprehensive environmental analysis of the proposed O'Hare Modernization Program and Master Plan projects. This commenter participated in the EIS process and all of their comments were considered and addressed in the Final EIS and/or Record of Decision. The FAA does not intend to duplicate the environmental review process in our analysis of the City's Supplemental BCA. The EIS dealt with similar issues in response to comments. For example, discussions on surface transportation can be located in Section 5.3 - Surface Transportation, F-1 beginning on Page U.5-28, and Appendix G - Surface Transportation as part of the FEIS. Property tax impacts can be located on Page U.4-565. Property value discussions can be located in G-2 on Page U.5-32 of the FEIS. Finally, construction safety information can be found in the topical response to comments in K-2 on Page U.5-43 of the FEIS.

For "distributional" effects, OMB recommends that economic analyses provide a description so that decision makers can properly consider them along with the economic efficiency effects. But only where distributive effects are thought to be important does OMB require that the effects be described quantitatively (to the extent possible). Relative to the economic efficiency benefits of the O'Hare OMP and its costs, FAA doesn't believe that this type of distributional impact is significant.

See FAA Response to Comment #62 (Campbell) and Comment #6 (Karaganis).

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Comment #66: The BCA claims downstream benefits, without discussion or justification, that are 33.0% of the City's total OMP-Phase 1 Airfield projected benefits, and 34.3% of its Total Master Plan projected benefits.[103] There is no basis offered to support such claims. The FAA's BCA Guidance requires a thorough justification and documentation if downstream benefits are to be claimed. The FAA admits that it has been unable to develop a robust simulation methodology for measuring system-wide (downstream) delay impacts, so it informs airport project sponsors that downstream delay benefits must be well documented.

Under all theses circumstances the FAA must demand a much greater level of effort, a more comprehensive analysis, a corrected BCA evaluation structure complete with full

disclosure of all costs and assumptions, and an analysis that considers equally all reasonable alternative solutions – not just an undercosted and overstated Alternative C. Page 23 of the FAA's BCA Guidance discusses the level of effort and completeness of analysis that is required for a project of this scope and magnitude. Nowhere in the City's BCA report is the level of effort addressed or is there any attempt to justify the inadequate effort put forth in the City's report. In its Guidance the FAA reserves the right to require the BCA to be redone, and for all the reasons outlined in this report it should do so here. As a guardian and trustee of public funds, the FAA has an overriding responsibility to demand correct and comprehensive analysis from Chicago. Otherwise the FAA should conduct its own BCA and accept appropriate inputs from interested parties.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 96)

FAA Response:

See FAA Response to Comment #21 (Campbell).

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Comment #67: 5.3.7 The BCA Fails to Identify, Quantify, and Evaluate Benefits and Costs

Campbell-Hill's comments on the DEIS, filed with the FAA on April 6, 2005, state that neither the City nor the FAA have been forthcoming about providing detailed cost estimates for the OMP/Master Plan. In the aggregate they are vastly understated because major categories of costs have been ignored. The Campbell-Hill benefit-cost analysis in the sections above corrects some obvious omissions which are discussed above. But, there may be scores of other costs that are simply hidden from view. The whole area of airport access system requirements has been ignored by the City. Either major costs will be incurred or else major increases in passenger access/egress time must be incorporated (like the added aircraft taxi times).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 97)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comments #3, #10, #14, and #22 (Campbell).

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Comment #68: The City has included modest estimates for greater aircraft taxi times that would be occasioned by each phase of the OMP/Master Plan. However, there is no documentation of the derivation of these estimates, and considering the longer taxi

distances and the increase in parallel runway crossings, the City's estimates appear low. Moreover, the City makes no allowance for this taxi time differential to increase over time as aircraft volumes would increase.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 97)

FAA Response

FAA disagrees with the comment.

See Response to Comment #3 (Campbell).

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Comment #70: Neighborhood effects of increased airspace congestion are unaddressed. Pushing ever-increasing volumes of flight operations through Chicago airspace will cause increased delays at Midway, Milwaukee, Rockford, Gary and possibly other airports. Neither the applicant's Master Plan studies nor the FAA's analyses of O'Hare deal with this issue, and none of the studies impute a cost to the OMP/Master Plan for these impacts.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 98)

FAA Response

The FAA disagrees with this comment. In addition to assessing specific airspace modifications relating directly to Chicago O'Hare, the FAA also assessed the airspace for other local airports. Specifically, the FAA performed air traffic routing modeling analyses for Milwaukee General Mitchell International Airport, South Bend Regional Airport, Greater Rockford Airport, and Midway International Airport. The results of these analyses include modifications being incorporated for Milwaukee, Midway and South Bend. These changes will allow Chicago O'Hare to efficiently accommodate forecast traffic through the planning horizon with no operational impact to traffic originating or destined to other local area airports.

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Comment #69: The City's BCA overstates significantly the expected benefits from passenger and aircraft delay savings. This is because of the study's choice of a faulty and irrelevant operating limit (974,000 annual operations) that freezes the existing airfield at its maximum delay while ignoring the impact of unrestrained growth on OMP/Master Plan delay levels, and the ability of the region to handle passenger growth through operational changes at ORD and alternative airport utilization.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 98)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA..

See FAA Response to Comments # 2, #3, and #13 (Karaganis)

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Comment #70: **5.3.8 The BCA Fails to Measure the Impact of Alternatives on Airport Usage**
The City of Chicago has been of single-minded purpose throughout the entire OMP/Master Plan planning process. Its goal is to create a massive 10-year construction project using federal money for a significant portion, so no options other than the City-promoted Alternative C have been subjected to benefit-cost analysis. The City's failure to consider alternatives completely contravenes FAA's Guidance which states "a valid BCA must have at least one alternative identified for each possible course of action." FAA Guidance further states that "at a minimum , the following alternatives should be identified and discussed for any airport infrastructure project: . . . demand management strategies . . ." FAA BCA Guidance § 7.3, Page 18. This failure is so severe that it renders the approval process stalled. The FAA should not proceed without a comprehensive, rigorous and complete BCA.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 98)

FAA Response:

See FAA Response to Comments # 3 and #13 (Karaganis).

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Comment #715.3.9 **The BCA Fails to Compare Benefits and Costs of Alternatives**
The City's BCA compares understated costs with significantly overstated benefits derived using an artificial forecast

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 98)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #10 (Campbell).

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Comment #72: **5.3.10 The BCA Fails to Include Relevant Uncertainty Analysis**

The City's sensitivity analysis deals only with the OMP- Phase 1 Airfield scenario. Its only value is to demonstrate that a five-year delay in starting Phase 1 of the OMP would not reduce the City's expected ratio of benefits versus costs. The City's analysis shows also that the benefit-cost ratio is sensitive to relatively small changes in forecast costs and benefits. A 25% increase in the City's construction costs coupled with a 25% decrease in projected benefits would reduce the City's computed benefit-cost ratio by 40% from 2.13 to 1.27 for OMP- Phase 1 Airfield. As shown in Section 3.0 above, the realistic ratio is far below 1.0.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 99)

FAA Response:

FAA disagrees with the comment.

The City's Supplemental BCA includes a number of multi-attribute sensitivity analyses including a range of values for elasticity of demand, money fare, and passenger demand. These analyses are proper for a BCA.

See FAA Response to Comment #6 (Karaganis).

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Comment #73: **5.3.11 The BCA Cannot Make an Informed Recommendation**
The requirement to select among the competing alternative plans that have been subjected to benefit-cost analysis is absent from the City's BCA. The City has only one pre-ordained option in mind, so it did not evaluate any other reasonable alternatives, including congestion management, use of other airports and the like. Flawed analysis based upon an unrealistic analytical structure leads to faulty conclusions and recommendations. The City of Chicago's BCA report fails in all material respects to adequately address every one of the FAA's BCA process requirements as described in its Guidance at page 6 and following.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 100)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comments # 3 and #13 (Karaganis) and Response to Comment # 27 (Campbell).

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Comment #74: 5.4 The City's BCA Ignores Other Significant Factors that Reduce the Benefit-Cost Ratio
The City's biased analysis must be corrected to (1) utilize reasonable delay, passenger, and operation forecasts that accurately compare the capabilities of the OMP airfield options with a true "No Build" scenario, (2) include significant cost elements that have been ignored or understated, and (3) use revised benefit assumptions that meet FAA guidelines. Several of these have been described in Section 5.3 above and require further elaboration. Others have not been addressed at all.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 100-101)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #2 and #6 (Karaganis) and Response to Comment #10 (Campbell).

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Comment #75: 5.4.1 The City Estimates Benefits for the OMP/Master Plan Based on Forecasts That Ignore Probable Future Use of the Expanded O'Hare and Viable Alternatives for the No Action Scenario
A reasonable evaluation of the OMP/Master Plan options should focus on each option's performance and capacity under the likely range of demand patterns as required by the DEIS's own purpose and need statement (i.e., "to address the projected needs of the Chicago region"). Instead the City has constructed a "straw dog" scenario certain to provide positive benefits, but not reflective of real conditions for either the Build or No Action scenarios.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 101)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comments #10 and #14 (Campbell)

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Comment #76: Basing the constrained operations on the current airfield alone ignores the airport system's ability to handle operations at alternative regional or Mid-Continent hub airports, and market-based decisions showing a preference for other airports.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 101)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comments # 3 and #13 (Karaganis) and Response to Comment #27 (Campbell).

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Comment #77: By assuming that constrained operations will necessarily constrain passenger growth in the short term, the BCA forecast ignores the historical pattern of operating efficiency at ORD (in terms of both load factor and aircraft size) and the highly probable response of carriers to a constrained environment.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 101)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #6 (Karaganis) and Comment #26 (Campbell).

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Comment #78: The use of increasing average delay levels for the existing airfield over the analysis period is illogical; if "maximum" delay constrains operating levels, it would also constrain operating changes that push beyond that level.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 101)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See FAA Response to Comment #2 (Karaganis).

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Comment #79: The lack of any risk analysis ignores the high probability that one of the existing hub carriers will fail, eliminating the constraints on the existing airfield for many years to come.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 101)

FAA Response:

The City of Chicago's Supplemental BCA considered the possible failure of one of O'Hare's two primary hub airlines. In additional, the FAA considered this issue and determined that OMP Phase 1 would still be cost beneficial.

See Response to Comment #6 (Karaganis).

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Comment #80: The use of the DEIS constrained forecast only "tests" the OMP at operating levels for which the "No Action" alternative is at its maximum delay, while also ignoring the requirement to handle more reasonable 2003 or 2004 TAF traffic levels (see Section
5.4.2).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 102)

FAA Response:

The City of Chicago's Supplemental BCA included a sensitivity analysis of the most current forecast (2004 TAF).

See Response to Comment #6 (Karaganis).

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Comment #81: The use of unconstrained passenger levels for the OMP/Master Plan analysis is unexplained and totally inconsistent with the entire BCA analysis. The unique and abrupt economic change in forecasts was obviously done by the City to achieve a benefit-cost ratio in excess of 1.0. If its analysis remained consistent with the three other build scenarios, the City would only show a 0.93 ratio (without any other corrections). Concerned about failing the BCA test for the Total Master Plan, the City simply cooked the books by inventing a new method for increasing the benefits in order to reach the 1.0 threshold level. This contrived analysis should be rejected.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 102)

FAA Response:

See FAA Response to Comments #10 and #14 (Campbell) and Response to Comment #1 (Karaganis).

