APPENDIX T

Technical Subcommittee Materials

From: Marie Keister [mkeister@engagepublicaffairs.com]
Sent: Wednesday, January 23, 2008 5:03 PM
To: 'Jane Weislogel'
Subject: 080123_WOOSE_OSU Part 150 TAC follow-up comments

Jane,

Thank you for forwarding WOOSE comments.

Marie

Marie S. Keister, APR, AICP
Engage
7759 Crawley Dr.
Dublin, Ohio 43017
(614) 565-2819
mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

From: Jane Weislogel [mailto:jweislogel@columbus.rr.com]
Sent: Wednesday, January 23, 2008 4:14 PM
To: Marie Keister
Cc: Jane Weislogel; core@woose.org
Subject: OSU Part 150 TAC follow-up comments from WOOSE

Marie Keister
Engage
7759 Crawley Dr.
Dublin, Ohio 43071

01/23/08

Dear Ms. Keister:

This email is submitted to reply to your request that all comments about the meeting on 1/17/08 and the data provided be forwarded to you by 1/24/08. We all have a desire to produce the best possible Part 150 Study for OSU Airport; however, the 90 pages of meeting documents were emailed to committee members less than 41 hours prior to the meeting . As a result, adequate time was not provided for committee members to thoroughly analyze the documents. Compounding this situation was the distribution of revised charts prior to the meeting start with no time to compare and review the data changes or opportunity to discuss the changes. In addition, since the meeting, committee members were emailed yet another set of revisions on 1/21/08. This ongoing exchange of revised documents is extremely confusing and does not provide for discussion or explanation of the data. WOOSE suggests at a complete set of revised documents (with changes noted), with all chapters, charts and graphs correctly labeled and all pages numbered be provided to the committee one week (5 business days) prior to yet another meeting of the Part 150 Technical Advisory Committee for review, discussion and confirmation of data. This action would ensure we're all "on the same page" and provide an opportunity for us to work together to ensure we have the best possible data for the Part 150 Study.

With limited time, I reviewed a small portion of the data and questioned the number of the 2007 Annual-Average Day Fleet Mix (Itinerant Operations). Specifically, the Lab Corp Piper Navajo Chieftain fleet of 5 aircraft is flown into OSU daily, producing 10 operations/day, 5 days/week, 52 weeks/year, yielding 2,600 operations per year of the PA-31. The majority of those operations are at night. However, the documents provided list 1,392.413 operations, short 1,200 operations. Lab Corp's 6 operations at night daily yield 1,560 operations. The documents provided list 348.701, again short 1211 night operations. Also, two PA-31's are based at the airport. It is worth noting LabCorp's PA31's regularly makes weekend flights to OSU Airport which have not been included in my numbers.. It appears these additional operations were not included in the flight counts and averages provided by the consultants. It was very unsettling to hear Mr. Chris Lenfest, from the FAA Tower at CHM, state that he had provided the correct figures for the PA-31's night operations. Apparently the information provided by Mr. Lenfest was not used. Therefore, it is important the consultant provide the committee with complete and correct data and explain what data was provided, gathered, and used.

During the meeting on January 17th, David Zoll and Scott Whitlock, representing the City of Worthington, noted significant discrepancies in the number of Stage 2 aircraft reported. Mr. Whitlock referred to research and reports prepared by the Airport Advisory Committee's Overnight Subcommittee on Stage 2 aircraft which were verified by Port Columbus radar. During the discussion that followed Whitlock's comments, it was obvious those documents had not been provided to the consultants for their use. The airport staff was asked to provide the report. The 050 Turn Subcommittee report is apparently in the hands of some of the consultants, but not all. This report, and others created by subcommittees of the OSU Airport Advisory Committee, are the result of months of research and discussion by OSU Airport staff, pilots, airport users as well as residents. Subcommittee final reports were submitted to and approved by the OSU Airport Advisory Committee and, as part of the process, were promised to be shared with the Part 150 consultants and included in the raw data used for the report. Therefore, these reports and associated research should be provided to committee members.

David Zoll requested that he and the committee be provided with the raw data used for these charts as there were errors in the documents. He also requested that the Technical Committee meet again before the next Part 150 Committee meeting, so that the data which will be used for the noise models can be reviewed and deemed accurate. WOOSE strongly agrees with Mr. Zoll and WOOSE supports his request for another meeting of the Technical Advisory Committee. WOOSE requests that prior to that meeting all documents and materials be provided to the committee members at least a week ahead (5 business days) to provide adequate time to review the information and to allow for informed meeting participation.

The committee was not provided with touch and go operations numbers during the meeting. It was explained those numbers were "in the works." This information should be provided and discussed by the Technical Committee.

Upon review of night helicopter operations, it appears the numbers provided in the documents are low: 0.746 arrivals and .0662 departures nightly. It is worth noting one helicopter operates at OSU nightly as the shift changes around 11pm. Also Medflight operated based helicopters and additional itinerate medical helicopters regularly use OSU facilities at night. Was the STARS data included in the data provided to the committee?

Since Thursday's meeting, I have reviewed the May 2007 FlightAware records (provided by OSUA to WOOSE; some departure data was missing). That review established 260 Arrivals and 209 Departures for the PA31, yielding 469 operations for the month or 15.129 operations per day. The documents provided during the meeting listed PA31's Annual Ops at 1043.712 and monthly ops at 348.701 which average to 116 monthly operations and 3.75 daily operations. There is a significant different noted when comparing actual operations numbers for a sample month with those provided as yearly averages. These differences should be reviewed, explained and corrected if needed. In addition a review of the BE

58 Beech Baron (one of which is operated nightly at OSU by US Check) yielded 55 Arrivals and 44 Departures for a total of 99 operations or 3.193 operations per day. The documents provided at the meeting did not include operations for BE58 in the fleet mix 2007 chart. Its operations exceed several aircraft listed in the 2007 fleet mix. This discrepancy should be reviewed, explained and corrected.

While tabulating all of the types of aircraft shown by FlightAware, it was noticed that at times the same aircraft (N number) is listed 2 or 3 times going different places and leaving at the same time. This is obviously impossible and we would hope that when using FlightAware for data collection, the consultants would correct for this.

In summary: The example of PA31 and BE58 are only two of the many aircraft using OSU airport. These errors combined with those explained by Zoll and Whitlock undermine the accuracy of the fleet mix as well as the operations. The data provided during the meeting was incomplete and incorrect. This data should be reviewed and revised. The Technical Advisory Committee should be provided with a complete set of reviewed/corrected documents and another meeting of the Technical Advisory Committee should be scheduled before the Part 150 Study Committee and Public meetings. It would serve the Part 150 Study, OSU Airport and the surrounding communities well, if the data inputs were fully reviewed and approved by the Technical Advisory Committee.

Respectfully yours,

Jane Weislogel, WOOSE Vice President,
WOOSE Representative Technical Advisory Committee

ZOLL KRANZ & BORGESS, LLC
Attorneys at Law

6620 West Central Avenue
Suite 200
Toledo, OH 43617
www.toledolaw.com
www.toledoconstructionlaw.com
Phone: 419-841-9623
Fax: 419-841-9719

David W. Zoll*
david@toledolaw.com
Michelle L. Kranz
michelle@toledolaw.com
Pamela A. Borgess
pamela@toledolaw.com
Wesley D. Merillat
wes@toledolaw.com
*Certified National Board of Trial Advocacy

January 23, 2008

Marie S. Keister
Engage
7759 Crawley Dr.
Dublin, Ohio 43017

Re: City of Worthington / Ohio State University Airport Part 150
Technical Committee

Dear Ms. Keister:

At the Technical Committee meeting last Thursday members were asked to provide their written comments within one week. Please consider this letter as the good faith effort of the City of Worthington to meet that deadline.

1. It was the expressed goal of the Part 150 Committee to have a process that resulted in outputs in which all could have confidence.
2. It is impossible for the members of the Technical Committee to make comments on the validity of the inputs without first having the opportunity to review the input documents.
3. Once those documents have been produced, members of the committee will need a reasonable period of time to review and comment on them.
4. The information so far provided to the committee does not support the inputs.
5. The Worthington Representative to the OSU Airport Advisory Board challenged the inputs on the basis of both anecdotal and study material, particularly the nighttime flights of a regular PA-31 Piper Navajo Chieftan which had a regular schedule of 5 flights per night.
6. The Port Columbus FAA tower representative confirmed the nighttime air ops for one particular multiengine turboprop (PA31) and indicated that he had reported them to OSU.
7. The OSU report failed to include those nighttime ops in numbers equal to that reported by the FAA tower.
8. The Worthington Representative also reported a short count Stage 2 jets (Gulfstream II and Lear 24/25) based on an earlier study performed as part of the Overnight Flights Subcommittee of the Advisory Board.
9. To date no explanation for the short counts and no back up data have been supplied.
10. In the absence of such it is not possible to make further review and comment on the study.
11. OSU is encouraged to delay further action until the source documents are provided to the Committee and a reasonable explanation is made for the failure of the consultant team to utilize data provided by the Port Columbus tower and the earlier study of

Stage 2 jets. It should be emphasized that these are not trivial criticisms. It would appear that the nighttime operations in the proposed inputs were understated by 50% or more. At this point it is impossible to confirm any of the other inputs to the Integrated Noise Model, so the work sheets and other documents should provide sufficient detail that members of the Technical Committee and the public can have confidence in the inputs. In order to achieve that I would recommend that the documents to be furnished to the Technical Committee include all of the base data used or if base documents cannot be released to the public you include sufficient identifiers of the base documents that they can be obtained through a Freedom of Information Act and/or a Public Records request. In that later event you should allow sufficient time for the base documents to be obtained and analyzed.

12. In the absence of that it will be difficult for citizens to have confidence in the output of the study, and therefore the expressed goal of a credible study will not be met.

Sincerely,

David W. Zoll

DWZ:dwz

cc: Scott N. Whitlock
Matthew Greeson, City of Worthington

TECHNICAL MEMORANDUM

To: Technical Subcommittee of The Ohio State University Airport Part 150 Committee

From: David Full – RS&H
Project Manager

Date: March 18, 2008

Subject: January 17, 2008 Technical Subcommittee Meeting Follow-up

At the first Ohio State University Airport (Airport) Part 150 Committee meeting on September 19, 2007, a request was made that the consultant team (RS&H, ESA Airports, and Engage Communications) share the Integrated Noise Model (INM) inputs with stakeholders in advance of running the INM. The INM inputs were assembled and shared with the Technical Subcommittee on January 17, 2008. This memorandum accomplishes the following: (1) provides updates on a number of issues that were raised by the Technical Subcommittee during and after the January 17, 2008 meeting; (2) responds to questions that were raised by the Technical Subcommittee during and after the January 17, 2008 meeting; and (3) includes additional information for review with the Technical Subcommittee. This material will be discussed at the Technical Subcommittee meeting to be held on March 26, 2008.

1. SOURCE DATA

At the January 17, 2008 Technical Subcommittee meeting, it was requested that the consultant team share the underlying source data for the INM inputs with the Technical Subcommittee. The source data for the INM inputs is voluminous, complex, and in some cases not cleared for release to the public by the FAA. For these reasons, source data is ordinarily not shared with the public as a part of a Part 150 Study. In fact, in our experience, we are not familiar with any Part 150 Study where the underlying source data was shared with the public as a part of the process. Although this is an extraordinary step, The Ohio State University (OSU) has requested that the non-restricted source data be provided to the Technical Subcommittee. A brief summary of various data sources used in the preparation of the activity forecast and the fleet mix analysis is provided in Appendix A. A compact disc (CD) is also provided with Appendix A and contains electronic files of the non-restricted sources.

As explained during the Technical Subcommittee meeting on January 17, there is no single source of all of the data necessary to generate INM inputs. Therefore, it is not possible to use the attached source data alone to independently recreate each INM input. The process of developing

INM inputs from the source data requires numerous steps, including but not limited to interviews with aircraft operators, air traffic control personnel, and airport management; the application of standard industry methodologies; and professional judgment. We will provide an overview of this process at the Technical Subcommittee meeting on March 26th.