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Comment #82: Delay estimates for the OMP Full Build-out options (Total Master Plan, OMP Total Airfield) should be based on reasonable delay curves as specified in the DEIS comments of Campbell-Hill.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 102)

FAA Response:

See FAA Response to Comments #10 and #14 (Campbell) and Response to Comment #1 (Karaganis).

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Comment #83: Using the adjusted delay curves and reasonable traffic levels, the OMP-Phase 1 Airfield and Full Build-out airfield (OMP Total Airfield) will hit maximum delay within their economic lives requiring a constraint on operations. Prior to that point, operation levels will rise to satisfy the needs of the scheduled carriers.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 102)

FAA Response:

The FAA determined that the City's methodology of capping operations was not appropriate for determining the benefits of the OMP Phase 1. The FAA's LOI decision is based on the City of Chicago's Supplemental BCA.

See FAA Response to Comments #10 and #14 (Campbell) and Response to Comments #1 and #2 (Karaganis).

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Comment #84: The traffic impact of the additional OMP/Master Plan costs on airline costs and passenger fares is ignored in the City's BCA report (see Section 5.4.3).

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 102)

FAA Response:

See FAA Response to Comments #10 and #14 (Campbell) and Response to Comment #1 (Karaganis).

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Comment #85: The failure of an existing hub carrier would eliminate most of the delay benefits projected for the OMP/Master Plan options, particularly since the high

OMP/MasterPlan investment costs will be absorbed by fewer passengers (see Section 5.3.10). There is no credible risk analysis in the BCA.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 102)

FAA Response:

See FAA Response to Comment #81 (Campbell) and Response to Comment #6 (Karaganis).

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Comment #86: 5.4.2 Basing the BCA on the Out-of-Date 2002 TAF "Undermines the Credibility" of the City's Analysis

The City of Chicago prepared its BCA using the FAA's 2002 TAF forecasts. For all the many reasons stated by Campbell-Hill in its April 6, 2005 DEIS comments, these forecasts are significantly out-of-date considering the changes that took place in the airline industry and at O'Hare during 2003 and 2004.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 103)

FAA Response:

FAA disagrees with the comment.

See Response to Comment #6 (Karaganis).

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Comment #87: 5.4.3 The City's BCA Makes No Provision for the Loss of Traffic and Reduction of Service as a Result of the Exorbitant OMP/Master Plan Airport Costs

Based on Campbell-Hill's adjusted OMP/Master Plan costs, the airlines' expenses for operating at O'Hare would increase so significantly that passenger traffic and airline operations would decline below the TAF projected levels. This becomes the Cost-Related Passenger Reduction in the Campbell-Hill analysis.[114] As traffic declines, the cost per enplanement would rise still further. This is fully described in Appendix A below and in section 3.4 of our April 6, 2005 DEIS comments. The fact that airline traffic is price elastic[115] causes the significant decline in traffic. The fact that the OMP/Master Plan costs are fixed, without regard to traffic volume, is what triggers the Cost-Related Passenger Reduction in the Campbell-Hill forecasts. In some of the Build scenarios, the loss of traffic (and loss of airport revenues) is sufficient to obliterate any perceived benefit, a significant factor causing a reduction in the City's benefit-cost ratios.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 104)

FAA Response:

See FAA Response to Comments #10 and #14 (Campbell) and Response to Comment #1 (Karaganis).

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Comment #88: **5.4.4 Proper Evaluation of the Merits of the OMP Requires Full Disclosure and Full Costing**
The City's LOI application for approval of OMP-Phase I Airfield, and later the Total Master Plan, must reflect the entire system that is impacted. It is not enough to simply include the cost of runways and associated taxiways and infrastructure. These capacity enhancements will dictate the need for additional terminal and access/egress system capacities. The City's cost projections ignore billions of dollars of essential landside requirements that are an integral part of operating a larger airport

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 105)

FAA Response:

See FAA Response to Comments #10, #14, and #22 (Campbell) and Response to Comment #1 (Karaganis).

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Comment #89: The City's OMP-Phase 1 Airfield for which it seeks immediate funding approval from the FAA deals only with building three runways and increasing the runway capacity of O'Hare. Yet not one dollar of expenditure is associated with new or renovated terminals, and not a dollar is projected to be spent to increase roadway access/egress to/from O'Hare. These construction expenditures will be required or else the access/egress time delays and terminal facilitation times will increase so greatly as to more than offset the City's claimed reduction in aircraft related delay benefits.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 105-106)

FAA Response:

FAA disagrees with the comment. See Response to Comments #10, #14 (Campbell) and Response to Comment #1 (Karaganis).

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Comment #90: **5.4.5 The City's BCA Ignores Construction Cost Contingencies**
The City's BCA report for OMP-Phase 1 Airfield includes zero contingency allowance and its Total Master Plan contains only a 6% contingency.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 106)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #37 (Campbell).

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Comment #91: **5.4.6 Interest Paid on Construction Loans Must Be Capitalized for the Construction Period**
The City's BCA report ignores completely the interest expenses that will be incurred during construction. These are real and unavoidable costs of the project.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 107)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #38 (Campbell).

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Comment #92: **5.4.7 The City's BCA Ignores Third Party Costs**
Several elements of third party costs, especially environmental, were identified in Section 3.3 above. None of these costs were discussed or quantified in the City's BCA, yet the FAA's BCA Guidance requires them to be included.[125] This oversight by the City could have serious implications for the BCA when delay and disruption costs during construction, and vehicular congestion on access roadway are factored into the analysis.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 108)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #66 (Campbell).

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Comment #93: **5.4.8 The City Erred in Valuing Passenger Time Savings at $32.10 Per Hour**
The City based its value of time estimate on old 1997 survey data. In its most recent

O'Hare scheduling order[126] the FAA used $28.60 per hour for O'Hare passengers. Clearly the FAA unit value is preferred for the benefit-cost analysis.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 108)

FAA Response:

FAA disagrees with the comment.

See FAA Response to Comment #40 (Campbell).

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Comment #94: **5.4.9 The City's Incorporation of Downstream Delay Benefits is Unjustified**

Without explanation, analysis or justification the City claimed 80% of the amount it computed for passenger time savings, as downstream passenger delay savings. The FAA Guidance permits a claim for downstream savings, but it must be analyzed and justified.[127] The City has done neither. In regard to O'Hare, the City has not even shown that the concept of downstream delay savings is valid. The concept of downstream delays is based on the assumption that an aircraft delayed at a particular airport has some probability of being delayed on subsequent flights during the same day. The impact estimates used in the BCA are based on a 1997 paper by the Lincoln Laboratory[128] which provided a very generalized methodology developed for a single month (December 1993) and all airports. The paper's results have several limitations including:

- The paper noted that the results were preliminary and anticipated future enhancements that would be necessary for airport-specific evaluations.
- The original paper only applied to multi-stop flights where the delay occurs at an intermediate airport. In the BCA, the impact ratio is applied to all delays projected for ORD including non-stop flights and flights terminating their daily operations at ORD.
- The FAA Guidance suggests deriving estimates using the paper's probability factors and project-specific simulation results, not the blanket application of a theoretical multiplier (1.8) that was not calibrated to O'Hare.

Commenter: Campbell-Hill Aviation Group, Inc. (C-H BCA p. 109)

FAA Response:

FAA disagrees with the comment.

See Response to previous Comment #21 (Campbell).

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FAA previously responded to Rep. Hyde's July 5, 2005, letter through the FEIS response to comments process. The responses can be found on pp. L-170 through L-176 in the FEIS Response to Comments Section. Below are the FAA's updated responses for those comments directly related to the City's Letter of Intent application.

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July 5, 2005 Rep. Hyde letter
FAA Response to Comments

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Comment #1:

> **Lima Lima.** First, as the Chicago Tribune reported on June 20, 2005 Chicago's stated $2.9 billion cost estimate for Phase One (and its related financing plan and airport layout plan) neglected to inform the public that Chicago has eliminated a key taxiway (Lima Lima) from Phase One. The Tribune article states that the cost of Lima Lima exceeds $200 million and Chicago has not presented to FAA and the public the financial plan to pay for the cost of Lima Lima and the remainder of Phase One.
>
> The same Tribune article indicates that the airlines have refused to provide airline financing for Lima Lima — leaving Phase One with a more than $200 million funding gap.

Commenter: Rep. Henry Hyde (p. 2 of July 5, 2005 letter to Ms. Hunzicker and Mr, MacMullen)

FAA Response:

The FAA does not agree with the comment that OMP Phase 1 has an estimated $200 M funding gap.

The FAA is satisfied that the BCA included all relevant capital and operational and maintenance cost elements associated with the Master Plan Phase 1. These costs include all projects covered under Phase 1 as defined in the Master Plan Study and EIS, including but not limited to the costs of the Western Concourse, Concourse K extension, and Taxiway Lima Lima. Taxiway Lima Lima is estimated to cost $ $113,657,163, or approximately 3% of the overall Master Plan Phase 1 costs. All relevant costs were included in the BCA regardless of whether the projects were eligible for AIP funding or were included in the LOI request. The FAA determined that the Master Plan Phase 1 projects will be cost beneficial over a reasonable range of probable outcomes and that the data and assumptions made were reasonable and correct. See FAA's "Analysis And Review Of City Of Chicago's Application For Letter Of Intent" for more information on FAA's review of the BCA.

Even though Taxiway Lima Lima is not included in the OMP Phase 1 costs or financial plan, it is included in the City's Master Plan Phase 1 costs and FAA had determined that

it must be constructed as part of the Phase 1 program. Since Taxiway Lima Lima is part of the Master Plan Phase 1 projects, but not part of the LOI request (OMP Phase 1), FAA's financial analysis (including the analysis performed by the FAA's consultant, John F. Brown & Company (JFB)) considered the costs of the Total OMP and the Total Master Plan. We concluded that projects above and beyond OMP Phase 1, including the Total OMP and Total Master Plan may be expensive but are financially feasible because of certain characteristics of O'Hare and its market. See FAA's "Analysis And Review Of City Of Chicago's Application For Letter Of Intent" for a detailed analysis of FAA's conclusions on the City's Total OMP and Total Master Plan financial analysis.

FAA responded to airline OMP financing issues in the FEIS response to comments. FAA stated "as is typical in projects of this scope, magnitude and duration, airport operators seek incremental approval from their majority-in-interest carriers as funding becomes necessary[.]"…. " In addition, the initial majority-in-interest approval by the airlines acknowledged the need to provide subsequent approvals to accomplish the funding of the full OMP. The largest airlines serving ORD have evidenced their support for OMP in public statements. For example, in a speech delivered in March 2002, the CEO of United Airlines stated "modernization of O'Hare also is an important part of United's financial recovery plan and critical to our long-term success". More recently, both United and American have formally expressed their support both in letters and at public hearings".

For more detail on the MII issue, see pg. U.4-568 of response to comments #103 (FEIS).

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Comment #2:

> **Benefit-Cost Legerdemain**. The Phase One financing problems don't stop with Lima Lima. To pay for the remaining cost of Phase One, Chicago seeks $300 million in discretionary federal AIP funds and over $1 billion in federal PFC funding authorization. While the PFC application has its own serious problems relating to inability to meet the statutory requirements for $4.50 PFC authorization, what is patently clear if Chicago's inability to demonstrate the fundamental requirement for AIP discretionary funding that the project benefits exceed the costs.

Commenter: Rep. Henry Hyde (p. 2 of July 5, 2005 letter to Ms. Hunzicker and Mr, MacMullen)

FAA Response :

FAA disagrees with the comment.

In accordance with the provisions of section 47110(e) of title 49, United States Code , FAA has determined that the OMP Phase 1 meets the benefit cost criteria and that the project satisfies the statutory BCA requirement for discretionary funding. See FAA's "Analysis And Review Of City Of Chicago's Application For Letter Of Intent AGL 05-01" for a detailed analysis of FAA's conclusions on the City's Benefit Cost Analysis. As

noted in that document and in the response to Comment #3 below, the City's initial BCA submittal had methodological flaws that caused the FAA to request the City to perform a supplemental BCA. Our conclusion that the project meets statutory benefit cost criteria is based on this supplemental analysis, which the City submitted after Representative Hyde submitted his comment.

The FAA has not received a PFC application for any of the projects in the Phase 1 OMP. However, a BCA is not required for PFC decisions (Ref: 14 CFR Part 158). The FAA will assess any future PFC application from the City for the OMP at the time it is received against all statutory and regulatory requirements for PFCs.

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Comment #3

Chicago has sought $300 million in AIP funds on the claim that for every dollar of Phase One cost, there will be $2.13 in delay savings benefits. Chicago based this delay savings claim on a prediction of the future facts that Chicago and the FAA have themselves stated to be untrue.

Chicago's delay benefits claim is based on the presumption that traffic under Phase One (and indeed under the full build OMP-Master Plan) will never exceed 974,000 operations — the level of traffic at which FAA says traffic at the existing airport will cease growing. Chicago compared the delay that would be experienced at the existing airport at 974,000 operations and the delay that would be experienced under Phase One at 974,000 operations — and then, like the sorcerer's apprentice — marched this delay differential (based on an assumed constant limit of 974,000 operations) twenty years forward to the year 2028, without any growth in operations under Phase One.

In reality, FAA's and Chicago's own forecasts state that traffic (and delays associated with that traffic) will grow quickly beyond 974,000 operations so that shortly after Phase One opens, the delays will rise to the same levels of delay experienced at the existing airport. This rise in traffic and delays— coupled with the increased taxi times (and associated delay) involved in Phase One — means that the delay savings benefits attributed by Chicago to support its benefit-cost claims (and associated application for $300 million in AIP funds) disappear shortly after Phase One opens. Indeed, for most of the 20 year economic life used for benefit-cost analysis for Phase One (2007-2028) the delay costs (*i.e.*, number of operations X minutes of delay) under Phase One far exceed those of the existing airport.

The consequence of this deliberate overstating of benefits (*i.e.*, marching the delay savings at 974,000 fixed operations in lockstep to the year 2028) is that Chicago's delay savings benefits are grossly inflated. When FAA's and Chicago's own forecasts of delays and traffic increases are used in the analysis, the so-called "delay savings benefits" are far outweighed by the costs of Phase One. For very dollar of Phase One cost, the delay savings benefits are less than a penny! Given that reality, FAA is prohibited by statute from giving Chicago its requested $300 million AIP grant for Phase One[1].

Commenter: Rep. Henry Hyde (p. 2-3 of July 5, 2005 letter to Ms. Hunzicker and Mr, MacMullen)

FAA Response :

The FAA agrees that the City's methodology of capping operations was improper for determining the benefits of the Master Plan Phase 1.

The FAA notes that the methodology developed in the original BCA to measure the benefits of the proposed project would have been appropriate if aircraft operations remained capped at 974,000 operations. Upon reviewing the methodology, FAA concluded that this assumption was not realistic since the base case and build scenarios both need to reflect realistic operating environments. This means the BCA should include constrained and unconstrained forecasts for the base case and Master Plan Phase –1 scenarios, respectively. In each scenario, the level of operations should be capped at the maximum level of acceptable delay.

FAA also determined that the assumption that operations remained capped also meant that the original BCA did not fully account for consumer benefits attributable to the airport's ability to handle additional operations. Based on discussions with the airport sponsor and its contractor conducting the analysis, the FAA's concerns with the original analysis were recognized by the City. As a result, the City provided the FAA with a supplemental analysis, dated September 27, 2005, that used an alternative approach to measuring benefits for the proposed project. Instead of maintaining a constant operational cap of 974,000, the alternative approach allowed aircraft operations to grow until average annual delays were equal to what was projected under the base case. At that point in time, aircraft operations would be capped. This approach was not only consistent with the approach recommended in the comment, but also with the FAA's BCA guidance. This approach is discussed in Appendix C to the FAA's BCA guidance, Adjustments of Benefits and Costs for Induced Demand, and relies on a standard economic model that examines the "full price" of travel before and after the proposed project and then calculates changes in consumer surplus. The application of this model is entirely appropriate for the proposed project and provides a conservative measure of the economic value generated by Master Plan Phase 1.

It is important to note that the assumptions described above are solely for evaluating Master Plan Phase 1 impacts. Assuming future phases of OMP development occur as planned and as adopted by FAA's Record of Decision, the need to impose an operational cap would not exist since Phase-2 of the modernization program would be completed by 2013. At that point there would be enough capacity to accommodate unconstrained demand.

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FAA Response to DOT Office of Inspector General July 21, 2005 Report

The purpose of this document is to describe the steps undertaken by the FAA in the review of the City of Chicago's (City) Letter of Intent (LOI) Application for Phase 1 of the O'Hare Modernization Program (OMP). The FAA appreciates the OIG's interest in this significant project at O'Hare, one of most important airports in the National Airspace System (NAS). These responses underscore the rigorous steps the FAA has taken to fulfill its statutory responsibilities for reviewing the project and FAA's responsiveness to the OIG's recommendations. The OIG's comments are designated by bullets.

- Consider not only the stability of the financial plan for Phase 1, but also the reasonableness of the overall OMP financial plan, which includes Phase 2.

The FAA reviewed the City's financing plan and found the non-federal funding sources to be satisfactory for the funding of the Phase 1 OMP. However, given the magnitude of the OMP, the large federal investment requested, and in consideration of the OIG recommendations on the OMP, the FAA undertook an extensive review as detailed below.

The FAA hired John F. Brown & Company (Brown) to conduct a comprehensive review of the City's proposed financing plan for the Phase 1 OMP and subsequent project phases, as well as the overall O'Hare Master Plan. This review also contemplated sensitivity analyses that included cost escalation, project delay, and alternative LOI funding, to assess the affordability of the project currently under consideration and the subsequent projects. Brown submitted the results of its analysis in a letter report dated June 27, 2005 (See Attachment A).

Based on its review of the City's financial plan, the Brown Study, FAA's understanding of airport finance, and with the assistance of its contractor, the FAA completed a review of the City's financing plan for OMP Phase 1. We found that even though a projected OMP Phase 1 Cost Per Enplanement (CPE) would place the Airport at the upper end of the middle range for large hub airports as defined by the FAA, Chicago possesses important characteristics that make O'Hare an attractive market for carriers. Specifically, Chicago's strong origin and destination (O&D) traffic base serving the largest population and economic center in the middle of the country, its substantial international traffic, and majority-in-interest (MII) commitments of carriers serving O'Hare, we concluded that the financial plan for OMP Phase 1 is realistic, reasonable, and credible. Accordingly, in considering the financial commitment from non-U.S. government sources, the FAA is satisfied that enough money will be available to pay the costs of OMP Phase 1 that will not be paid by AIP grants.

For a detailed discussion on FAA's financial analysis OMP Phase 1, see Section 3.2.3 and referenced attachments of FAA's "Analysis and Review of the City of Chicago's Application for Letter of Intent AGL 05-01" (LOI Analysis Document).

As of the time of this analysis, the City has not filed a PFC application for funding any project associated with the OMP. However, the FAA expects the City to file applications sequentially as needed for projects in the OMP. FAA's review of the financing plan included a comprehensive analysis of the City's PFC status and funding potential. On that basis, the FAA determined that the City's PFC funding estimates were supportable and realistic.

Since the LOI application before the FAA involves only OMP Phase 1, the FAA is not statutorily required to consider the financial commitment from Non-US sources for the Full OMP and Master Plan. Nevertheless, in light of the OIG's recommendations, the FAA considered the financial viability for the Total OMP and Total Master Plan.

The FAA's financial analysis, including the analysis performed by the FAA's consultant, Brown, considered the costs of the Total OMP and the Total Master Plan. We concluded that projects above and beyond OMP Phase 1, including the Total OMP and Total Master Plan may be expensive but are financially feasible because of certain characteristics of O'Hare and its market. See Section 4.2 of FAA's LOI Analysis Document for a detailed analysis of FAA's conclusions on the City's Total OMP and Total Master Plan financial analysis.

The FAA believes that the City will be able to finance the non-Federal share of the project should the City elect to go forward with the Total OMP or Total Master Plan. Equally important, should the City elect not to go forward, OMP Phase 1 meets all statutory criteria for LOI funding on a stand-alone basis. However, as stated in the LOI Analysis Document, the FAA found the Total Master Plan financially feasible and concluded that the City is likely to implement the entire project.

- FAA must also ensure that the benefits and costs represented for both Phase 1 and Phase 2 are fully disclosed and considered.

The OIG properly notes that FAA is legally obligated to consider the benefit and cost of OMP Phase 1. Under the terms of 49 USC Section 47115(d)(2), which applies to LOI requests under the terms of 49 USC Section 47110(e)(2)(C), the FAA must consider the benefits and costs of the "project" being considered for a grant or LOI. In this case, the only project before us is OMP Phase 1 and therefore a positive Benefit Cost Analysis (BCA) finding for the Total OMP or Total Master Plan is not required to support a decision on the LOI application before us at this time. As discussed in the LOI Analysis Document the FAA has concluded that OMP Phase 1 is cost beneficial on a stand-alone basis, i.e. it will be cost beneficial even if the remainder of the OMP is never constructed. This determination is sufficient to meet the requirements of Section 47115(d)(2).

The following information is a short summary of the supplemental BCA submitted by the City in furtherance of the FAA's consideration of the LOI application. Please see Section 3.0 of the LOI Analysis Document for a more detailed discussion of FAA's considerations, findings and conclusions.

OMP Phase 1

On September 27, 2005, the City submitted a Supplemental BCA for Master Plan Phase 1 development that produced a benefit/cost ratio of 4.6. While the benefits are identical to those reported for OMP Airfield Phase 1, Master Plan Phase 1 includes the relevant set of costs (e.g. costs associated with the Lima-Lima taxiway, the Western Concourse, and the Concourse K extension) necessary for a proper evaluation of the proposed project

The Supplemental BCA methodology and results were reviewed by both FAA's Office of Policy and Plans (APO) and FAA's contractor, GRA, Inc., an aviation firm specializing in strategic advice and financial analysis relating to air transportation. APO determined that the benefits sufficiently exceeded the project costs over a range of parameters. A copy of the memos produced by APO accepting the City's use of the FAA suggested methodology and results are included as Attachment E to the LOI Analysis Document. GRA concluded that the project appeared to show robust benefit-cost ratios over a range of parameter values. A letter accepting the methodology and results by GRA is included as Attachment D to the LOI Analysis Document. Through these two reviews, FAA concluded that the project is cost beneficial.