2. EVALUATION OF JET ALTITUDE PROFILES

Technical Subcommittee members questioned whether Air Traffic Control (ATC) procedures for operations to and from the east of the Airport were resulting in consistently lower than normal altitude profiles at the Airport. In response, the consultant team examined the actual altitude profiles of jet aircraft departures from, and jet aircraft approaches to, the Airport to evaluate whether the INM default profiles are representative of actual operations the Airport.

Because noise from jet aircraft is the dominant contributor to noise exposure at the Airport, the focus of the profile analysis was jet departures and jet arrivals. Because jets climb faster than piston and turbo-prop aircraft, jets will reach any presumed “hold down” altitudes sooner and closer to the airport than other aircraft types, and thus jet aircraft “hold downs” have the potential to contribute more significantly to the total annual average aircraft noise exposure than piston and turbo-prop aircraft. For both of these reasons, jet aircraft represent the “worst case” scenario for any potential deviations from the INM default profiles.

Because altitude restrictive air traffic control procedures, such as “hold downs” are more likely to occur to the east of the Airport towards the Port Columbus Terminal Control Area (TCA), this analysis focused on jet departures to the east on Runway 9R and jet arrivals from the east on Runway 27L. Lower average altitudes related to other non-ATC causes would also be apparent in these operations.

The data collected were for the Cessna 560 (C560) and Beechjet 400 (BE40) aircraft because these aircraft account for 42 percent of the jet operations at OSU. A primary focus of the analysis was the influence of air traffic control “hold downs” on the actual profiles compared to the profiles for the MU3001 in the FAA’s Integrated Noise Model (INM). The MU3001 is the FAA-approved INM substitute for both the Cessna 560 and the Beechjet 400.

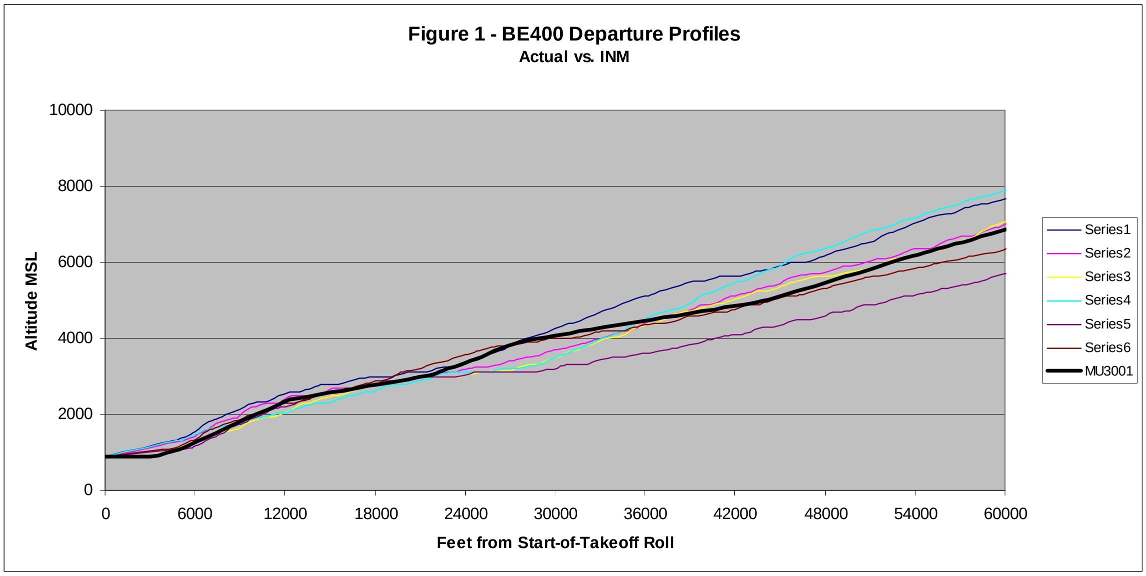
The Cessna 560 and Beechjet 400 data were collected from the Airport’s Era AirScene flight track system. At the time of the analysis, data were available for three quarters of 2007. Several hundred altitude profiles comprised of over 100,000 data points were reviewed. We note that through April 23, 2007, the altimeter readings from the aircraft in AirScene were not adjusted for actual barometric pressure. Data from before April 23, 2007 reflects some variability associated with that fact. After April 23, 2007, the altitudes were calibrated using the actual barometric pressure and were more consistent. The pre-April 23, 2007 data were still useful in the analysis, however, because “hold downs” and other trends (if present) can still be observed regardless of whether the barometric pressure calibration was made.

2.1 Jet Aircraft Departure Profiles

The altitude profiles for an aircraft departing an airport are affected by many different factors including, but not limited to: takeoff weight; aircraft performance; thrust settings; pilot technique; air traffic control instructions; density altitude; wind speed; and weather conditions. Despite these various influences on the departure profile flown, a given aircraft type will generally have very similar profiles over a series of many flights. While some of the actual profiles may be higher and some may be lower, a nominal altitude profile can be used to represent a given aircraft type for noise modeling purposes.

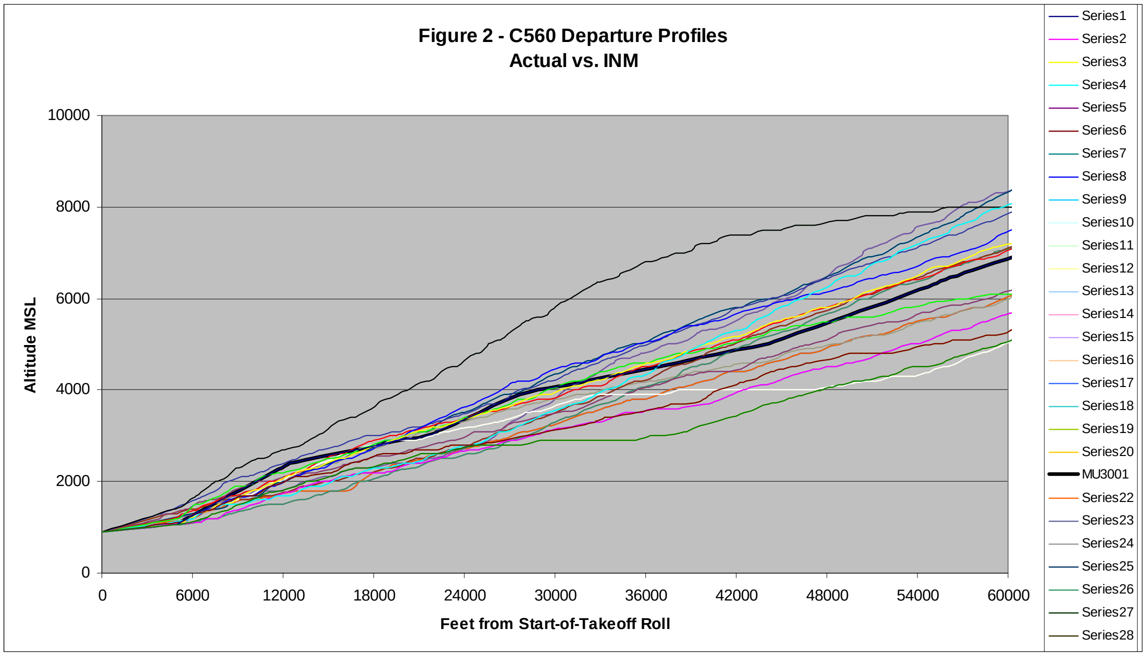
The actual altitude profiles for jet departures to the east on Runway 9R were reviewed on a point-by-point basis from the aircraft's initial detection by the AirScene system to a point when the aircraft reached 10,000 feet above ground level or 20 nautical miles, whichever came first. Based on a review of previous Day-Night Average Sound Level (DNL) contours for the Airport, it is likely that the 65 DNL contours will fall within two nautical miles from the start-of-takeoff roll on Runway 9R. Therefore, the altitude profiles within the first two to three nautical miles from start-of-takeoff roll are most important with respect to their influence on the potential areas of incompatibility and identify the area of most concern from a noise modeling standpoint. Differences in actual altitude profiles versus the INM profiles beyond three nautical miles from the start-of-takeoff roll on Runway 9R are likely to have no effect on the size and shape of the 65 DNL contour to the east of the Airport.

As shown in Figure 1, the actual and INM departure profiles for the Beechjet 400 align very well. The actual profiles have the same general shape as the INM departure profile for the MU3001, and they surround the INM MU3001 departure profile. That is, some of the actual BE40 departure profiles are above the INM MU3001 departure profile, while some of the actual BE40 departure profiles are below the INM MU3001 departure profile. In addition, there were relatively few "hold downs" in the data. A "hold down" would be identified by a cessation of an aircraft's climb prior to reaching a cruise altitude, which would be represented by a flat horizontal line in the figures below. Therefore, with respect to the BE40, the MU3001 departure profile is a good representation of the actual BE40 departure profiles at the Airport. This is especially true in the first two to three nautical miles that are critical to the development of the 65 DNL contour.



As shown in Figure 2, the INM MU3001 departure profile also falls within the range of the actual C560 departure profiles. Some of the actual C560 departure profiles are higher than the INM MU3001 departure profile, while some are lower. In general, the actual C560 departure profiles show a trend toward a less steep climb than the INM MU3001 departure profile, but few "hold downs". The steepness of the INM MU3001 departure profile implies a higher power setting and/or lower airspeed than the C560 appear to be flying at the Airport. From a noise exposure standpoint, we expect that the higher power setting and slower speed apparent in the INM MU3001 departure profile would offset the slightly lower altitude and increased airspeed of some of the actual C560 departure profiles. Therefore, with respect to the actual C560 departure profiles, the INM MU3001 departure profile is a good representation of the actual C560 departure profiles at the Airport for noise modeling purposes.

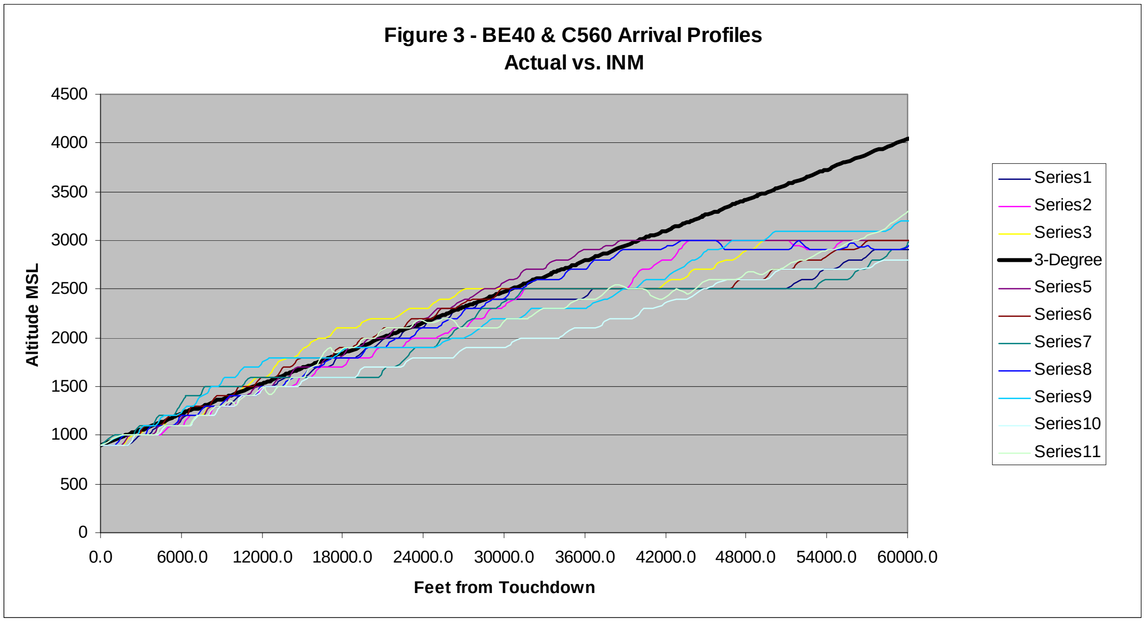
There are a few "hold downs" in the actual C560 departure profiles. When they do occur, they tend to be beyond three nautical miles. There are also a few aircraft that transit from the Airport to Port Columbus International Airport that have the appearance of a "hold down", because they maintain level flight between the two airports. There are relatively few of these operations.