OMP Phase 2 and Total Master Plan

The City's Supplemental BCA includes data on the benefits and costs of the Total Master Plan. That data shows that the Total Master Plan is also cost beneficial, however, this information was not sufficient for the FAA to make a final decision on whether the Total Master Plan is cost beneficial.

A determination of OMP Phase 2's benefits and costs is not required to issue an LOI for OMP Phase 1. Our review of the City's supplemental analysis indicates that OMP Phase 1 will be cost beneficial on a stand-alone basis. In other words, the Federal investment in OMP Phase 1 would be justified even if OMP Phase 2 and the remainder of the master plan are not constructed. Therefore, a detailed analysis of OMP Phase 2's benefits and costs is not required to support our decision to issue an LOI for OMP Phase 1. Having found that OMP Phase 1 provides significant improvement at one of the nation's most important airports, assuming the City is able to comply with the statutory and regulatory guidance on LOI/AIP funding, and funds remain available when those applications are filed, the FAA can be expected to continue to fund the overall OMP.

- Ensure that the statement of costs is credible and includes escalations for any anticipated schedule delays and rising labor or materials costs.

In consideration of the OIG's encouragement to do more than the FAA customarily does when reviewing an LOI application, the FAA reviewed the City's Total OMP cost estimates that were prepared by the City of Chicago's construction management team. The FAA is satisfied that the BCA cost estimate includes all relevant capital and operational and maintenance cost elements associated with the benefits derived under Master Plan Phase 1. This included all projects covered under Phase 1 as defined in the

Master Plan Study and EIS, including but not limited to the costs of the Western Concourse, Concourse K extension, and Taxiway LL. All relevant costs were included in the BCA regardless of whether the projects were eligible for AIP funding.

For the BCA, the City denominates costs (and benefits) in terms of a "constant dollar" (2001 in this case) in accordance with generally accepted governmental benefit/cost analysis (BCA) principles. The BCA includes cost estimates for Master Plan Phase 1 (approximately $4.0 billion) and OMP Phase 1 (approximately $2.9 billion). The Master Plan included a contingency factor of 13% for OMP listed projects. In addition, the Concourse K extension was included in the World Gateway Program (WGP) project list and World Gateway Program contingency factor was 14%. The FAA determined that the cost contingency established for the OMP, WGP and Capital Improvement Program (CIP) identified in the Master Plan were reasonable, and consistent with FAA's guidance. Please see Section 1.7 of the Final Environmental Impact Statement.

To assist FAA in determining costs reasonableness, FAA hired Crawford, Murphy & Tilly, Inc. (CMT), a nationally recognized airport engineering and planning firm that devotes key resources to detailed cost estimating. CMT was asked to analyze the completeness and comprehensiveness of the OMP and Master Plan work components and then validate the estimated cost data. CMT provided the FAA with the results of their analysis in a report titled, "Analysis of the 2004 O'Hare Master Plan Cost Estimates for the O'Hare Modernization Environmental Impact Statement". This is included in the Supplemental BCA in Appendix B as well.

CMT's analysis reviewed the cost components of the OMP, Master Plan and World Gateway Program. CMT conducted side-by-side comparisons of key construction cost components and comparisons of estimated costs for similar runway and terminal projects at other large airports. Overall, CMT indicated that the City's estimated costs appear to be reasonable and representative. Since all the Master Plan Phase 1 components are included in the analysis, FAA is satisfied that the costs used in the BCA are reasonable and appropriate.

OMP Phase 2 and Total Master Plan

Both costs and benefits for OMP Phase 2 and the Total Master Plan are, at this time, less precise than they will be in the future, when the City is ready to seek Federal funding for OMP Phase 2. Nevertheless, the FAA notes that the City provided an analysis in its Supplemental BCA that included the estimated costs of the Total Master Plan. These costs were deemed reasonable relying on the CMT validation process described above.

- The City estimated that Phase 2 will cost $2.5 billion, but detailed project specifications and cost estimates will not be completed until after 2006, when the City completes the final design of Phase 2. FAA will need to evaluate the risk to cost estimates due to changes in project scope, final engineering changes, labor and material cost increases, and other factors and then will need to disclose their potential effect on the cost of the OMP and ensure the financial plan and the

accompanying schedule are realistic and take into account any risks to cost due to potential schedule slippage.

Based on the OIG's focus on the OMP Phase 2 and the Total Master Plan, the FAA deemed it would be appropriate to address the issue of financial feasibility of the Total Master Plan. As stated before, the FAA hired Brown to conduct a comprehensive review of the City's proposed financing plan for Total OMP and the Total Master Plan. This review also contemplated cost escalations of 15%, project delays up to 1 year, and alternative LOI funding, to assess the affordability of the Total OMP and Total Master Plan. (See Brown Study in Attachment A).

As stated above, the FAA is not required to consider either the financial plan or the benefits and costs for the Total OMP and Total Master Plan at this time. The City's current LOI request is limited to OMP Phase 1, and we have concluded that OMP Phase 1 satisfies all statutory criteria for LOI approval on a stand-alone basis. Therefore an analysis of the Total OMP or Total Master Plan is not necessary to support a decision on the City's current request.

Moreover, as stated before, both costs and benefits for OMP Phase 2 and the Total Master Plan are, at this time, less precise than they will be in the future, when the City is ready to seek Federal funding for OMP Phase 2.

As demonstrated in Sec. 4.2. and Attachment B, Financial Feasibility of FAA's LOI Analysis Document , the FAA finds the Total Master Plan is financially feasible, and it concludes that the City is likely to implement the entire project.

A determination of OMP Phase 2's benefits and costs is not required to issue an LOI for OMP Phase 1. Nevertheless, the FAA notes that the City provided an analysis in its Supplemental BCA that included the estimated costs of the Total Master Plan. These costs were deemed reasonable relying on the CMT validation process described above. That data also shows that the Total Master Plan is cost beneficial, however, this information was not sufficient for the FAA to make a final decision on whether the Total Master Plan is cost beneficial.

Having found OMP Phase 1 provides significant improvement at one of the nation's most important airports, the FAA can be expected to continue to fund the overall OMP, assuming that the City is able to comply with the statutory and regulatory guidance on LOI/AIP funding, and that funds remain available when those applications are filed.

- Ensure the City has adequately disclosed how it plans to cover any funding shortfall from AIP discretionary grants or PFCs, including who will pay what amounts and when and consider the impact of any funding shortfall from AIP discretionary grants or PFCs and the corresponding effect of fee increases on the airlines' cost per enplaned passenger before making the appropriate disclosures.

The FAA appreciates the OIG's concern. However, the City's financial model established that if the FAA participated in $100M discretionary funds ($200M less than requested), the City would finance the difference through General Airport Revenue Bonds (GARBs) debt as needed. In this case, the CPE would only increase $0.23 from $13.19 to $13.42. Additionally, while potential PFC shortfalls are more difficult to predict and less likely to occur since the PFC revenue stream is not subject to annual federal budget decisions. It is important to note that the City's assumption of an increase in PFCs from $4.50 to $6.00 occurs after the completion of Phase 1.

Of the many factors analyzed including the effect of increases in project costs, schedule delays, decreases in LOI amounts, extensions in LOI payment schedules, and no increase in PFC levels above $4.50, the most significant effect on CPE was caused by increases in project costs. Even with a 15 percent increase in the costs of OMP-Phase 1, increasing the CPE in the year 2015 from $13.19 to $14.04, the study concluded that the City would have sufficient non-US government financial resources available for the project. See response to first comment above, for the reasons why the CPE projections discussed would be manageable.

- Exercise due diligence when reviewing the City's request for an LOI to ensure that the sources of funding are sufficient to handle the costs of Phase 1 and Phase 2 projects and that the funds are not otherwise committed or encumbered for other programs in O'Hare's Master Plan; FAA has legal obligations to assure that the project costs not paid for with AIP grants or PFC revenue will in fact be covered by non-Federal funds (such as airport-issued bonds) before approving the LOI for Phase 1.

The FAA is mindful of its important statutory responsibilities when reviewing requests for Letter of Intents and grant applications. As previously discussed above, the FAA is not required to consider the financial plan for the Total OMP and Total Master Plan at this time. The City's current LOI request is limited to OMP Phase 1, and we have concluded that OMP Phase 1 satisfies all statutory criteria for LOI approval on a stand-alone basis. Therefore an analysis of the Total OMP or Total Master Plan is not necessary to support a decision on the City's current request.

Nevertheless, FAA responded to concerns about the Majority In Interest (MII) airline issue in the FEIS Response to Comments on page U.4-568. FAA stated, "as is typical in projects of this scope, magnitude and duration, airport operators seek incremental approval from their majority-in-interest carriers as funding becomes necessary… In addition, the initial majority-in-interest approval by the airlines acknowledged the need to provide subsequent approvals to accomplish the funding of the full OMP and have evidenced their support for OMP in public statements... More recently, both United and American have formally expressed their support both in letters and at public hearings".

Also, we note that the amount of discretionary funds included in the LOI for OMP Phase 1 is $300 million, the amount specified in the MII approval already obtained for OMP

Phase 1 by the City. No further MII approval will be needed for the City to issue revenue bonds to finance its share of the OMP Phase 1 projects included in its LOI request.

- Fully and thoroughly carry out its legal obligation for approving and authorizing PFC and AIP grants.

As stated above, the FAA is mindful of its important legal obligations for approving PFC and AIP grants and as aptly demonstrated in the LOI Analysis Document, the FAA made all statutory determinations and conducted all reviews required to support the issuance of an LOI for OMP Phase 1. Currently, there is no PFC application pending before the FAA for financing construction of OMP Phase 1, and thus no finding is required. Similarly legal requirements to support an AIP or PFC funding decision for the Total OMP or Total Master Plan are not required at this time. No such funding requests are before us and OMP Phase 1 satisfies all statutory criteria for the only funding decision pending before us (the LOI request) on a stand-alone basis.

FAA will carry out its legal obligations for approving and authorizing PFC and AIP grants before approving any additional requests for funding. This includes making all statutory findings, based on a thorough analysis of any PFC or AIP applications.

FAA Responses to October 28, 2005 Karaganis/Cohn Letter
Including Campbell-Hill Response to Chicago's Supplemental BCA

There is no statutory right to comment to a Letter of Intent (LOI) application. Nor is there a statutory obligation to respond to comments submitted with respect to an LOI application. However, due to the interest shown by various commenters in the LOI decision, FAA has compiled the following response.

In a letter dated October 28, 2005, to the FAA concerning the proposed issuance of a Letter of Intent (LOI) for O'Hare Modernization Program (OMP) Phase 1 Airfield, the commenters made several assertions regarding the FAA's conduct, process and law that are wholly incorrect, unsubstantiated, and lacking in merit. The letter enclosed a new 68-page document with exhibits prepared by Campbell-Hill commenting on the City of Chicago's final supplemental Benefit Cost Analysis (BCA) of September 27, 2005. The FAA's responses are arranged to address the principal objections raised by the commenters in its October 28, 2005 letter and the Campbell-Hill October 28, 2005 document.

(1) Process and Statutory Objections
The commenters labor under the misconception that they are party to the FAA decision whether to issue, under an FAA statute, an LOI evidencing the United States' intent to fund OMP Phase 1 Airfield in the future if there is Federal money available. They are not. In considering an LOI for an airport development project the FAA examines, under statutory directive, the LOI project from financial, capacity, and other national funding perspectives. The concerns of the surrounding communities are addressed in the separate but related environmental review process, which in this case culminated in a recent EIS Record of Decision. Unlike the NEPA process, the FAA has no statutory obligation to accept or respond to comments on the LOI funding decision from third parties.

For these reasons statements by the commenters that the FAA has conceded the accuracy or validity of the Campbell-Hill June 6, 2005, analysis by not criticizing or challenging the Campbell-Hill report are without merit. Consultants hired by the commenters do not become party to an LOI funding decision of the United States by filing an unsolicited report. The agency has the discretion to ignore the report, or review it, as it did in this case, but certainly is under no obligation to respond to it. Nevertheless, because of the public interest generated by the OMP the FAA is responding to the comments submitted by the commenters, including those of its consultants, in this and other documents.

The October 28, 2005 submission also alludes several times to "secret" documents and the "secret" writing by the FAA of Chicago's revised Benefit Cost Analysis. Because as explained above, since the commenters and its consultants are not party to the LOI funding decision, they are not entitled to review internal government documents before they are finalized and released. After review of Chicago's initial BCA the FAA suggested alternative methodologies for the City to consider for revising its BCA. The FAA provided guidance to the City to ensure the correct application of the alternative methodologies in a series of exchanges between the agency and the City, which are

available to the public. The City's Supplemental BCA was written by the City and its consultant pursuant to FAA comments.

This process is entirely consistent with the BCA Guidance which clearly indicates that the FAA retains the option to review BCAs, request further documentation or analysis by the sponsor and/or conduct an independent BCA.

The commenters provide two statutory reasons why the LOI for $300 million in future discretionary funds if available cannot be issued. First they argue that FAA cannot find under 49 U.S.C. § 47106(a) (3) that there is enough non-Federal money available to pay the project costs that will not be paid by AIP because a substantial amount of the non-AIP share of project funds are planned to be drawn from Passenger Facility Charge (PFC) funds. As of yet, the City has not submitted an application for the collection and use of PFCs for OMP Phase 1 that is subject to FAA review and approval.

The commenters confuse the issuance of the LOI evidencing the government's intent to fund OMP Phase 1 through future AIP discretionary funds if they are available, with the issuance of individual discretionary grants pursuant to and subsequent to, an issued LOI.

With respect to the availability of non-AIP funds, all that is required for issuance of an LOI is for the FAA to *consider* "the financial commitment from non-United States Government sources to preserve or improve airport capacity." See, 49 U.S.C. § 47110(e) (2) (C); 47115(d) ((1) C). The FAA did so consider this point as explained in the "Analysis and Review of City of Chicago's Application for Letter of Intent AGL 05-01" (LOI Analysis Document) concluding that the City has sufficient non-U.S. government financial resources available for the OMP Phase 1 Airfield project. These resources include future Passenger Facility Charge funds.

The FAA applies section 47106 generally to the LOI to ensure compliance with the basic requirements for individual grants where applicable. After the LOI is issued, individual grants proposed for issuance under the LOI will be subject to the 47106(a)(3) review when they are reviewed. With respect to the decision to issue an LOI, in the LOI Analysis document, the FAA found that it was satisfied that the City has enough money available for the non-federal share of the OMP Phase 1 project pursuant to section 47106(a)(3).

The LOI statute provides that the LOI establishes a schedule, in this case for 15 years, under which FAA will reimburse the airport as AIP amounts become available. The statute does not require that the City have 15 years worth of non federal money on hand before the LOI is issued Such a requirement would make no financial sense, even assuming it could be implemented.

The commenters make a second statutory argument that section 47106 prohibits the award of AIP grants because the City does not have the necessary authority to acquire and relocate St. Johannes Cemetery, or that Chicago will not be able to obtain good title to St. Johannes Cemetery.

Again, the commenters confuse issuance of the LOI with issuance of subsequent individual grants pursuant to an issued LOI. The LOI Analysis Document found that the City had the necessary authority under state law to carry out the OMP Phase-1 Airfield project. Additionally it noted that the City certified in its Master Certification document that it has the legal authority to apply for grants. These findings are sufficient to meet the section 47106(a) (5) legal authority requirement for issuance of the LOI. Thereafter, the City will have to meet the 47106(a) (5) requirement for the individual LOI grants including those that pertain to the cemetery.

Moreover, the state statute permits the taking of the cemeteries. As stated in the FAA's ROD, the FAA declined the invitation of the religious objectors to pass upon the constitutionality of the O'Hare Modernization Act adopted by the State of Illinois. It is not the role of the FAA to make such judicial determinations.

It is important to note that the DC Court of Appeals recognized (although in a different context) that it would be unreasonable to require airport authorities to expend large sums of money to acquire tracts of land before a project was even partially approved. [See ATA v. FAA, 169 F3d 1, 5 (D.C. Cir. 1999)].

The LOI Analysis Document found that the City holds good title to takeoff, landing, and surface movement areas or that good title will be acquired. This finding is sufficient for the issuance of the LOI. Future individual grants will be subject to the same requirement.

(2) LOI Objections based on Use of EIS

The commenters included some objections asserting that the FAA cannot rely on the EIS issued in July 2005 to support the issuance of the LOI or discretionary grants. The commenters are incorrect.

The FAA's Record of Decision for O'Hare Modernization specifically provides for eligibility for Federal grant-in-aid funds and/or PFCs. The ROD contains FAA's environmental and other approvals, based upon the Final EIS, for the agency to authorize the sponsor to proceed with the project. The ROD also satisfies FAA's NEPA obligation for granting federal funds by approving a project's eligibility for funding under the Airport Improvement Project. Thus, while an approved ALP is a condition-precedent to awarding federal grant funds, the actual approval of an application for funding is an entirely separate process. There is no legal obligation that they be merged into one.

The FAA directed the City to include a series of sensitivity analyses including evaluating the impact of traffic growing faster than expected. As part of that exercise, the FAA asked the City to consider the FAA's 2004 Terminal Area Forecast, which is the most recent forecast released by the FAA. The commenters incorrectly states that "...the Total OMP Master Plan airfield and the surrounding communities will be subjected to much high levels of traffic with much different environmental impacts and delay performance of the in the 2020-2032 time period..." As with the analysis performed by the City for the

Phase I BCA, the FAA directed the City to constrain the number of operations for the Phase I airfield when delays would reach the levels in the 15 to 20 minutes of average annual delay. The number of operations was constrained at just over 1,150,000 annual operations for 2013 through 2028. This total is less than was evaluated in the 2018 timeframe for the EIS. In addition, it is the FAA's belief that the City would continue construction of the full OMP upon completion of Phase I and would have the entire project completed prior to the need to re-instate any type of operational cap.

The EIS and LOI application are two separate processes being conducted by the FAA. The FAA evaluated, as part of the EIS process, the entire project (OMP, World Gateway Program, and Capital Improvement Program). It is the FAA's understanding that the City plans on pursuing development of the entire project, and as such, it was appropriate for the FAA to evaluate all components of the planned development. For the LOI Application, the City has submitted a request for funding for Phase I of the project. Title 49 USC section 47106(a) (3) does not, as argued by the commenters, require the FAA to evaluate the entire project cost of the Total OMP Master Plan for the LOI application. Section 47110(e) provides for the issuance of an LOI for an airport development project applied for, and defined, by the applicant. As explained above, the Secretary must be satisfied that the City has enough money available for the non-Federal share of the OMP Phase 1 project defined in the LOI application.

The City utilized the delay curves developed during the EIS process. For future airfield alternatives and operating configurations, existing procedures in use today were utilized. Future operating configuration utilization is based on an analysis of 10-years of historical weather information. However, the FAA disagrees with the commenters' assertion that delays have been overstated in the base case. The FAA constrained all future No Action scenarios based on guidance provided in the FAA's BCA Guidance document to average annual delays between 15 and 20 minutes. All future No Action scenarios have average annual delays between 15.9 and 17.2 minutes of delay.

The commenters object to a base case that does not incorporate the effects to August 2004, Scheduling Order. The imposition of the 2004 Scheduling Order represents, as stated in that Order, an interim solution to a long term problem of delay. As a temporary situation, it would have been inappropriate to rely on such an artificially constrained environment as a base case.

FAA acknowledges that the 2003 TAF was issued in February 2004, about one year before the DEIS was issued in January 2005. However, the work necessary to produce a DEIS that was issued in January 2005 was initiated before the 2003 TAF was available. Analytical work on airline flight schedules and other derivative forecasts required to complete the complex technical analyses reported in the DEIS were initiated in early 2003, and continued through the end of 2004. FAA determined that "re-starting" such analyses after publication of the 2003 TAF, which occurred in the middle of such detailed technical analyses, would significantly delay the completion of such analyses and resulting DEIS. For a project of OMP's magnitude and complexity, the comprehensive analyses required by the FAA necessitated more than one year of analysis. FAA

determined that it would be appropriate to conduct sensitivity analyses of any new forecasts produced during the course of the EIS analysis. This is fully explained in the Final EIS (including the letter from FAA approving the use of the 2002 TAF and the requirement to conduct sensitivity analysis on subsequent TAF results), and the sensitivity analysis is documented in Appendix R of the Final EIS.

FAA has addressed the significance of potential new forecasts – including both the 2003 TAF and the 2004 TAF – in Appendix R of the Final EIS. FAA has acknowledged that future conditions may be different from those represented by the 2002 TAF, and this is the reason for including Appendix R in the Final EIS.

(3) Total Master Plan BCA Issues

The City's Supplemental BCA includes some data on the benefits and costs of the full master plan (which is more extensive and includes the Phase 2 OMP). That data shows that the full master plan is cost beneficial. However, at this stage of the project this information remains incomplete, thereby precluding the FAA from making a final decision on whether the City's claim that OMP Phase 2 is cost beneficial.

A determination of OMP Phase 2's benefits and costs is not required to issue an LOI for OMP Phase 1. Our review of the City's Supplemental Analysis indicates that OMP Phase 1 will be cost beneficial on a stand-alone basis. In other words, the Federal investment in OMP Phase 1 would be justified even if OMP Phase 2 and the remainder of the master plan are not constructed. Therefore, a detailed analysis of OMP Phase 2's benefits and costs is not required to support our decision to issue an LOI for OMP Phase 1. Having found OMP Phase 1 provides significant improvement at one of the nation's most important airports, assuming the City is able to comply with the statutory and regulatory guidance on LOI/AIP funding, and funds remain available when those applications are filed, the FAA can be expected to continue to fund the overall OMP.

(4) Delay and Travel Time Benefits Objections

The City of Chicago utilized Total Airspace & Airport Modeller (TAAM) results as the basis for their qualitative information on the performance of the Do-Nothing versus the With Project Phase I O'Hare Modernization Program (OMP) case. The same modeling that was used for the Environmental Impact Statement was also used in development of the BCA. The purpose of the following sections is to illustrate how the TAAM modeling was used in this analysis including the development of the design day flight schedules, the use of delay curves, the calculation of delay savings and commensurate increase in total operations and passengers and concluding that the City of Chicago properly applied the results in their BCA.

Development of Design Day Flight Schedules

The FAA developed the design day flight schedules that were used in the TAAM analysis. The FAA used standard industry practices in the development of these flight

schedules. For the base year (2002) the FAA utilized information publicly available from BACK Aviation Solutions. This information included the airline, fleet mix, scheduled time of arrival and departure, and origin and destination information for each flight.