2.2 Jet Aircraft Arrival Profiles

Unlike departure altitude profiles, which can exhibit a great deal of variability, arrival profiles for jet aircraft typically exhibit much less fluctuation, especially within the last two to three nautical miles from the runway end. In fact, most jet aircraft fly a 3-degree approach even under visual flight conditions.

Actual jet aircraft approach profiles to Runway 27L were analyzed for data points up to 6,000 feet above ground level or out to 20 nautical miles, whichever came first. The arrival profiles in the INM begin at 6,000 feet above ground level and descend at a 3-degree approach to the runway touchdown point, which is about 954 feet down the runway from the landing threshold. Nearly all of the jet aircraft arriving from the east to Runway 27L experience a “hold down”. The “hold down” appears to occur between 5 to 7 nautical miles from the Runway 27L touch down point. After that point, as shown in Figure 3, most aircraft are flying a standard 3-degree approach from about 5 nautical miles to the runway touchdown point. As with the departures, some of the actual profiles are above the INM 3-degree approach, while some are below it. Because the “hold down” occurs more than three miles from the touchdown point, the INM 3-degree approach profile does a good job replicating the actual BE40 and C560 approach profiles in the critical noise exposure areas on approach to the Airport.



2.3 Conclusion

Based on the examination of both the departure and arrival profiles for the BE40 and C560, the consultant team concludes that there is not a need to alter the standard INM departure and arrival profiles for the noise modeling effort at the Airport. Any "hold downs" that may occur are beyond two to three nautical miles from the end of the runway and, therefore, will have no impact on the determination of the 65 DNL contour. In addition, any deviation from the INM default profiles would require FAA approval. This approval has been sought previously for the Airport and was denied by the FAA. In the present analysis, no new information has been found that would suggest the FAA would reconsider that previous denial, and we have found no reason to suggest that pursuing such a request again would be productive or useful.

3. CONFIRMATION OF FLEET MIX

At the January 17 Technical Subcommittee, participants questioned whether the INM fleet mix inputs for each aircraft type adequately reflected the actual number of operations by certain aircraft that are known to operate regularly during nighttime hours from the Airport. Specifically, Technical Subcommittee members questioned why the nighttime operations totals in the INM inputs were not the same as the nighttime flight totals tallied from certain anecdotal sources, such as conversations with Port Columbus International Airport air traffic control tower personnel, and information from the OSU Airport Advisory Committee's subcommittee on Stage II nighttime operations.[1]

As explained at the last Technical Subcommittee meeting, there is no single source of information that precisely identifies the type of aircraft associated with every annual operation in a given year at the Airport. This is true with all airports in the United States with general aviation

[1] Specific questions were raised regarding the nighttime operations shares for the following aircraft types: Piper Chieftain PA-31, Lear 24/25; Lear 31; Beech Baron, and Gulfstream II.

activity. There are multiple sources of partial information that can be used to develop an estimate of the distribution of total operations across the fleet of aircraft known to use the airport (the “fleet mix”). The sources used for this process include: records of actual operations (such as FlightAware, Air Traffic Control records, etc.); list of based aircraft; and interviews with aircraft operators, tenants and air traffic control tower personnel. These sources are well-established standard industry data sources. However, no single source will capture every operation in a given year.

FlightAware is a well-established industry source for operations data for Part 150 Studies and other purposes, and is commonly used for studies at airports like OSU. The FlightAware data is comprised of aircraft that have filed Instrument Flight Rules (IFR) flight plans, which are only a portion of the overall operations at the Airport. Visual Flight Rule (VFR) operations comprise the majority of the aircraft operations at the Airport. The FlightAware database for the annual period of July 24, 2006 through July 23, 2007 used to develop the initial aircraft fleet mix INM input contained 14,977 records; each record is one aircraft operation. The total number of actual operations (both IFR and VFR) at the Airport for FY2007 was 87,156. The ratio of FlightAware records to actual operations is considered typical for a general aviation airport, and standard methodologies were used to formulate the initial aircraft fleet mix from the FlightAware data and other supplemental sources.

As a result of questions and comments raised at the January 17, 2008 Technical Subcommittee meeting, the consultant team investigated additional sources of information for use in establishing the FY2007 operational fleet mix. The consultant team conducted additional interviews with aircraft operators, and investigated the feasibility of obtaining records of these aircraft from the Columbus Regional Airport Authority (CRAA) Noise Office for the same time period as the previously collected FlightAware data. Those inquiries revealed that the CRAA Noise Office data contained over 55,000 records for the subject time period. This larger source of data would be expected to yield more accurate results without the need for as many allocation assumptions as would be required with a smaller database. Therefore, OSU initiated the coordination required to get permission from the FAA to allow the CRAA Noise Office to release the data for use in the Part 150 Study. These additional data were collected and processed, and a revised operational fleet mix for FY2007 was formulated. The methodology employed in this effort is summarized in Appendix B and the final fleet mix tables are presented in Table B-5 of Appendix B.

It is important to note that OSU and the consultant team are restricted by the FAA from sharing a complete copy of the CRAA Noise Office source data outside of the consultant team. FAA permission to release the data extends only to a release of the summary form presented in Appendix B. Questions related to the release of this information may be directed to the FAA. See Appendix A for contact information.

The summary data in Appendix B shows that the projected annual operations for the aircraft types identified by the Technical Subcommittee are now in alignment with the number of operations suggested by various Technical Subcommittee members at the last meeting. The difference between the initial fleet mix and the revised fleet mix is almost imperceptible from a noise modeling perspective. However, because this revised fleet mix is based on a larger database of actual operations, the consultant team has concluded that this aircraft fleet mix is more accurate than the fleet mix input originally developed, and this data will be used in the development of the INM inputs.

Although the revised fleet mix input will be used in the INM, it is important to note that the difference between the original and revised fleet mix inputs is very small with respect to the affect on the noise contours that will be developed. The types of differentials discussed at the last Technical Subcommittee meeting would most likely make essentially no measurable or perceptible difference in the size of the noise contours that will be developed.

4. EVALUATION OF NIGHTTIME FLIGHT TRACKS

Technical Subcommittee members questioned whether or not different flight tracks should be used for modeling day versus night operations. Following the last Technical Subcommittee meeting, the consultant team examined the nighttime flight tracks for the Airport to determine if different flight tracks are used at night when compared to the day. Samples of nighttime flight tracks were gathered from AirScene for the primary categories of aircraft operating at the Airport. These categories included jet, turboprops (i.e., Beech King Air) and piston (i.e., Piper Navajo). Previous sampling of helicopters, a large user of the Airport during the nighttime hours, included both daytime and nighttime operations so no additional analysis was necessary for those operations.

The nighttime flight tracks were plotted and then compared to the tracks developed for the daytime operations of each aircraft category. Overall the daytime flight tracks were found to be very similar to the nighttime flight tracks for most aircraft operations. The one difference that was found is related to multi-engine aircraft, including twin piston aircraft as well as twin turboprop aircraft. The nighttime flight tracks for this category of aircraft were found to be slightly different from the daytime tracks. The analysis of these operations revealed a defined flight track corridor to the northwest of the Airport where arrivals and departures existed at night but not during the day. This unique corridor can be attributed to the nighttime operators, such as LabCorp and other based tenants, and the consistent destinations they serve nightly. Unique nighttime arrival and departure flight tracks were developed to represent the corridor to the northwest for both arrivals and departures. Specifically, new nighttime flight tracks were developed for multi-engine aircraft for west flow arrivals, east flow departures, and west flow departures. East flow arrival flight tracks at night did not differ from daytime flight tracks, therefore no new tracks were required for east flow operations.

All other nighttime operations, both arrivals and departures, can be accurately represented by using the same flight tracks developed for the daytime for jets, helicopters, and single engine propeller aircraft. All flight track graphics have been included on the provided CD for review prior to the next Technical Subcommittee meeting.

5. EVALUATION OF MISCELLANEOUS FLIGHT TRACK QUESTIONS

Technical Subcommittee members asked several questions regarding flight tracks and whether or not the existing flight tracks adequately covered the different aircraft categories operating at the Airport, specifically single engine aircraft. At the time of the meeting, the consultants were still evaluating the flight tracks for single engine aircraft and anticipated completing the analysis in the near future.

Following the last Technical Subcommittee meeting, the consultant team examined the single engine aircraft flight tracks for the Airport to determine if flight tracks would need to be added to adequately cover those operations. Samples of single engine aircraft flight tracks were gathered from AirScene for analysis. As a result of that analysis, several flight tracks were developed solely for the coverage of single engine aircraft operations. Flight tracks were added for all runways where operations were identified. In addition, flight track use percentages for these new flight tracks were also calculated. All flight track use percentage tables have been included on the provided CD for review prior to the next Technical Subcommittee meeting.

At the Technical Subcommittee meeting the consultants also presented flight tracks for the touch and go operations at the Airport, but had not completed the analysis to determine the runway use percentages that would be assigned to those operations. An analysis was conducted on the touch and go operations to determine the runway use percentage for these operations. The runway use percentage was calculated by counting the number of flight tracks for each runway with touch and go operations and dividing by the total number of touch and go operation flight tracks. This information will be presented in table format similar to the other runway use percentage numbers already presented to the Technical Subcommittee. All runway use percentage tables have been included on the provided CD for review prior to the next Technical Subcommittee meeting

APPENDIX A
DATA SOURCES FOR INM INPUTS

A brief summary of various data sources used in the preparation of the INM inputs is provided below. A compact disc (CD) is also provided with this Appendix and contains electronic files of the non-restricted sources.

- FAA Terminal Area Forecasts (TAF) – All TAF information is available for review on the FAA website: http://aspm.faa.gov/main/taf.asp
- FAA ATADS –All information from this data source is available for review on the FAA website: http://aspm.faa.gov/main/atads.asp
- The Ohio State University Airport List of Based Aircrafts – A paper copy of this document is provided in this Appendix as Table A-1 and an electronic copy is on the CD.
- The Ohio State University Airport Hangar Waiting List – A paper copy of this document is provided in this Appendix as Table A-2 and an electronic copy is on the CD.
- FlightAware – Provides information on aircraft operations for the period July 23, 2006 to July 23, 2007. The file contains 14,000+ records. An electronic copy of the file is provided on the CD.
- AirScene – Provides information on flight patterns for the Airport used in the development of flight track inputs for the INM.
- Columbus Regional Airport Authority (CRAA) Noise Office – Provides information on aircraft operations retrieved from the CRAA Noise Office database for the period July 1, 2006 to July 31, 2007. The file contains 60,000+ records. NOTE: This database is restricted by the FAA and The Ohio State University Airport is only permitted to release information from this database in summary form. The person to contact at FAA concerning questions about access to this restricted data is:

  Ms. Annette Davis
  FAA Southwest Regional Office
  2601 Meacham Blvd.
  Ft. Worth, TX 76137
  817-222-5729

In addition to the files noted above, the attached CD also includes other files referenced in the body of the memo as well as a complete .pdf copy of the entire technical memorandum. A listing of all the files included on the CD is provided in this appendix as Table A-3.