In developing the future flight schedules (for both the No-Action and With Project Phase I Scenario) the FAA also applied standard industry practices. The FAA evaluated, on an airline-by-airline basis, current trends in fleet orders and origin and destination cities served.

From this available information, the FAA applied professional judgment to the types of aircraft each airline would be serving O'Hare with, the times of operations and the likely city pairs that each flight pair would serve.

Specifically, the FAA used the following assumptions in developing the unconstrained flight schedules:

- Each category of activity was forecast to increase in accordance with the peak-month average day operations levels.
- Aircraft fleet orders were reviewed to determine the anticipated evolution of the fleet to newer-generation aircraft.
- Overall market growth implied by the FAA Terminal Area Forecast was applied to individual markets in order to determine likely increases in service frequency and up-gauging of aircraft size on specific routes.
- It was assumed that there would be no significant change in the overall time-of-day profile of flight scheduling in relation to the data compiled for 2003.

Changes in fleet mix and origin/destination cities are a normal industry accepted practice in developing design day flight schedules. This practice appropriately accounts for changes in airline practices as they are best known today. It is also appropriate to utilize total trip time as that includes all travel time from the origin airport to O'Hare and from O'Hare to the destination airport.

The Do-Nothing alternative assumes no airspace modifications. However, the With Project Phase I analysis includes airspace modifications required to support the airfield modifications. The use of total travel time (delay and unimpeded travel) appropriately captures all of the relevant portions of the trip including additional time that it takes to traverse airspace modifications and airfield modifications.

Development of Delay Curves

From this analysis delay curves were developed. Specifically, the FAA (in the EIS process) developed delay curves for the first phase of the OMP project (Phase 1A) which

adds the new north Runway 9L/27R. FAA also developed a second delay curve for the entire first phase of the OMP project (Phase 1) which includes new Runway 9L/27R, new Runway 10C/28C and extended Runway 10L/28R (existing Runway 9R/27L).

Results from these delay curves were utilized in calculating the level of activity that could be accommodated in terms of total annual operations.

Reductions in Delay/Increases in Travel Time

With Phase I of the OMP implemented, there are significant delay savings. With these delay savings there is also an increase in travel times as the proposed runways are located further from the main terminal core. However, based on the TAAM analyses, the increase in travel times is outweighed by the reduction in average annual delays. At the unconstrained 2009 forecast activity (1,057,200 annual operations) level the With Project Phase I OMP has an average annual delay of 10.3 minutes per operation. At the constrained 2009 forecast activity level (974,000 annual operations) the No Action airfield has an average annual delay of 15.9 minutes per operation. This is a reduction of 5.6 minutes of average annual delay with a commensurate increase of 83,200 annual operations and 2,863,000 total passengers.

However, with the runways located further from the main terminal core, there is an increase in travel time. With the first runway commissioned, there is an increase of 1.0 minutes of average annual travel time per operation. By the end of Phase I (when both runways and the runway extension are commissioned) there is an annual average increase of 2.3 minutes of travel time per operation. With an average delay reduction of 5.6 minutes per operation and an average increase of 2.3 minutes per operation, the overall net benefit remains 3.3 minutes per operation.

Delays in Phase I Were Allowed to Grow to Levels Equivalent to No Action Airfield

The FAA recognizes that acceptable delays do have an upper limit. In Section 5.7 *Need for New or Adjusted Assumptions*, the FAA's BCA Guidance states that, "...approximately 20 minutes represents the highest level of average delay realized in actual practice, even at highly congested airports." During the TAAM modeling the FAA constrained the forecast for the No Action which resulted in 974,000 annual operations at an average annual delay ranging between 16 and 17 minutes.

For the With Project Phase I airfield, the delays were also allowed to grow to similar levels as the No Action airfield. This was accomplished through a delay curve analyses of the Phase I airfield using the data points of 2007, 2009 and 2013 unconstrained forecast levels. The results of this analysis indicate that delays would reach approximately the same levels of the No Action airfield in the year 2016 accommodating 1,150,000 total annual operations. It is important to note that this is a theoretical analysis in that it is the FAA's belief that the City will continue immediately with Phase 2 of the OMP project upon completion of Phase 1. This continued construction will result in

Phase 2 being fully implemented and functional before the need to recap the flight operations in 2016.

Increases in Passengers and Operations between No Action and With Project

Equally important is the fact that the reduction in overall delays is concurrent with a forecast increase in total annual operations and total passengers. The No Action airfield, for all practical purposes, is at capacity. Based on the current procedures and forecast fleet mix the airfield can accommodate approximately 974,000 annual operations with between 16 and 17 minutes of average annual delay. From a passenger standpoint, it is believed that the airlines would adjust their fleet mix serving the airport in future years to continue to serve more passengers without an increase in operations. During the EIS planning horizon, total passengers are forecast to increase from 67,267,460 in 2004 up to 89,945,000 in 2018 for the No Action alternative. For the Phase I alternative, passengers would increase from 67,267,460 in 2004 up to 98,124,000 in 2018. Completion of Phase I would allow an additional 8,179,000 annual passengers to pass through O'Hare.

As demonstrated above, the FAA developed design day flight schedules according to standard industry practices and the City of Chicago correctly applied the delay and travel time analysis in the BCA. Furthermore, the BCA analysis correctly included both the delay benefits of the Phase I project and the increase in travel times associated with the aircraft utilizing the additional runways and their increased travel distance between the runway and the main terminal core area.

(5) Final Supplemental BCA Methodology Objections

See FAA's responses titled, "Response To Robert Haveman Affidavit dated 11/8/05 And To Some Further Comments By Campbell-Hill dated 10/28/05."

Response To Robert Haveman Affidavit dated 11/8/05 And To Some Further Comments By Campbell-Hill dated 10/28/05

The Campbell-Hill comments dated October 28, 2005 and the Affidavit submitted by Robert Haveman dated November 8, 2005 suggests that there are a number of deficiencies associated with the methodology that the airport sponsor used to measure the benefits of Phase-1 of the O'Hare Modernization Program (OMP Phase-1). The FAA has reviewed the comments in its evaluation of the airport Sponsor's Supplemental Benefit-Cost Analysis dated September 27, 2005, and notes that the commenters have a fundamental misunderstanding of the techniques that were used to measure benefits, the models used in the analysis, and the process and the techniques used by the Federal Aviation Administration (FAA) to review Benefit-Cost Analyses (BCA) in FAA's Airport Improvement Program.

In general, the FAA Airport Benefit-Cost Guidance (FAA's BCA Guidance) provides clear direction to airport sponsors for capacity-related airport projects in which the benefits can primarily be quantified in terms of delay savings. However, when questions arise the FAA is always available to provide guidance related to FAA policy Orders and/or guidance. The FAA makes itself available to meet with any airport sponsor as needed, on any topic, including those related to BCAs. These meetings are used to provide the sponsor with fair and unbiased guidance. Therefore, the FAA seriously disagrees with this commenter's assertion that these meetings are inappropriate, or that outside parties have the right to attend.

Based on FAA's "own" independent review of the original draft BCA dated February 2005, the FAA determined that the delay savings model used in the analysis was inadequate and was based on a number of faulty assumptions. Instead, given the nature of OMP Phase-1, the FAA suggested that the airport sponsor might want to consider using a consumer surplus model for measuring benefits of the proposed project. Because FAA's BCA Guidance only briefly covers the use of consumer surplus and does so for the express purpose of adjusting delay-base benefits, FAA's Office of Airports contracted with GRA, a well-known and respected aviation consulting firm, to draft additional guidance in how an airport sponsor could use this approach for measuring project benefits. The FAA's Office of Aviation Policy and Plans reviewed the additional guidance and agreed that it was consistent with FAA's BCA Guidance document. At the same time, FAA noted that if the airport sponsor used a consumer surplus approach to measure benefits, they would need to conduct a number of sensitivity tests to validate the model's results.

Based on a fundamental misunderstanding of the techniques that were used to measure benefits and how the FAA's TAAM simulation results were used as well as how the FAA developed the 2002 Terminal Area Forecast, which serves as the basis for the analysis, the commenter's mistakenly identified the following areas of deficiency: 1) estimating benefits; 2) travel time savings; 3) how the air traffic forecast was conducted; and 4) concerns with the sensitivity analysis.

Each of these comments are without merit and is discussed below. [1]

[1] The FAA contracted with GRA, Inc. an economic consulting firm specializing in transportation, to assist the FAA in preparing these responses.

1) ESTIMATING BENEFITS

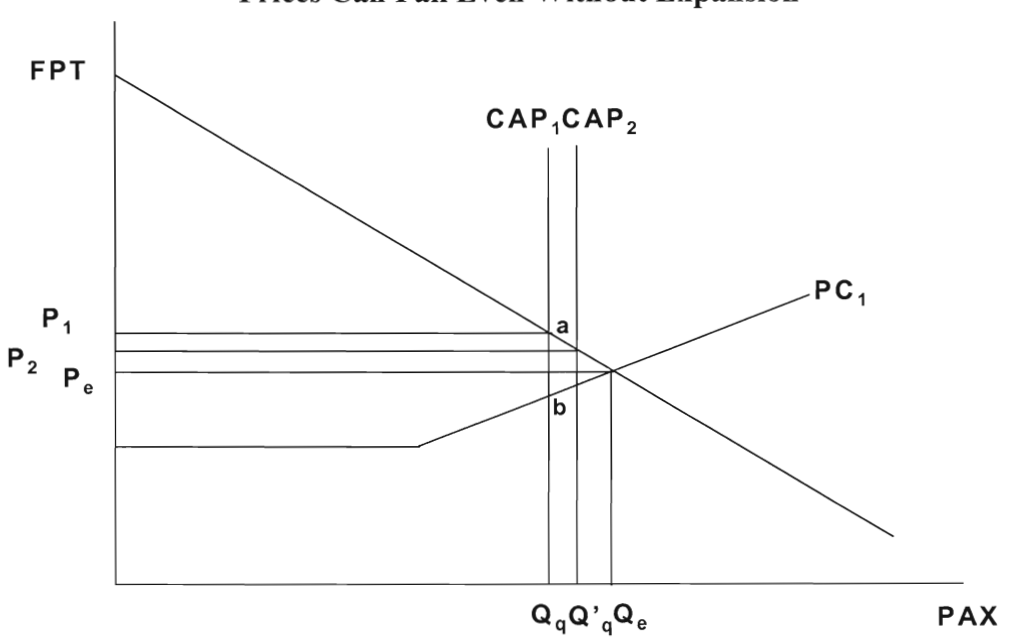
Costs Do Not Need to Fall in Order for Prices to Fall

In several places, both Haveman and Campbell-Hill state categorically that money prices cannot fall unless there are reductions in costs. This reveals a misunderstanding of the nature of the slot rule and its role as a quota.

Referring to Exhibit 1, the current slot constraint (or cap) at O'Hare behaves like a quota on the market. An effective quota limits the quantity available in the market to some value less than Q_e, the equilibrium quantity (i.e., the quantity that would occur where the private supply or the private industry marginal cost curve and the market demand curve intersect). The quota-constrained quantity is labeled as Q_q in Exhibit 1. The price in a quota-constrained market is determined by the marginal buyer's willingness-to-pay at Q_q (i.e., the demand price at Q_q). Since Q_q is less than Q_e, the demand price at Q_q is greater than the private supply price at Q_q. This difference between the demand and supply price is referred to as a "wedge." The wedge is a measure of the per unit economic rent earned by the marginal seller at Q_q. The presence of economic rent implies that sellers in the market would be willing to supply the same quantity at a lower price.

Prices at a slot-constrained airport can fall even if there were no expansion. Suppose the quota is relaxed by the FAA (as it has been periodically over time). Price will fall because the demand price of the marginal buyer falls. No decline in seller costs is required, since at the original Q_q, sellers would have been willing to produce at a lower price. Indeed, further relaxations of the quota will continue to cause price to fall without cost reductions as long as $Q_e > Q_q$ (i.e., as long as the constraint is effective). This is true in both the short run and the long run.

Exhibit 1
Prices Can Fall Even Without Expansion



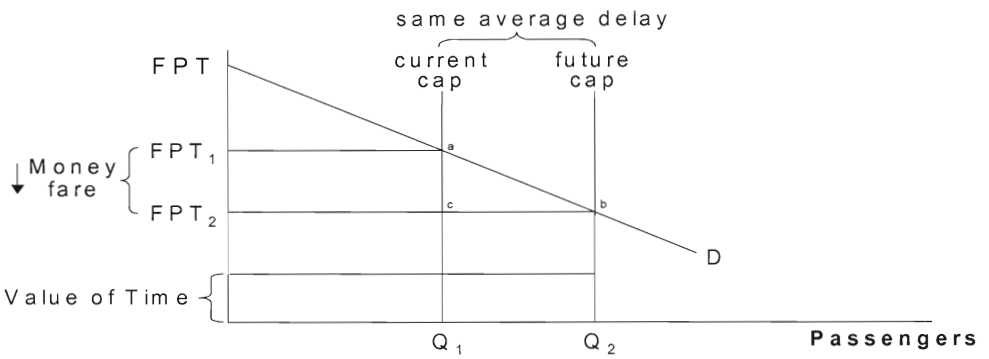
Q_e = airlines willing to produce up to this level
Price falls from P_1 to P_2 with higher cap without reduction in costs

Why Carriers Signing Off on the Project Means There Is No Transfer from Producers to Consumers

Haveman questions whether the benefits counted in the BCA are net of transfers. He explicitly questions whether it is appropriate to count the rectangle FPT_1 FPT_2 a b in Exhibit 2 (reprinted from the BCA) as a net benefit of the program and alleges that this rectangle is actually a transfer from producers to consumers.

Exhibit 2

When Delay is Equal in Base Case and Scenario Cases



Below we provide a more detailed explanation of the intricacies of the net benefits measure. In this section, we provide a brief synopsis of why airlines at O'HARE with Majority in Interest Rights were rational to approve the OMP Phase-1 project. Their approval means that at a minimum they are no worse off than in the base case. As was stated in footnote 1 of the GRA paper: "To the extent there is producer surplus in the base case, carriers would seek to preserve it in the scenario case and would not support the expansion unless this were the case. Our assumption is that because the carriers have supported an expansion, they will preserve any such producer surplus. Thus, the consumer benefit area FPT_1 a b FPT_2 represents a net increase in social surplus."

Haveman's critique misses three essential points:

- The slot rule at O'Hare is a quota that reduces operations below levels that the carriers desire to provide. Since carriers would willingly supply more flights than FAA currently allows, carrier private costs must be below both the full price of travel and the money fare; thus the carriers earn surplus and would seek to preserve it; said another way, they would only support expansion if they thought they could at least pay for it and preserve their surplus. Almost surely they would expect to grow their surplus.

- Airlines are in a network business; expansion can provide important opportunities to realize economies of scope and density; we expand on this point below.

- Increases in slots via the expansion means that existing ground facilities and personnel as well as aircraft and crews can be more intensively utilized; this can have a large impact on unit costs. This is also discussed below.

Preserving Producer Surplus

Central to the BCA analysis is the presumption that airlines are rational actors. At Chicago, airlines have majority in interest rights with regard to major capital expenditures. In the case of OMP Phase-1, the carriers support the program.

One important question is how big a commitment does this represent to the carriers? Rough estimates suggest that the carriers' financial commitment to the OMP Phase-1 projects is approximately 2 percent of airline fare revenues generated at O'Hare in 2005.[2] Moreover, it is projected that the expansion program will result in an 18 percent increase in operations.[3] The decision made by the airlines therefore appears to be relatively straightforward. They can increase the number of operations at the airport by 18 percent in exchange for committing 2 percent of current revenues. Since relaxing the quota by 18 percent is likely to result in more than a 2 percent increase in net revenues for the carriers, we can assume that they will be better off as a result of the expansion. In other words, they should be able to at least maintain their current surplus or grow with expansion. This is the only assumption required to calculate benefits using the methodology in the benefit-cost analysis.

Why Carriers Can Expect to Become More Competitive as a Result of the Expansion

O'HARE is the site for two major airline hubs. The slot rule restricts the size of those hubs by reducing operations to levels lower than the carriers themselves would select. Over time, operating an undersized hub is a disadvantage especially if competing airlines are able to grow.

It is well established in the economics literature that hub carriers enjoy the benefits of economies of scope and density.[4] By relaxing the quota at O'Hare, hub carriers (including both the two hubbing airlines at O'Hare and other hub operators that operate to O'Hare) will potentially realize both types of economies. With increased numbers of operations at the airport, carriers can add service to new points. Because there are hubs at O'Hare (and at other airports) the addition of one point can effectively add service to hundreds of origin-destination markets. As a result, a carrier's shares in many markets may increase as a result of adding service to only one. This is termed economies of scope. As a result, the carriers at O'Hare can expect to increase the

[2] This assumes that the carriers are responsible for debt service associated with $1.9 billion of GARBs for 30 years @ a 6% interest rate and that total airline fare revenues attributable to O'Hare are about $8 billion in 2005.

[3] 1,150,000 versus 974,000 operations per year.

[4] See for example: S. Berry et al: "Airline Hubs: Costs, Markups and the Implications of Customer Heterogeneity" NBER Working Paper No. 5561 (May 1996); L. basso and SR Jara-Diaz: "Calculation of Economies of Spatial Scope from Transport Cost Functions with Aggregate Output with an Application to the Airline Industry" Journal of Transport Economics and Policy (January 2005)..

number of passengers they will carry because they will have added service to new points when the quota is increased through expansion.

With additional slots available, hubbing carriers can also add frequency in existing markets. There is substantial economic literature that suggests that the returns to added frequency far outweigh the returns to adding seats. Haveman makes the point that carriers can grow their operations at O'Hare merely by up-gauging. But the economic literature suggests that the returns to up-gauging are far less attractive than the returns to adding frequency.[5] Thus, carriers at O'Hare would be rational to want expansion at the airport so that they can increase frequency and thereby increase their market shares, thus adding more passengers to their operations at O'Hare.

Both economies of scope and the returns to added frequency will, in turn, allow the carriers to realize economies of density. This means that on major routings the carriers will be able to spread route-specific fixed costs of flying across a larger base of passengers, resulting in lower costs per passenger served.

Adding frequency, and realizing economies of scope and density are particularly important for the two large carriers at O'Hare because their hubs are undersized. Their competitors are adding capacity at their major hubs (e.g., Atlanta) while other carriers are reducing capacity (e.g., Pittsburgh and Cincinnati). In order to gain shares and compete, the O'HARE hubs will have to grow. By growing, it is likely that revenues will increase significantly and that through economies of density, unit costs per passenger will be lower.

More Intensive Use of Assets

Adding operations through the expansion will also allow carriers (of all types) to increase their utilization of existing assets. For example, if a carrier is able to increase its operations, it can increase the number of turns at its gates. As a result, expensive ground assets (gates, hold rooms, baggage makeup rooms, ramp and other facilities) will be used more intensively. The cost per passenger will, as a result, decline since the marginal cost of adding another passenger is relatively low.

In addition, American Airlines has already adopted a "continuous hubbing" process at O'Hare. This means that they turn their aircraft at O'Hare as quickly as possible, instead of waiting for all feasible connections at a hub bank. As a consequence, the carrier has increased its utilization of aircraft and crews. A potential downside of continuous hubbing, however, is that the carrier may "break" some connection opportunities (and hence lose some economies of scope). To remedy this situation, the carrier could add frequency (as noted above) and thus recapture some lost passengers while still realizing considerable cost savings from continuous hubbing. Thus, for at least one carrier, added frequency will mean being able to expand its continuous hubbing

[5] See Wei and Hansen "Impact of Aircraft Size and Seat Availability on Airlines Demand and Market Share in Duopoly Markets," (July, 2003) , initial submittal for review to TRB 2004 annual meeting.

operation (thus lowering its costs[6]) while adding frequency (thus increasing its revenues). Other carriers may find it advantageous to implement continuous hubbing as a result of the expansion.

Finally, it should be noted that in the period from 2007 to 2015 when the expansion program has been completed but a new cap has not yet been put in place, all carriers will realize significant delay savings. These are direct reductions in unit costs that are available in no other way.

For all of the foregoing reasons, it seems perfectly rational for the carriers to have supported the OMP Phase-1 program and to expect that their producer surplus would be at least as large as it is in the base case. In all likelihood, carriers should be significantly better off with OMP Phase-1 than without it, meaning that their producer surplus would, in fact, be larger with expansion.

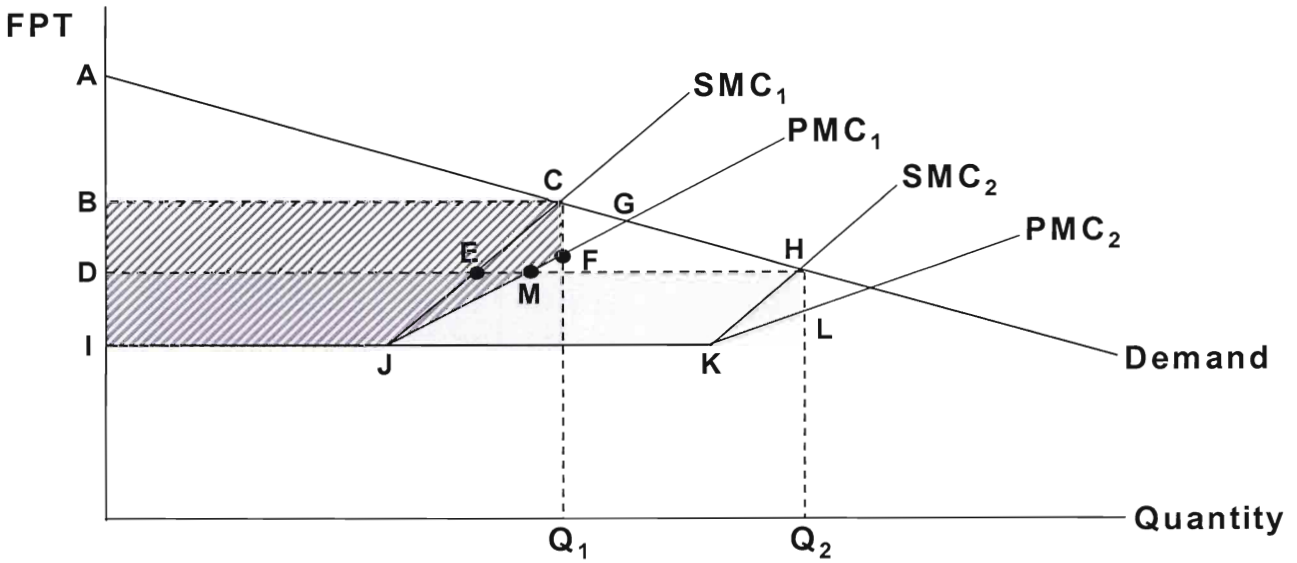
Explanation of the Net Gain in Social Surplus

This section provides a technical discussion of the method for estimating benefits used in the BCA and why it is appropriate.