Based Aircraft

Aircraft Make	Aircraft Model	Type
Piper	Aztec	Multi
Piper	Turbo Arrow	Single
Cessna	210	Single
Cessna	150	Single
Cessna	172D	Single
Cessna	310	Multi
Cessna	182	Single
Cessna	310-Q	Multi
Cessna	172	Single
Christen Eagle	Eagle II	Single
Piper	Warrior	Single
Piper	PA32-R300	Single
Cirrus	SR-20	Single
Tecnam	P2002 Sierra	Single
Cessna	210	Single
Mooney	M20K	Single
Grumman	AG 5 B Tiger	Single
Cessna	182	Single
Piper	PA28RT-201	Single
Cessna	C-172	Single
Beech	Bonanza	Single
Cessna	210	Single
Mooney	M20M	Single
Cirrus	SR-22	Single
Piper	PA28-300	Single
Piper	Arrow (PA-28RT)	Single
Piper	Archer	Single
Piper	Twin Commanche	Multi
Piper	Cherokee	Single
Cessna	182Q	Single
SUBLET		Single
Cessna	182	Single
Piper	PA30-260	Multi
Piper	PA32R-300	Single
Ercoup 46	415C	Single
Cirrus	SR22	Single
Beech	Bonanza S35	Single
Cessna	172M	Single
Cessna	C-210	Single
Cessna	182	Single
Cessna	C-172	Single
Piper	PA-28	Single
Cessna	182	Single
Piper	Lance	Single
Beech	Bonanza F33A	Single
Cessna	180	Single
Mooney	M20C	Single
Cessna	182	Single
Cessna	172	Single
Mooney	M20C	Single
Cessna	150	Single
Cessna	C-172	Single
Cessna	C-172	Single

Aircraft Make	Aircraft Model	Type
Cessna	172	Single
Cessna	C-172	Single
Piper	PA22	Single
Piper	PA32R	Single
Cessna	172	Single
Cessna	172	Single
Piper	PA-38-112	Single
Grumman	Cheetah	Single
Grumman	AA5B	Single
Cessna	C-182	Single
Mooney	M20G	Single
Piper	PA-28 180	Single
Cessna	150	Single
Cessna	172	Single
Piper	PA28-180	Single
Cessna	182L	Single
Mooney	M20J	Single
Liberty	XL-2	Single
Piper	PA-28-151	Single
Cessna	C-172R	Single
Piper	PA-28-161	Single
Piper	Archer	Single
Cessna	C-150L	Single
Cessna	C-182	Single
Beechcraft	A23-19	Single
Piper	Archer	Single
Cessna	172	Single
Piper	23-160 Apache	Multi
Cessna	C-172	Single
Mooney	M20E	Single
Cessna	210	Single
Mooney	M20E	Single
Cessna	172	Single
Cessna	152	Single
Cessna	182	Single
Cessna	152	Single
Cessna	152	Single
Cessna	172	Single
Piper	Archer	Single
Cessna	172	Single
Cessna	152	Single
Cessna	152	Single
Cessna	152	Single
Cessna	152	Single
Cessna	152	Single
Cessna	152	Single
Cessna	152	Single
Cessna	172	Single
Cessna	172P	Single
Cessna	172P	Single
Cessna	172N	Single
Cessna	172P	Single
Cessna	172P	Single
Beech	76	Multi
Piper	PA28R-201	Single

Aircraft Make	Aircraft Model	Type
Piper	PA28R-201	Single
Beech	Bonanza	Single
Cessna	C-182	Single
SUBLET		Single
Cessna	C-182	Single
Beech	Bonanza-B36TC	Single
Cessna	C-182J	Single
Mooney	M20	Single
Cessna	182	Single
Piper	Warrior	Single
Hughes	MD 520N	Helo
Cessna	CE560-XLS	Jet
Cessna	CE 560	Jet
Cessna	CJ1	Jet
Beech	King Air 200	Multi
Cessna	560XL	Jet
Beech	King Air 350	Multi
Cessna	CE-525	Jet
Piper	Seneca II	Multi
Piper	PA-31-310	Multi
Piper	Seneca III	Multi
Cessna	C-421	Multi
Piper	Chiefton	Multi
Piper	PA23-250	Multi
Piper	Cheyenne	Multi
Cessna	C-340	Multi
Cessna	C-414	Multi
Bombardier	CL-30	Multi
Hawker	Hawker 800	Jet
Beech	King Air 350	Jet
Canadair	CL601-3A	Jet
Falcon	2000	Jet
Falcon	Falcon 2000	Jet
Socata	TBM 700C	Jet
Cessna	Citation X	Jet
Beech	Beechjet 400	Jet
Falcon	Falcon 2000EX	Jet
Beech	C90	Multi
Eurocopter	BK117-B2	Helo
Messerschmitt	BK117-B1	Helo
Beech	B200	Multi
Cessna	182T	Single
Eurocopter	AS350B2	Helo
Cessna	182R	Single
Cessna	182T	Single
Cessna	182R	Single
Cessna	182R	Single
Cessna	172R	Single
Cessna	182R	Single
Cessna	182T	Single
Cessna	182S	Single
Eurocopter	AS350B2	Helo
Eurocopter	AS350B2	Helo
Patenavia	P96 OBSER	Multi
Piper	PA-23-250	Multi

Aircraft Make	Aircraft Model	Type
Beech	C90	Multi
Partenavia	P68C	Multi
Piper	PA-31-350	Multi
Cessna	182K	Single
Bell	206B	Helo
Partenavia	P68C	Multi
Bell	206B	Helo
Beech	B200	Multi
Bell	206B	Helo
Cessna	182T	Single
Cessna	182S	Single
Cessna	172R	Single
Cessna	182H	Single
Mooney	M20G	Single
Piper	Archer	Single
Cessna	C-210	Single
Cessna	210	Single
Piper	Cherokee	Single
Mooney	M20J	Single
Cessna	150F	Single
Cessna	C-150	Single
Piper	PA-28-181	Single
		Single
Cessna	172	Single
Piper	PA28R-200	Single
Piper	Warrior	Single
Piper	PA-30	Multi
Grumman	AA5	Single
Cessna	150	Single
Cessna	172	Single
Cessna	C-182	Single
Cessna	C-172	Single
Beechcraft	C-23	Single
Cessna	C-172	Single
Agusta	SF260D	Single
Mooney	M20C	Single
Piper	Tomahawk	Single
Albatross	Albatross	

Hangar Waiting List

ZIP Code	Aircraft Type	Original Reservation Date
43074	Beechjet/MD900	26-Feb-98
43065	TBM 700	04-Aug-99
43017	Comanche	23-Aug-99
43065	Aeronca L-16	15-Sep-99
43214	C-172	03-Aug-00
43220	C-172	01-Sep-00
43235	C-172	04-Oct-00
43202	Grumman AA5-N9514L	26-Oct-00
43016	Twin Cessna	20-Dec-00
43220	Twin, Cheyenne, C414, C425	29-Jan-01
	Waco Cabin	08-Feb-01
43235	Velocity XL	01-Mar-01
43206	Adventurer	02-Mar-01
43212		25-Mar-01
43082	C-150	02-Apr-01
43017	Bonanza	15-May-01
	Experimental	23-May-01
43220	C-182	30-May-01
43059	Lance Air	11-Jun-01
43221	PA-28 Archer - N727SS	11-Jul-01
	C-210	20-Jul-01
43201	CJ-6	23-Jul-01
43220	Twin	27-Aug-01
43017	Cherokee	31-Aug-01
43082	Cessna 310	05-Sep-01
43035	Cessna 172	27-Sep-01
43085		26-Oct-01
	Seneca	05-Nov-01
43065	Piper 235	19-Dec-01
43231	Bonanza	15-Jan-02
	Cessna 310	25-Jan-02
43221		31-Jan-02
43235	Archer	05-Mar-02
43016	Glassair	15-Apr-02
43082	PA-28	18-Apr-02
84098	Twin Aero	30-Apr-02
43065	Lance Air	11-May-02
43017	TBM 700 and Heli R44	04-Jun-02
43082	C-337	06-Jun-02
		17-Jun-02
43228	Rutan Variez	25-Jun-02
43221		17-Jul-02
43235	Warrior	01-Aug-02
43235		19-Aug-02
43082	Commander	23-Aug-02
43212	Vintage	18-Sep-02
43235	C-172XP	31-Oct-02
43017	Conquest	11-Dec-02
43081	single engine	17-Feb-03
43235	Archer	26-Feb-03
43017	Tiger	01-Mar-03
62902	single engine	03-Apr-03

ZIP Code	Aircraft Type	Original Reservation Date
43206	C-210	12-May-03
43016	Dakota	20-May-03
43082	Swift (1946)	21-May-03
	Piper Warriors	22-May-03
43082	Bonanza	30-May-03
43235		29-Jul-03
	Navajo Chieftain	05-Aug-03
43081	Velocity XL	29-Sep-03
43221	C-172	20-Oct-03
43235	C-310/Citabria(tail-dragger)	21-Nov-03
43235	Warrior	22-Jan-04
43221	Turbo Aero	03-Feb-04
43082	Diamond	10-Mar-04
43235	RV-7A	01-Apr-04
45750	Marchetti SF260D	07-May-04
43221	C-172	08-Jun-04
45208	C-182	09-Jun-04
43204	Bonanza	28-Jun-04
43235	Cherokee Six	06-Jul-04
43221	Bonanza	07-Jul-04
43235	C172	20-Jul-04
43017	Cheetah	02-Aug-04
43065	C-182	04-Aug-04
43081		11-Aug-04
75901	Beech Sierra	16-Aug-04
43235	Citabria-N466DS	27-Aug-04
43016	C-182	27-Aug-04
43220		28-Sep-04
43065	SR-22/C-210/C-206	14-Oct-04
43082	Aero	22-Nov-04
43016	Possibly 3 a/c	02-Dec-04
43085	Experimental	07-Feb-05
43065	Bonanza	09-Feb-05
43026	Cherokee 180	08-Mar-05
43065	Bonanza A36	11-Mar-05
43054	Baron	15-Apr-05
43235	C-182	19-Apr-05
43085	Mooney	28-Jun-05
61614	Saratoga	07-Jul-05
	Avion	18-Jul-05
	C-182	18-Jul-05
	C-150	25-Jul-05
43082	Navajo	25-Jul-05
43085	Cherokee Six	26-Jul-05
43017	C-177RG	28-Jul-05
43026	Super Cub	29-Jul-05
43054	Piper Arrow	08-Aug-05
43221	C-172	07-Sep-05
43230		19-Sep-05
43235	Mooney MJ-20	20-Oct-05
43235		31-Oct-05
43220		15-Nov-05
73044	RV4/Commanche	04-Jan-06
77024	Piper Aero	09-Jan-06

ZIP Code	Aircraft Type	Original Reservation Date
43054	Cirrus SR-20	23-Jan-06
43016	C-172	28-Feb-06
43017	PA-28	25-Apr-06
43081	Homebuilt	20-Jun-06
43082		26-Jun-06
		29-Jun-06
43054	Grumman Tiger	02-Aug-06
43211	C-182	18-Aug-06
43230	C-182	31-Aug-06
44114	N530P -Citation II	01-Oct-06
43235	ARCHER	06-Oct-06
77069	C-180; possibly A-36	23-Oct-06
	Citation I	23-Oct-06
43017	Citation II	08-Nov-06
43065		09-Nov-06
43017	Warrior	30-Nov-06
43016		05-Dec-06
43085	Comanche	19-Dec-06
43085	Cherokee	19-Dec-06
43040	AA-5	04-Jan-07
43016	Piper Cub	27-Feb-07
43235	C172	31-May-07
43085		14-Jun-07
43221		18-Jun-07
43026		08-Jul-07
43035	Multi	17-Jul-07
	Bonanza	18-Jul-07
43220	Bonanza G35	26-Jul-07
30073	Marquart Charger MA5 (taildragger)	27-Aug-07
43017		28-Aug-07
34108		03-Sep-07
43221	C150	06-Sep-07
	2 King Airs	11-Sep-07
43017	C310 R/Q; Mooney, Saratoga	08-Oct-07
43222	Bonanza	10-Oct-07
43054	SR-20	11-Oct-07
43065	CJ2/Baron	18-Oct-07
43231	Cirrus	05-Nov-07
43220	C172	22-Dec-07

Name	Size (KB)
D:\CD with Tech Memo (2008-03-18)\	139,004
01 Based Aircraft & Waiting List	46
02 FlightAware	3,035
03 AirScene	74,377
Helos	16,605
Jets	9,825
Night Tracks	8,343
Props	7,959
Single Engine	4,983
TGOs	22,222
TPs	4,439
04 Files for Review with Technical Subcommitte (3-26-08)	60,945

Name	Size (KB)
D:\CD with Tech Memo (2008-03-18)\	139,004
Tech Memo (2008-03-18).pdf	602
01 Based Aircraft & Waiting List	46
Appendix A TableA-1.xls	28
Appendix A TableA-2.xls	18
02 FlightAware	3,035
OSU FlightAware Data 0706to0707.xls	3,035
03 AirScene	74,377
Helos	16,605
Helicopter Operations East Side.csv	6,471
Helicopter Operations West Side.csv	1,513
Helicopter Operations.csv	8,621
Jets	9,825
East Flow Arrivals Q1_Q2.csv	1,273
East Flow Arrivals Q3_Q4.csv	1,550
East Flow Departures Q1_Q2_Q3_Q4.csv	1,658
West Flow Arrivals Q1_Q4.csv	1,600
West Flow Arrivals Q2_Q3.csv	1,651
West Flow Departures Q1_Q2_Q3.csv	1,325
West Flow Departures Q4.csv	769
Night Tracks	8,343
J-EFA1.csv	228
J-EFA2.csv	243
J-EFD.csv	216
J-WFA1.csv	408
J-WFA2.csv	263
J-WFD1.csv	23
J-WFD2.csv	325
P-EFA.csv	956
P-EFD1.csv	303
P-EFD2.csv	269
P-WFA1.csv	585
P-WFA2.csv	553
P-WFD1.csv	1,002
P-WFD2.csv	326
T-EFA1.csv	239
T-EFA2.csv	267
T-EFD1.csv	65
T-EFD2.csv	227
T-WFA1.csv	537
T-WFA2.csv	469
T-WFD1.csv	404
T-WFD2.csv	434
Props	7,959
Arrivals to Runway 05.csv	1,274
Arrivals to Runway 14.csv	637
Arrivals to Runway 23.csv	421
Departure off Runway 23.csv	1,731
Departures off Runway 05.csv	2,838

Name	Size (KB)
Departures off Runway 32.csv	1,058
Single Engine	4,983
SEP-EFA.csv	1,102
SEP-EFD.csv	1,042
SEP-WFA.csv	1,090
SEP-WFD.csv	1,749
TGOs	22,222
East Flow Touch and Go Operations.csv	19,405
West Flow Touch and Go Operations.csv	2,817
TPs	4,439
East Flow Arrivals Q1_Q2_Q3_Q4.csv	1,134
East Flow Departures Q1_Q2_Q3_Q4.csv	897
West Flow Arrivals Q1_Q2_Q3_Q4.csv	1,390
West Flow Departures Q1_Q2_Q3_Q4.csv	1,019
04 Files for Review with Technical Subcommitte (3-26-08)	60,945
Draft OSU Existing Tracks.pdf	32,988
Draft OSU Future Tracks.pdf	27,867
OSUA 2012_2027 Flight Track Use P.pdf	28
OSUA Existing Flight Track Use %.pdf	25
OSUA Existing_Future Runway Use.pdf	38

APPENDIX B
FLEET MIX CONFIRMATION

The following steps were followed to determine the aircraft fleet mix at the Airport.

Step 1 - Prepare First-Level Sort - The 55,000+ records in the CRAA Noise Office database were analyzed and a first-level sort of the raw data produced the information presented in Table B-1. The table lists the number of aircraft operations recorded for each of the 279 unique aircraft codes in the database.

Step 2 – Create Lookup Table - Many of the 279 aircraft codes found in the data can be consolidated into a smaller number of aircraft categories. For example, in the previous tables, the four aircraft codes of AA5, AA5A, AA5B, and AAA5 all refer to the same aircraft type – a Grumman Aerospace AA-5 Traveler Cheetah.

Aircraft types in turn, can be further consolidated when various models in an aircraft type are the same or very similar. For example, Cessna Aircraft Models 150, 152, 170 and 172 share similar characteristics and can all be grouped together for the purposes of aircraft fleet mix analysis into a single model combination.

Another data consolidation step involves assignment of an INM equivalent aircraft type to each record. The FAA's aircraft database for use in the Integrated Noise Model (INM) does not include every aircraft that has been manufactured. For the purposes of noise modeling, the FAA has developed a list of approved substitutions of a particular aircraft type for one that is in the FAA database. The INM database also includes some default aircraft types that can be assigned as needed. For example, one of the default profiles in INM includes GASEP, which stands for "General Aviation Single Engine Piston."

The final consolidation step includes applying very broad categories to each operation in the database to assist in the presentation of summary data. These broad categories include designations such as Jet, ME (multi-engine), SE (single-engine), etc.

In total, each of the 55,000+ records in the CRAA Noise Office database were assigned four categories of aircraft type in addition to the "Aircraft Code" that is in the base data. The number of unique designations in each of the five categories is listed below, and the master lookup table is presented in Table B-2.

Column Heading	# of Unique Values
Aircraft Code	279
Aircraft Type	230
Model Combinations	68
INM Equivalent	37
Aircraft Sub-Category	7

Step 3 - Reassemble Table B-1 at the "Model Combination" Level - The master lookup table was applied to the CRAA Noise Office database, and the information presented in Table B-1 was reassembled in Table B-3 at the Model Combinations sort level.

Step 4 – Adjust Database to equalize Arrival/Departure Counts - In many cases throughout the database from the CRAA Noise Office, the number of arrivals for a particular aircraft type does not equal the number of departures (e.g., the jet aircraft model Astra 1125 recorded 21 arrivals and 26 departures). This occurs for a variety of valid reasons, and the total operations count was adjusted so arrivals and departures are equal. This adjustment was made at the Model Combination level. Arrivals or departures for each Model Combination were added as necessary and assigned a day/night code based on the percentage of day/night operations for unadjusted operations of the Model Combination aircraft category. This adjustment increased the total number of operations in the database to 61,486. A copy of the adjustment worksheet is provided as Table B-4.

STEP 5 – Prepare Final Allocations for FY2007 – In this step, the total operations count is adjusted so it is equal to the official count of FY2007 operations. To complete this step, aircraft types and day/night allocations must be assigned to all 87,186 operations that are included in the FY 2007 operations count. This includes the 25,700 operations that were not included in the CRAA Noise Office database. These operations consist primarily of certain fixed-wing piston, helicopter, and military/law enforcement operations that are either not collected by the CRAA software, or which are filtered out by the FAA prior to disclosure outside of the FAA. Information on these types of operations was collected from other sources, such as interviews with operators, Ohio Highway Patrol, OSU Flight School, and OSUA air traffic control. These adjustments result in the final aircraft fleet mix numbers presented in Table B-5.

STEP 6 – Prepare 2012 and 2027 Fleet Mix Allocations – The 2007 aircraft fleet mix served as the foundation for preparation of the 2012 and 2027 aircraft operational fleet mix tables. The introduction of Very Light Jets (VLJs) is expected to change the fleet mix at the Airport by slightly reducing the proportion of multi-engine turboprop activity; and by capturing growth that would have otherwise occurred in the small jet category. The VLJ are targeted at this segment of general aviation. Civilian helicopters are expected to continue to follow the FAA's predicted national trends, thus capturing an expanded future share of the Airport's fleet mix. The replacement of aging jet aircraft is limited in the 2027 fleet mix estimates to primarily those aircraft that have been out of production for several decades. The final aircraft fleet mix numbers for 2012 and 2027are presented in Tables B-6a and B-6b.

TABLE B-1
First-Level Sort of Source Data

Count of Day or Night	Day or Night	A/D/O					
	D		D Total	N		N Total	Grand Total
New Aircraft Code	A	D		A	D		
A100	1		1				1
A109	1	4	5		1	1	6
A36					1	1	1
A68	1	3	4				4
AA5	24	16	40	1	1	2	42
AA5A		2	2				2
AA5B	2		2				2
AAA5	6		6				6
AC11	8	5	13		1	1	14
AC14	1	1	2				2
AC80	1	1	2				2
AC90	72	83	155	13	5	18	173
AC95	6	5	11		1	1	12
ACRO	6	5	11	1		1	12
AERO	1		1				1
AEST	10	7	17				17
AS350	45	50	95	24	17	41	136
ASTR	21	26	47				47
B120		1	1				1
B190	4	6	10	1		1	11
B206		1	1				1
B350	213	206	419	17	28	45	464
B36T	26	17	43		11	11	54
B58	1		1				1
BE10	77	86	163	5	6	11	174
BE18	1	12	13	1		1	14
BE20	384	417	801	96	57	153	954
BE23	8	3	11		1	1	12
BE24	4	4	8				8
BE30	20	21	41	1		1	42
BE33	47	42	89	2	2	4	93
BE35	86	65	151	2	1	3	154
BE36	103	90	193	2	7	9	202
BE40	450	472	922	36	17	53	975
BE45		2	2				2
BE55	25	23	48	1		1	49
BE58	70	66	136	56	20	76	212
BE60	1	1	2				2
BE65	4	3	7		1	1	8
BE76	31	22	53	1	1	2	55
BE77	1		1				1
BE9	1		1				1
BE90	9	1	10	5	2	7	17
BE95	1	9	10				10
BE9L	226	263	489	58	33	91	580
BE9T	15	13	28	2	3	5	33
BF36	1		1				1
BK17	65	253	318	19	77	96	414
BL17	7	3	10				10
BR20	1	1	2				2
C10T	1		1				1
C120	1		1				1
C150	36	31	67	1	2	3	70
C152	50	52	102	4	1	5	107

Count of Day or Night	Day or Night	A/D/O					
	D		D Total	N		N Total	Grand Total
New Aircraft Code	A	D		A	D		
C170		1	1				1
C172	924	669	1593	42	16	58	1651
C177	17	10	27	1	1	2	29
C180	8	12	20	1		1	21
C182	486	388	874	23	9	32	906
C185	1	2	3	1		1	4
C195	3	1	4				4
C206	39	35	74	1	1	2	76
C208	89	81	170	2	1	3	173
C210	147	117	264	1	3	4	268
C25A	9	9	18				18
C25B	10	11	21	1		1	22
C310	88	78	166	2	7	9	175
C312		1	1				1
C337	25	22	47	5	7	12	59
C340	37	38	75		1	1	76
C401	1	1	2				2
C402	12	12	24	2		2	26
C414	44	45	89	5	2	7	96
C421	41	52	93	1	3	4	97
C425	5	6	11				11
C441	67	70	137	5	3	8	145
C500	36	37	73	4	3	7	80
C501	5	6	11	1		1	12
C525	276	278	554	15	14	29	583
C550	211	218	429	15	7	22	451
C560	651	688	1339	47	26	73	1412
C566		1	1				1
C56X	173	178	351	11	9	20	371
C650	31	30	61		2	2	63
C680	76	74	150	2	3	5	155
C712		1	1				1
C72R	1		1				1
C750	177	186	363	14	8	22	385
C77R	2	3	5				5
C82R	6	3	9				9
CESS	5	9	14	1		1	15
CHMP		2	2				2
CITA	1		1				1
CL30	155	152	307	11	14	25	332
CL60	69	70	139	5	5	10	149
COL3	2	3	5				5
COL4	16	12	28				28
COUR	1	1	2				2
COZY	1		1				1
CRJ2		1	1		1	1	2
CSNA	5	2	7				7
DA20	1		1				1
DA40	8	2	10	1	1	2	12
DA42	2	2	4				4
DV20	1		1				1
E120	2	2	4				4
E135	10	9	19		1	1	20
E145		1	1				1

Count of Day or Night	Day or Night	A/D/O					
	D		D Total	N		N Total	Grand Total
New Aircraft Code	A	D		A	D		
E350	9	10	19				19
E400	1	1	2				2
E45X		1	1				1
Eagle		1	1				1
EC35	27	26	53	4	10	14	67
EC45	2	2	4				4
ERCP	1	1	2				2
EXP	18	13	31	6	5	11	42
EXPE		1	1				1
EXPP	1		1				1
EXXP	1		1				1
F200	2		2				2
F26	4	3	7		1	1	8
F260	10	8	18	1	1	2	20
F2TH	246	260	506	47	36	83	589
F406				1		1	1
F900	30	28	58	1		1	59
FA10	32	29	61				61
FA20	58	56	114	3	3	6	120
FA50	38	36	74		1	1	75
FAIR	1		1				1
G150	3	3	6				6
G2	2	1	3				3
G200		1	1				1
GALX	15	15	30		1	1	31
GC1	1		1				1
GLAS	2	1	3				3
GLEX	1	1	2				2
GLF1	1		1	1		1	2
GLF2	7	8	15	1	1	2	17
GLF3	10	9	19		1	1	20
GLF4	48	46	94	1		1	95
GLF5	14	14	28				28
H25	1	4	5				5
H25A	5	4	9				9
H25B	192	184	376	8	13	21	397
H25C	8	8	16				16
H47	2	3	5				5
H60	8	2	10	1		1	11
HOME	10	19	29	1		1	30
HS25	2	2	4				4
HXB	2	1	3				3
HXC	1	1	2				2
J328	7	8	15	2	1	3	18
JS32	2	1	3		1	1	4
KITFOX	4	2	6				6
L2XL	5	4	9				9
L45	4	6	10	2		2	12
LA4	1	1	2				2
LAKE		1	1				1
LANC	3	2	5		1	1	6
LBTY	2	1	3				3
LC41	1		1				1
LGEZ		1	1				1