The FPT demand curve is shown in Exhibit 3. Also shown here are the supply curves representing the amount of air transportation that airlines are willing to offer at any given price. For purposes of this discussion, it is assumed that unit costs are constant until output approaches the capacity of the airport, at which point unit costs begin to increase (reflected by the upward slope of the supply curve). As operations expand beyond the nominal capacity of the airport, delays occur and cause the cost of production to increase. Because carriers do not consider the delay costs that their own operations impose on others, a wedge develops between private and social marginal costs. For the Base Case (no project), these curves are shown as PMC_1 and SMC_1. Assuming that the FAA restricts output to the socially optimal point C, the associated full price of travel is B and the quantity produced is Q_1.[7] Consumer surplus is given by the area ABC, while producers earn a private surplus equal to the striped area BCFJI.[8]

[6] American reports that continuous hubbing at DFW and O'HARE saves it about $100 million per year and has resulted in a reduction in four gates and five percent of manpower (through more intensive use of remaining gates) at O'HARE. See: ***Aviation Week and Space Technology*** (February 17, 2003: page 53).
[7] Because the demand curve includes delay costs experienced by passengers, producers will receive only a portion of the full price B as money fare revenue.
[8] Although this exposition assumes that the cost curve is flat until delays begin to affect costs, the conclusion does not depend on this assumption. It may even be the case that the horizontal portion of the cost curve shifts *up* due to the investment project (due to, say, increased PFC charges and landing fees) – even that assumption does not affect the conclusion. The only key assumption, as described both above and below, is that carriers expect to earn a greater return with the project than without it.

Exhibit 3
Estimating Net Benefits at O'HARE



After the expansion project, the airport can handle a higher level of activity without delays. This is shown in the Exhibit by extending the horizontal portion of the supply curve out to point K. After this point, both social and private marginal costs again begin to rise, shown as SMC_2 and PMC_2. Again assuming that the FAA restricts output to the socially optimal point H, the new full price of travel is D and the quantity produced is Q_2. Consumer surplus is now given by the area ADH, while producers earn a private surplus equal to the solid-shaded area DHLKI.

From a social point of view, the net change in surplus is given by the trapezoid CJKH, and this is the appropriate measure of the net social benefits of the project. In the BCA, the gain in net social surplus was instead measured by BCHD. For discussion purposes, this latter area can be divided into two parts – BCFMD and the non-shaded area CFMH.

Because air carriers at the airport strongly support the project, they must believe that they will be better off with the project than without it. This in turn implies that the their private producer surplus (shaded area DHLKI) is at least as large as the striped area BCFJI. Since DMJI is common to both producer surplus areas, it must be the case that the remaining portion of the solid-shaded area (MHLKJ) is at least as large as the remaining portion of the striped area (BCFMD). But BCFMD is precisely the area that, along with the non-shaded area CFMH, was measured in the BCA. This means that the BCA in effect measured a lower bound to the area MHLKJ plus the non-shaded area. In other words the BCA measured a lower bound to the entire area bounded by CFJKLH. The only difference between this measurement and the theoretically correct social surplus trapezoid given by CJKH is the inclusion of the wedge HKL and the exclusion of the wedge CJF. These areas will approximately offset (in fact, the excluded area CJF is likely to be greater than the included area HKL) unless the relationship between private and social marginal costs is significantly different between the Base and the Expansion Case. There is no reason to believe this to be the case, so it is reasonable to conclude that the surplus

area BCHD that was measured in the BCA is in fact a very good lower-bound approximation to the true change in social surplus given by CJKH.

Why Benefits Are Likely To Be Underestimated In The BCA

One of the consequences of adding slots at O'Hare is that it will make it possible for new carriers to enter and/or for existing carriers to expand. For example, it may be possible for one or more low cost carriers to enter at O'Hare because there would be sufficient numbers of slots available with expansion to assemble a viable operation. This may be particularly important in Chicago because virtually all the gates at the other airport in the city (Midway) are dominated by two code sharing partners—Southwest and ATA. While these two carriers offer low cost service, some low cost operators have been unable to assemble a full pattern of service to the city. With additional low cost carrier entry, one would expect that both costs per passenger and fares at O'Hare would decline with expansion.

2) TRAVEL TIME SAVINGS CALCULATIONS

Haveman and Campbell-Hill both question the time saving calculations in the expansion case and assert that reductions in total travel time credited to the expansion project are due solely to flying shorter average trips. They suggest that it would be appropriate to equalize the block times in the base and expansion cases for the purposes of analysis.

This suggestion is without merit. The process for developing a schedule for the expansion case was based upon the opportunities available to the carriers and on the carriers' fleet plans. This is a standard industry practice. The forecast suggested that there would be an increase in short haul flying, as the hubbing operators at O'Hare filled in their hub complexes to realize the economies of scope and density suggested above. The fact that average block times in the expansion case declined relative to the base case are merely a reflection of the change in opportunities made possible by the expansion. It has nothing to do with attempting to change the outcome of the benefit-cost study. In fact, the projected schedules were developed for the purpose of TAAM modeling, and not specifically for the BCA. Instead, the BCA was an independent assessment of benefits and costs estimated in other analytic steps.

Campbell-Hill also note that the trip times are assumed to continue to increase under the base case (no build) after the point in time when operations are constrained, in contrast to the expansion case where the travel times stop increasing when operations are constrained.

The time savings in question under the scenario case (depending on the year) amount to no more than three percent of total travel time, so the impact on overall benefits would be small in any event. Moreover, the relevant measure of benefits that is used in the BCA is based on the full price of travel, so one is simply trading off travel time for money fare. If a higher average travel time were used in the scenario case, for example, this would simply imply a somewhat lower average money fare; there would be no change in the net benefits calculations.

3) FORECASTS DO ACCOUNT FOR REAL DECLINE IN YIELDS

Haveman alleges that the BCA forecast does not account for the decline in money fare and therefore underestimates demand. But, the BCA forecast is based on the 2002 unconstrained TAF forecast that did explicitly account for real declines in yield. With expansion, the unconstrained TAF forecast is used to forecast passenger demand at O'HARE until the cap is reinstated. Thereafter demand is constrained just as it is in the base (no build) case.

4) CONCERNS WITH THE SENSITIVITY ANALYSIS

The affidavit suggests that the sensitivity tests that were presented in the Supplemental BCA are invalid given the fact that the affidavit suggests (incorrectly) that the benefits were miscalculated.

However, this argument is specious. As noted in previous discussions, the fundamental premise is incorrect. The affidavit incorrectly described the method in which the benefits were measured. The role of sensitivity analysis is to acknowledge the underlying uncertainty associated with the assumptions implicit in the BCA. Sensitivity analysis should, ideally, convey how sensitive predicted benefit costs ratios are to changes in the model's assumptions. The FAA's BCA Guidance encourages the airport sponsor to conduct such sensitivity tests. In the BCA, the airport sponsor reported over 500 sensitivity results for Master Plan Phase-1. The airport sponsor used a multivariate sensitivity analysis to examine how changes in the benefit-cost ratio were affected by simultaneously changing parameters values. These sensitivity test results are reported in tables A-11 through A-16 of the Supplemental BCA. These tables illustrate the combination of parameter values that results in benefit-cost ratios that are above or below one. Based on a review of these results, the FAA determined that the reported benefits of the proposed project exceeded the projected costs over a reasonable range of parameter values.

ANSWERS TO SPECIFIC QUESTIONS

The Haveman and Campbell-Hill documents contained several statements concerning the BCA that can be shown to be false, based upon the foregoing discussion.

> **"In Any Forecast Year That Does Not Experience Time Savings, There Can Be No Consumer Benefits."**

In our earlier discussion, we demonstrated that consumers could benefit from reduced prices even if there were no expansion. The essential feature of O'Hare is that it is slot constrained and carriers would be willing to provide more service if the slot quota were lifted. So long as this is the case, with more output, the full price of travel will have to fall and consumers will benefit.

> **"Price Reductions Will Occur Only If There Are Cost Reductions."**

As discussed immediately above, this is clearly false. Any time there is a quota imposed on the market and producers are willing to produce more than the quota amount, there is a potential for

prices to fall even if there is no reduction in cost. Haveman and Campbell-Hill have missed a fundamental characteristic of the O'Hare market by misunderstanding how prices are affected both with and without expansion.

"The FAA Must Judge the Wisdom and Financial Viability of the Entire Plan and Not Simply An Incremental Stand-Alone Piece of It (OMP Phase-1)."

This comment misses entirely the option value of phased capital investments. The BCA demonstrates that the OMP Phase-1 is cost beneficial on a stand-alone basis. While there is an intention to fully build out the total program, the fact that the OMP Phase-1 phase is stand-alone beneficial means essentially that the city has an option to discontinue expansion while still realizing net benefits. This is of significant value in an uncertain world.

"There Is No Constraint on Seat Capacity at O'Hare and Therefore Passenger Volumes Can Increase Significantly (in the Absence of OMP Phase-1) if the Airlines Merely Schedule Larger Planes."

While it is true that carriers can up-gauge in response to increased demand, our earlier discussion of the economics literature clearly finds that increases in frequency have substantially larger returns than up-gauging. Carrier behavior confirms this. Throughout the history of deregulation, average aircraft size has continued to fall as carriers find it more advantageous to increase frequency rather than up-gauge. The expansion program provides opportunities for carriers to increase frequency at O'Hare and thereby realize substantial benefits. Consumers also benefit from increased frequency because it is more likely that airline schedules will more closely align with personal schedules.[9]

"The City Did Not Develop the O'Hare-Specific Data Required to Calibrate or Exercise the Model."

This is not true. A substantial amount of work was undertaken to forecast future carrier schedules both with and without the expansion. These schedules were used to undertake the TAAM modeling which, in turn, provided estimates of delays, and in particular, provided information on how delays would change as operations increased after OMP Phase-1 was completed. The details of these schedules were then aggregated to provide the Chicago-specific information on travel time, fare, and number of passengers in each year in both the base and expansion cases. All of this information is market-specific and therefore appropriate for the analysis.

"The City Did Not Perform Simulation Runs Specifically Tailored to Consumer Surplus Analysis."

This comment suggests a misunderstanding of how benefit-cost analysis is undertaken. In the BCA, an independent effort was undertaken to assess the consequences of the expansion including providing information on future schedules, prices, passengers, and passenger time.

[9] This difference between when a passenger would most prefer to fly and the nearest available service offer is often referred to as "schedule delay".

These schedules were used in the TAAM model to estimate delays in both the base and expansion cases. The resulting output of this independent analysis was then used in the BCA. The purpose of the BCA is to assess whether the projected changes in output that result from the expansion are cost-beneficial.