Count of Day or Night	Day or Night	A/D/O					
	D		D Total	N		N Total	Grand Total
New Aircraft Code	A	D		A	D		
LIB		1	1				1
LIBE	1	1	2				2
LIBR	1		1				1
LJ24	2	3	5	1		1	6
LJ25	41	41	82	1	3	4	86
LJ31	162	162	324	16	23	39	363
LJ35	61	59	120	9	9	18	138
LJ36	1		1				1
LJ40	16	16	32	2	1	3	35
LJ45	66	65	131	3	3	6	137
LJ55	9	7	16	1	2	3	19
LJ60	27	24	51		3	3	54
LLEZ	2		2				2
LNCR	2		2				2
LR31	1		1				1
LR35	3	3	6				6
LR45				1		1	1
M020	2	1	3				3
M20	5	4	9				9
M200	1	1	2				2
M20C	1		1				1
M20F	1	1	2				2
M20J	1		1				1
M20K	1	1	2				2
M20P	84	86	170	8	4	12	182
M20R	1		1				1
M20T	30	28	58	2	1	3	61
MO20	63	29	92	2		2	94
MO21	7	1	8				8
MO2T	1		1				1
MU2	5	5	10				10
MU30	33	36	69	3		3	72
NAVI	3	3	6				6
P180	50	50	100				100
P210	14	17	31				31
P28	16	9	25	2		2	27
P28A	185	176	361	12	4	16	377
P28B	21	14	35	2		2	37
P28R	93	94	187	7	6	13	200
P28T	14	30	44	17	2	19	63
P32	4	1	5				5
P32R	11	11	22		1	1	23
P32T	7	6	13				13
P33		1	1				1
P46T	31	32	63				63
P68	12	15	27	1		1	28
P68A	3		3				3
P68T		1	1	1		1	2
PA12	1		1				1
PA18	8	8	16		1	1	17
PA22	6	1	7				7
PA23	7	4	11	1		1	12
PA24	23	12	35				35
PA27	35	40	75	1		1	76

Count of Day or Night	Day or Night	A/D/O					
	D		D Total	N		N Total	Grand Total
New Aircraft Code	A	D		A	D		
PA28	281	149	430	7	6	13	443
PA29		1	1				1
PA30	50	51	101	3		3	104
PA31	637	390	1027	760	467	1227	2254
PA32	175	176	351	8	8	16	367
PA34	103	110	213	9	8	17	230
PA38	3		3				3
PA44	5	6	11	1	1	2	13
PA46	21	12	33		1	1	34
PA68		2	2				2
PARD	1		1				1
PARO	35	16	51	2	1	3	54
PART	1	2	3				3
PASE		4	4				4
PAY1	80	86	166	2	2	4	170
PAY2	74	68	142	3	3	6	148
PAY3	1		1				1
PAY4	7	9	16	2	1	3	19
PAYE	2		2	1		1	3
PAZT	1	1	2				2
PC12	53	47	100	1	4	5	105
PN68	12	11	23	8	1	9	32
PRM1	11	10	21				21
PT17	2	4	6				6
PT6		1	1				1
R22		1	1				1
RC70	1		1				1
RLU1	1		1				1
ROBIN		1	1				1
RV10	1		1				1
RV4	3		3				3
RV6	3	2	5		1	1	6
RV60	1		1				1
RV7	2	1	3				3
RV8	2	2	4				4
S12		1	1				1
S6	3	3	6		1	1	7
S76		3	3				3
SBR1	12	11	23		1	1	24
SF26	2		2				2
SF34	1	1	2				2
SK76	1	1	2				2
SR20	36	19	55	2		2	57
SR22	219	187	406	5	9	14	420
SW3	4	4	8				8
SW4	1	1	2				2
T34P	1	2	3				3
TB10	1		1				1
TB20		1	1				1
TB7	1	1	2				2
TBM7	47	49	96	1		1	97
TBN7		2	2				2
TMB7	1		1				1
TRIN	3	4	7				7

Count of Day or Night	Day or Night	A/D/O					
	D		D Total	N		N Total	Grand Total
New Aircraft Code	A	D		A	D		
UH1	7	2	9				9
UH60	6	4	10	1	1	2	12
UNK4	89	84	173	10	11	21	194
UNKN	3923	5498	9421	303	287	590	10011
UNKN3	36	60	96	3	3	6	102
Unknown2	9305	12094	21399	694	706	1400	22799
Waco	3	1	4				4
WW24	6	6	12		1	1	13
XL2	17	10	27	1		1	28
Grand Total	23467	27168	50635	2569	2108	4677	55312

TABLE B-2
Master Lookup Table

	A	B	C	F	G	I
1	**Aircraft Code**	**Number of Operations**	**Aircraft Type**	**Model Combinations**	**INM Equivalent**	**Aircraft Sub Category**
2	UNK4	194	No Code Found	_NCF	Unknown	7 - UNKNOWN
3	UNKN	10011	No Code Found	_NCF	Unknown	7 - UNKNOWN
4	UNKN3	102	No Code Found	_NCF	Unknown	7 - UNKNOWN
5	unknown2	22799	No Code Found	_NCF	Unknown	7 - UNKNOWN
6	AS350	136	Aerospatiale, Ecureuil, AS350 Helocopter	Aerospatiale AS-350	SA350D	4 - HELO
7	ASTR	47	IAI 1125 Astra (C-38)	Astra 1125	IA1125	1 - JET
8	H25C	16	BAe-125-1000	Bae-125 (1000 Series)	LEAR35	1 - JET
9	H25	5	British Aerospace (BAe), BAe HS 125 Series 1/2/3/400/600, H25A	BAe-125 (400 Series)	LEAR35	1 - JET
10	H25A	9	BAe HS 125 Series 400A	BAe-125 (400 Series)	LEAR35	1 - JET
11	H25B	397	BAE 125 SERIES 800A	BAe-125 (800 Series)	LEAR35	1 - JET
12	HS25	4	BAe HS25 Hawker Sidley	BAe-125 (800 Series)	LEAR35	1 - JET
13	SF26	2	JETSTREAM Jetstream	Bae-3200 Jetstream	DHC6	2 - ME
14	JS32	4	BAe-3200 Jetstream Super 31	Bae-3200 Jetstream Super 31	DHC6	2 - ME
15	SF34	2	JETSTREAM Jetstream Super 31	Bae-3200 Jetstream Super 31	DHC6	2 - ME
16	B190	11	BEECH 1900 (C-12J)	Beech 1900	1900D	2 - ME
17	BE10	174	Beech 100 King Air	Beech King Air	CNA441	2 - ME
18	BE18	14	Hamilton Aviation, Little Liner, BE18	Beech King Air	CNA441	2 - ME
19	BE9	1	Beech Aircraft Company, 90/A90 to E90 King Air (T-44 V-C6), BE9L	Beech King Air	CNA441	2 - ME
20	BE90	17	Beech Aircraft Company, 90/A90 to E90 King Air (T-44 V-C6), BE9L	Beech King Air	CNA441	2 - ME
21	BE9L	580	Beech King Air C90	Beech King Air	CNA441	2 - ME
22	BE9T	33	Beech F90 King Air	Beech King Air	CNA441	2 - ME
23	B350	464	Beech Aircraft Company, B300 Super King Air 350, B350	Beech Super King Air	DHC6	2 - ME
24	BE20	954	Beech 200 Super King Air	Beech Super King Air	DHC6	2 - ME
25	BE30	42	Beech 300 Super King Air	Beech Super King Air	DHC6	2 - ME
26	BR20	2	Beech 200 Super King Air	Beech Super King Air	DHC6	2 - ME
27	BE40	975	Beechcraft Beechjet 400	Beechjet 400	MU3001	1 - JET
28	CL30	332	Canadair BD-100 Challenger 300	Canadair BD-100	CNA750	1 - JET
29	C120	1	Cessna Aircraft Company, 120, C120	Cessna 150/152/172/172RG/177	CNA172	3 - SE
30	C152	107	Cessna 152	Cessna 150/152/172/172RG/177	CNA172	3 - SE
31	C172	1651	Cessna 172	Cessna 150/152/172/172RG/177	CNA172	3 - SE
32	C177	29	Cessna 177 Cardinal	Cessna 150/152/172/172RG/177	CNA172	3 - SE
33	C195	4	AgCarryall (U-17A/B) - Cessna 195 tail dragger	Cessna 150/152/172/172RG/177	CNA172	3 - SE
34	C712	1	Cessna Aircraft Company, 172/P172/R172/Skyhawk, C172	Cessna 150/152/172/172RG/177	CNA172	3 - SE
35	C72R	1	CESSNA 172RG	Cessna 150/152/172/172RG/177	CNA172	3 - SE
36	C77R	5	Cessna 177, Cardinal RG	Cessna 150/152/172/172RG/177	CNA172	3 - SE
37	CESS	15	Cessna Single Engine	Cessna 150/152/172/172RG/177	CNA172	3 - SE
38	CSNA	7	Cessna Single Engine	Cessna 150/152/172/172RG/177	CNA172	3 - SE
39	C10T	1	CESSNA P210N	Cessna 180/182/206/210	CNA206	3 - SE
40	C150	70	Cessna Aircraft Company, 150, C150	Cessna 180/182/206/210	CNA206	3 - SE
41	C170	1	Cessna Aircraft Company, 170, C170	Cessna 180/182/206/210	CNA206	3 - SE
42	C180	21	Cessna 180, Skywagon	Cessna 180/182/206/210	CNA206	3 - SE
43	C182	906	Cessna 182 Skylane	Cessna 180/182/206/210	CNA206	3 - SE
44	C185	4	Cessna Aircraft Company, 185/A185 Skywagon/Skywagon 185, C185	Cessna 180/182/206/210	CNA206	3 - SE
45	C206	76	Cessna 206	Cessna 180/182/206/210	CNA206	3 - SE
46	C210	268	Cessna 210 Centurion/II	Cessna 180/182/206/210	CNA206	3 - SE
47	C82R	9	Cessna R182, TR182 (Turbo) Skylane RG	Cessna 180/182/206/210	CNA206	3 - SE
48	P210	31	Cessna P210N Pressurized Centurion	Cessna 180/182/206/210	CNA206	3 - SE
49	C750	385	Cessna 750 Citation 10	Cessna 750	CNA750	1 - JET
50	F406	1	REIMS AVIATION S.A. F406/CARAVAN II	Cessna Caravan II	CNA208	2 - ME
51	C425	11	Cessna 425 Corsair/Conquest I	Cessna Conquest	CNA441	2 - ME
52	C441	145	Cessna 441 Conquest, Conquest 2	Cessna Conquest	CNA441	2 - ME
53	CL60	149	CL-600/Challenger 699/601/604	Challenger 600	CL600	1 - JET
54	C25A	18	Cessna 525A Citation CJ2	Citation 525/500	CNA500	1 - JET
55	C25B	22	Cessna 525A Citation CJ2	Citation 525/500	CNA500	1 - JET
56	C500	80	Cessna 500 Citation, Citation 1	Citation 525/500	CNA500	1 - JET
57	C501	12	Cessna 501 Citation 1SP	Citation 525/500	CNA500	1 - JET
58	C525	583	Cessna 525 Citationjet Citation CJ1	Citation 525/500	CNA500	1 - JET
59	C550	451	550, S550, 552 Citation 2/S2/Bravo	Citation 550/560	MU3001	1 - JET
60	C560	1412	560 Citation 5/5 Ultra/5Ultra Encore	Citation 550/560	MU3001	1 - JET
61	C566	1	C560 - Citation V?	Citation 550/560	MU3001	1 - JET
62	C56X	371	CESSNA 560XL Citation Excel	Citation 550/560	MU3001	1 - JET
63	C650	63	Cessna 650 Citation 3/6/7	Citation 650	CIT3	1 - JET
64	C680	155	680 Citation Sovereign	Citation 680	LEAR35	1 - JET
65	CRJ2	2	Canadair Bombardier, CL-600/Regional Jet CRJ-200/RJ-200, CRJ2	CRJ-200	CLREGJ	1 - JET
66	GLEX	2	Bombardier, BD-700 Global Express/Sentinel, GLEX	CRJ-700	GV	1 - JET
67	DA42	4	Diamond DA-42 Twin Star	Diamond Twin Star	BEC58P	2 - ME
68	J328	18	Fairchild Dornier 328JET, Envoy 3	Dornier 328	CL600	1 - JET
69	B120	1	EMBRAER EMB-120ER	EMB-120	EMB120	2 - ME

	A	B	C	F	G	I
1	**Aircraft Code**	**Number of Operations**	**Aircraft Type**	**Model Combinations**	**INM Equivalent**	**Aircraft Sub Category**
70	E120	4	EMB-120 Brasilia	EMB-120	EMB120	2 - ME
71	E135	20	EMB-135, ERJ-135/140	ERJ 135/140	EMB145	1 - JET
72	E145	1	Embraer, EMB-145/ERJ-145 (R-99), E145	ERJ 135/140	EMB145	1 - JET
73	E45X	1	Embraer, EMB-145XR, E45X	ERJ 135/140	EMB145	1 - JET
74	BK17	414	MBB/Kawasaki, Model BK117, BK17	Eurocopter EC-135	EC130	4 - HELO
75	E350	19	EUROCOPTER	Eurocopter EC-135	EC130	4 - HELO
76	EC35	67	Eurocopter EC 135	Eurocopter EC-135	EC130	4 - HELO
77	EC45	4	Eurocopter EC 145	Eurocopter EC-135	EC130	4 - HELO
78	ERCP	2	Eurocopter EC - Model unknown	Eurocopter EC-135	EC130	4 - HELO
79	FA10	61	Falcon 10/100, Mystere 10/100	Falcon 10	LEAR35	1 - JET
80	FA20	120	Falcon 20/100, Mystere 20/200, Gardian	Falcon 20	CL600	1 - JET
81	F200	2	Falcon 2000	Falcon 2000	CL600	1 - JET
82	F2TH	589	Falcon 2000	Falcon 2000	CL600	1 - JET
83	FA50	75	Falcon 50, Mystere 50	Falcon 50	LEAR35	1 - JET
84	F900	59	Falcon 900, Mystere 900	Falcon 900	LEAR35	1 - JET
85	A68	4	Aero Commander, AC68	Gulf Aero Commander	CNA441	2 - ME
86	AERO	1	Aero Commander, AC68	Gulf Aero Commander	CNA441	2 - ME
87	RC70	1	Rockwell International Corp, 700/710 Commander 700/710, RC70	Gulf Aero Commander	CNA441	2 - ME
88	G150	6	Gulfstream 150	Gulfstream 150	LEAR35	1 - JET
89	G200	1	Gulfstream 200	Gulfstream 200	GII	1 - JET
90	GALX	31	1126 Gulfstream 200	Gulfstream 200	GII	1 - JET
91	GLF1	2	GULFSTREAM AEROSPACE G1159B	Gulfstream 200	GII	1 - JET
92	GLF2	17	G-1159, G-1159B Gulfstream 2/2B/2SP	Gulfstream II	GII	1 - JET
93	GLF3	20	G-1159A Gulfstream 3/SRA-1, SMA-3	Gulfstream III	GIIB	1 - JET
94	GLF4	95	G-1159C Gulfstream 4/4SP/SRA-4	Gulfstream IV	GIV	1 - JET
95	GLF5	28	G-1159D Gulfstream 5	Gulfstream V	GV	1 - JET
96	H47	5	Boeing Vertol Company, Chinook/Model 234, H47	H-47 Chinook 234	CH47D	5 - MIL
97	LJ24	6	Learjet 24	Lear 24/25	LEAR25	1 - JET
98	LJ25	86	Learjet 25	Lear 24/25	LEAR25	1 - JET
99	L45	12	Learjet 45	Lear 31/35/40/45/55/60	LEAR35	1 - JET
100	LJ31	363	Learjet 31	Lear 31/35/40/45/55/60	LEAR35	1 - JET
101	LJ35	138	Learjet 35	Lear 31/35/40/45/55/60	LEAR35	1 - JET
102	LJ36	1	Learjet 36	Lear 31/35/40/45/55/60	LEAR35	1 - JET
103	LJ40	35	Learjet 40	Lear 31/35/40/45/55/60	LEAR35	1 - JET
104	LJ45	137	Learjet 45	Lear 31/35/40/45/55/60	LEAR35	1 - JET
105	LJ55	19	Learjet 55	Lear 31/35/40/45/55/60	LEAR35	1 - JET
106	LJ60	54	Learjet 60	Lear 31/35/40/45/55/60	LEAR35	1 - JET
107	LR31	1	Learjet 31	Lear 31/35/40/45/55/60	LEAR35	1 - JET
108	LR35	6	Learjet 35	Lear 31/35/40/45/55/60	LEAR35	1 - JET
109	LR45	1	Learjet 45	Lear 31/35/40/45/55/60	LEAR35	1 - JET
110	MU2	10	Mitsubishi MU-2B-17	Mitsubishi MU2	DHC6	2 - ME
111	MU30	72	Mitsubishi MU-300 Diamond	Mitsubishi MU300	CNA500	1 - JET
112	B58	1	Beech Aircraft Company, 58 Barron, BE58	Multiple Aircraft (1)	BEC58P	2 - ME
113	BE55	49	Beech 55 Barron	Multiple Aircraft (1)	BEC58P	2 - ME
114	BE58	212	Beech 58 Barron	Multiple Aircraft (1)	BEC58P	2 - ME
115	BE60	2	Beech 60 Duke	Multiple Aircraft (1)	BEC58P	2 - ME
116	BE65	8	Beech 65 Queen Air	Multiple Aircraft (1)	BEC58P	2 - ME
117	BE76	55	Beech 76 Duchess	Multiple Aircraft (1)	BEC58P	2 - ME
118	BE95	10	Beech 95 Travel Air	Multiple Aircraft (1)	BEC58P	2 - ME
119	C310	175	Cessna 310, T310	Multiple Aircraft (1)	BEC58P	2 - ME
120	C312	1	Cessna 310, T310	Multiple Aircraft (1)	BEC58P	2 - ME
121	C337	59	Cessna 337 Super Skymaster	Multiple Aircraft (1)	BEC58P	2 - ME
122	C340	76	Cessna 340	Multiple Aircraft (1)	BEC58P	2 - ME
123	C401	2	Cessna Aircraft Company, 401/402/Utililiner/Businessliner, C402	Multiple Aircraft (1)	BEC58P	2 - ME
124	C402	26	401, 402, Utililiner, Businessliner	Multiple Aircraft (1)	BEC58P	2 - ME
125	C414	96	Cessna 414 Chancellor	Multiple Aircraft (1)	BEC58P	2 - ME
126	C421	97	Cessna 421, Golden Eagle, Executive Commuter	Multiple Aircraft (1)	BEC58P	2 - ME
127	PA12	1	Piper Aircraft Corp, PA-12 Super Cruiser, PA12	Multiple Aircraft (1)	BEC58P	2 - ME
128	PA22	7	Piper Aircraft Corp, PA-22 Tri-Pacer/Caribbean/Colt, PA22	Multiple Aircraft (1)	BEC58P	2 - ME
129	PA23	12	PIPER PA-23-150/160 Apache	Multiple Aircraft (1)	BEC58P	2 - ME
130	PA27	76	PA-23-235/250 Aztec, Turbo Aztec	Multiple Aircraft (1)	BEC58P	2 - ME
131	PA34	230	PA-34 Seneca	Multiple Aircraft (1)	BEC58P	2 - ME
132	PA44	13	PA-44, Seminole, Turbo Seminole	Multiple Aircraft (1)	BEC58P	2 - ME
133	PAZT	2	Piper Aztec	Multiple Aircraft (1)	BEC58P	2 - ME
134	T34P	3	BEECH T34A/B, E-17 Mentor (45)	Multiple Aircraft (1)	BEC58P	2 - ME
135	A100	1	ROCKWELL INTERNATIONAL 114	Multiple Aircraft (2)	GASEPV	3 - SE
136	B36T	54	Beech Bonanza 36 turbine	Multiple Aircraft (2)	GASEPV	3 - SE
137	BE33	93	Beechcraft 33 Debonair/Bonanza	Multiple Aircraft (2)	GASEPV	3 - SE
138	BE35	154	Beechcraft Model 35 Bonanza	Multiple Aircraft (2)	GASEPV	3 - SE
139	BE36	202	Beech 36 Bonanza	Multiple Aircraft (2)	GASEPV	3 - SE

	A	B	C	F	G	I
1	**Aircraft Code**	**Number of Operations**	**Aircraft Type**	**Model Combinations**	**INM Equivalent**	**Aircraft Sub Category**
140	BE45	2	BEECH A45	Multiple Aircraft (2)	GASEPV	3 - SE
141	COL3	5	Lancair Columbia 300	Multiple Aircraft (2)	GASEPV	3 - SE
142	COL4	28	Lancair Columbia 400	Multiple Aircraft (2)	GASEPV	3 - SE
143	COUR	2	Helio Courier	Multiple Aircraft (2)	GASEPV	3 - SE
144	DA20	1	DIAMOND AIRCRAFT IND INC DA 20-C1	Multiple Aircraft (2)	GASEPV	3 - SE
145	DA40	12	DIAMOND AIRCRAFT IND INC DA 40	Multiple Aircraft (2)	GASEPV	3 - SE
146	DV20	1	Diamond, DA-20/22/DV-20 Katana/Speed Katana, DV20	Multiple Aircraft (2)	GASEPV	3 - SE
147	F26	8	Aermacchi Spa, SF-260 A-B-C-D-E-F-M-W/ Warrior, F260	Multiple Aircraft (2)	GASEPV	3 - SE
148	F260	20	Aermacchi Spa, SF-260 A-B-C-D-E-F-M-W/ Warrior, F260	Multiple Aircraft (2)	GASEPV	3 - SE
149	G2	3	Great Lakes, 2T-1 Sport Trainer/Sport, G2T1	Multiple Aircraft (2)	GASEPV	3 - SE
150	HXB	3	LAUNDRIE KENNETH COZY MARK IV	Multiple Aircraft (2)	GASEPV	3 - SE
151	HXC	2	LANCAIR LEGACY 2000	Multiple Aircraft (2)	GASEPV	3 - SE
152	LA4	2	Lake LA-4-200	Multiple Aircraft (2)	GASEPV	3 - SE
153	LAKE	1	Lake LA-4-200	Multiple Aircraft (2)	GASEPV	3 - SE
154	LANC	6	Lancair	Multiple Aircraft (2)	GASEPV	3 - SE
155	LC41	1	LANCAIR COMPANY LC41-550FG	Multiple Aircraft (2)	GASEPV	3 - SE
156	LNCR	2	Lancair HXB	Multiple Aircraft (2)	GASEPV	3 - SE
157	M020	3	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
158	M20	9	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
159	M200	2	Rockwell International Corp, 200 Commander 200, M200	Multiple Aircraft (2)	GASEPV	3 - SE
160	M20C	1	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
161	M20F	2	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
162	M20J	1	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
163	M20K	2	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
164	M20P	182	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
165	M20R	1	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
166	M20T	61	Mooney Aircraft Corp, M-20 Series, M20P	Multiple Aircraft (2)	GASEPV	3 - SE
167	MO20	94	Mooney M20J	Multiple Aircraft (2)	GASEPV	3 - SE
168	MO21	8	Mooney M20J	Multiple Aircraft (2)	GASEPV	3 - SE
169	MO2T	1	Mooney M20J	Multiple Aircraft (2)	GASEPV	3 - SE
170	NAVI	6	ROCKWELL Navion NA 145/154	Multiple Aircraft (2)	GASEPV	3 - SE
171	P28R	200	PIPER PA-28R-1802/3/200/201	Multiple Aircraft (2)	GASEPV	3 - SE
172	P28T	63	PA-28RT Arrow 4, Turbo Arrow 11	Multiple Aircraft (2)	GASEPV	3 - SE
173	P32	5	PIPER PA-32-300	Multiple Aircraft (2)	GASEPV	3 - SE
174	P32R	23	PIPER PA-32R-300	Multiple Aircraft (2)	GASEPV	3 - SE
175	P32T	13	PIPER PA-32RT	Multiple Aircraft (2)	GASEPV	3 - SE
176	P33	1	PIPER PA-32-300	Multiple Aircraft (2)	GASEPV	3 - SE
177	P46T	63	PA-46-500TP Malibu Meridian	Multiple Aircraft (2)	GASEPV	3 - SE
178	PA28	443	PIPER PA-28R-201T	Multiple Aircraft (2)	GASEPV	3 - SE
179	PA29	1	Piper Arrow PA28	Multiple Aircraft (2)	GASEPV	3 - SE
180	PA32	367	PIPER PA-32-300	Multiple Aircraft (2)	GASEPV	3 - SE
181	PA38	3	Piper Aircraft Corp, PA-38 Tomahawk, PA38	Multiple Aircraft (2)	GASEPV	3 - SE
182	PA46	34	PA-46 310P/350P Malibu, Malibu Mirage	Multiple Aircraft (2)	GASEPV	3 - SE
183	PARO	54	Piper Cherokee Arrow, PARO	Multiple Aircraft (2)	GASEPV	3 - SE
184	PASE	4	Piper Aircraft Single Engine	Multiple Aircraft (2)	GASEPV	3 - SE
185	SR20	57	CIRRUS DESIGN CORP SR20	Multiple Aircraft (2)	GASEPV	3 - SE
186	SR22	420	CIRRUS DESIGN CORP SR22	Multiple Aircraft (2)	GASEPV	3 - SE
187	TB10	1	Aerospatiale, Tabago/TB10C/200, TOBA	Multiple Aircraft (2)	GASEPV	3 - SE
188	TB20	1	Aerospatiale, Trinidad TB-20/21,TRIN	Multiple Aircraft (2)	GASEPV	3 - SE
189	TB7	2	Aerospatiale/socata TBM TB-700, TBM7	Multiple Aircraft (2)	GASEPV	3 - SE
190	TBM7	97	AEROSPATIALE/SOCATA TBM TB-700	Multiple Aircraft (2)	GASEPV	3 - SE
191	TBN7	2	Aerospatiale/socata TBM TB-700, TBM7	Multiple Aircraft (2)	GASEPV	3 - SE
192	TMB7	1	Aerospatiale/socata TBM TB-700, TBM7	Multiple Aircraft (2)	GASEPV	3 - SE
193	TRIN	7	AEROSPATIALE Trinidad TB-20/21	Multiple Aircraft (2)	GASEPV	3 - SE
194	A109	6	Beagle Aircraft, A-109 Airedale, AIRD	Multiple Aircraft (3)	GASEPF	3 - SE
195	A36	1	QUESTAIR MODEL 20, GRISWALD JAMES E	Multiple Aircraft (3)	GASEPF	3 - SE
196	AA5	42	Grumman Aerospace Corp, AA-5 Traveller Cheetah Tiger, AA5	Multiple Aircraft (3)	GASEPF	3 - SE
197	AA5A	2	Grumman Aerospace Corp, AA-5 Traveller Cheetah Tiger, AA5	Multiple Aircraft (3)	GASEPF	3 - SE
198	AA5B	2	Grumman Aerospace Corp, AA-5 Traveller Cheetah Tiger, AA5	Multiple Aircraft (3)	GASEPF	3 - SE
199	AAA5	6	Grumman Aerospace Corp, AA-5 Traveller Cheeta Tiger, AA5	Multiple Aircraft (3)	GASEPF	3 - SE
200	AC11	14	Rockwell International Corp, 112/114 Commander 112/114/Alpine/Commander/Gran Turismo/Commander, AC11	Multiple Aircraft (3)	GASEPF	3 - SE
201	AC14	2	Rockwell International Corp, 112/114 Commander, AC11	Multiple Aircraft (3)	GASEPF	3 - SE
202	ACRO	12	JACKSON JIM ACRO SPORTII	Multiple Aircraft (3)	GASEPF	3 - SE
203	B206	1	Beagle Aircraft, B-206 Basset, BASS	Multiple Aircraft (3)	GASEPF	3 - SE
204	BE23	12	Beechcraft Model 23 Musketeer	Multiple Aircraft (3)	GASEPF	3 - SE
205	BE24	8	Beechcraft Model 24 Sierra	Multiple Aircraft (3)	GASEPF	3 - SE
206	BE77	1	Beech Aircraft Company, 77 Skipper, BE77	Multiple Aircraft (3)	GASEPF	3 - SE
207	BL17	10	BELLANCA 17 Viking,Super Viking,Turbo Viking	Multiple Aircraft (3)	GASEPF	3 - SE
208	C208	173	Cessna 208 Caravan I	Multiple Aircraft (3)	GASEPF	3 - SE
209	CHMP	2	Bellenca Aerona Champ, CH7A, SP	Multiple Aircraft (3)	GASEPF	3 - SE

	A	B	C	F	G	I
1	Aircraft Code	Number of Operations	Aircraft Type	Model Combinations	INM Equivalent	Aircraft Sub Category
210	CITA	1	Bellenca Aero Citabria	Multiple Aircraft (3)	GASEPF	3 - SE
211	COZY	1	Cozy Homebuilt	Multiple Aircraft (3)	GASEPF	3 - SE
212	E400	2	CURTISS WRIGHT TRAVEL AIR 4000	Multiple Aircraft (3)	GASEPF	3 - SE
213	Eagle	1	GOLDEN EAGLE CHIEF	Multiple Aircraft (3)	GASEPF	3 - SE
214	EXP	42	Experimental Aircraft	Multiple Aircraft (3)	GASEPF	3 - SE
215	EXPE	1	Experimental Aircraft	Multiple Aircraft (3)	GASEPF	3 - SE
216	EXPP	1	Experimental Aircraft	Multiple Aircraft (3)	GASEPF	3 - SE
217	EXXP	1	Experimental Aircraft	Multiple Aircraft (3)	GASEPF	3 - SE
218	GC1	1	UNIVERSAL GLOBE GC-1B	Multiple Aircraft (3)	GASEPF	3 - SE
219	GLAS	3	WALKER KEITH GLASAIR SII	Multiple Aircraft (3)	GASEPF	3 - SE
220	HOME	30	BERGER SIDNEY L SUPERCAT X-1	Multiple Aircraft (3)	GASEPF	3 - SE
221	KITFOX	6	WHITTAKER WILLIAM R KITFOX MOD I	Multiple Aircraft (3)	GASEPF	3 - SE
222	L2XL	9	LIBERTY XL-2	Multiple Aircraft (3)	GASEPF	3 - SE
223	LBTY	3	LIBERTY XL-2	Multiple Aircraft (3)	GASEPF	3 - SE
224	LGEZ	1	MONTAGUE THOMAS W LONG EZ	Multiple Aircraft (3)	GASEPF	3 - SE
225	LIB	1	LIBERTY XL-2	Multiple Aircraft (3)	GASEPF	3 - SE
226	LIBE	2	LIBERTY XL-2	Multiple Aircraft (3)	GASEPF	3 - SE
227	LIBR	1	LIBERTY XL-2	Multiple Aircraft (3)	GASEPF	3 - SE
228	LLEZ	2	Long-EZ	Multiple Aircraft (3)	GASEPF	3 - SE
229	PA18	17	PIPER PA-18 Super Cub	Multiple Aircraft (3)	GASEPF	3 - SE
230	PT17	6	BOEING A75N1(PT17)	Multiple Aircraft (3)	GASEPF	3 - SE
231	PT6	1	CUNNINGHAM HALL PT-6F	Multiple Aircraft (3)	GASEPF	3 - SE
232	RLU1	1	LONG BREEZY RLU-1	Multiple Aircraft (3)	GASEPF	3 - SE
233	ROBIN	1	CURTISS WRIGHT ROBIN	Multiple Aircraft (3)	GASEPF	3 - SE
234	RV10	1	Van Aircraft-Homebult	Multiple Aircraft (3)	GASEPF	3 - SE
235	RV4	3	Van Aircraft-Homebult	Multiple Aircraft (3)	GASEPF	3 - SE
236	RV6	6	Van Aircraft-Homebult	Multiple Aircraft (3)	GASEPF	3 - SE
237	RV60	1	Van Aircraft-Homebult	Multiple Aircraft (3)	GASEPF	3 - SE
238	RV7	3	BYRUM JON W RV7A	Multiple Aircraft (3)	GASEPF	3 - SE
239	RV8	4	HENDERSON THOMAS F VANS RV-8	Multiple Aircraft (3)	GASEPF	3 - SE
240	S12	1	STRAMMER FRED RANS S-12S	Multiple Aircraft (3)	GASEPF	3 - SE
241	S6	7	RANDALL MARVIN L RANS S-7	Multiple Aircraft (3)	GASEPF	3 - SE
242	Waco	4	WACO 10	Multiple Aircraft (3)	GASEPF	3 - SE
243	XL2	28	LIBERTY XL-2	Multiple Aircraft (3)	GASEPF	3 - SE
244	P180	100	P-180 Avanti	P180 Avanti	C12	2 - ME
245	P68	28	PARTENAVIA SPA P.68C	Partinavia P68	BEC58P	2 - ME
246	P68A	3	Partenavia, AP-68TP-300 Spartacus, P68T	Partinavia P68	BEC58P	2 - ME
247	P68T	2	Partenavia, AP-68TP-300 Spartacus, P68T	Partinavia P68	BEC58P	2 - ME
248	PA68	2	Partenavia P68 Observer	Partinavia P68	BEC58P	2 - ME
249	PARD	1	Partenavia P68 Observer	Partinavia P68	BEC58P	2 - ME
250	PART	3	Partenavia P68 Observer	Partinavia P68	BEC58P	2 - ME
251	PN68	32	PARTENAVIA SPA P.68C	Partinavia P68	BEC58P	2 - ME
252	PC12	105	PILATUS PC-12, Eagle	Pilatus PC12	SD330	3 - SE
253	AEST	17	Piper Aerostar	Piper Aerostar	BEC58P	2 - ME
254	PAY1	170	PA-31T1-500 Cheyenne 1	Piper Cheyenne	CNA441	2 - ME
255	PAY2	148	PA-31T-620.T2-620 Cheyenne, Cheyenne 2	Piper Cheyenne	CNA441	2 - ME
256	PAY3	1	Piper Aircraft Corp, PA-42-720 Cheyenne 3, PAY3	Piper Cheyenne	CNA441	2 - ME
257	PAY4	19	PA-42-1000 Cheyenne 400	Piper Cheyenne	CNA441	2 - ME
258	PAYE	3	Piper Cheyenne II	Piper Cheyenne	CNA441	2 - ME
259	PA31	2254	PA-31/31P	Piper Chieftain	PA31	2 - ME
260	BF36	1	PA-30/39	Piper Comanche	PA30	2 - ME
261	PA24	35	PIPER PA-24 Comanche	Piper Comanche	PA30	2 - ME
262	PA30	104	PA-30/39	Piper Comanche	PA30	2 - ME
263	P28	27	Piper PA-28-201T	Piper Warrior	PA28	3 - SE
264	P28A	377	PIPER WARRIOR	Piper Warrior	PA28	3 - SE
265	P28B	37	PIPER PA-28-201T/235/236	Piper Warrior	PA28	3 - SE
266	PRM1	21	RAYTHEON AIRCRAFT COMPANY 390	Raytheon 390	LEAR35	1 - JET

Aircraft Code	Number of Operations	Aircraft Type	Model Combinations	INM Equivalent	Aircraft Sub Category
R22	1	ROBINSON HELICOPTER R22 BETA	ROBINSON HELICOPTER R22 BETA	R22	4 - HELO
AC80	2	680T, 680V Turbo Commander	Rockwell Turbo Commander	CNA441	2 - ME
AC90	173	Gulf Aero 690 Jetprop Commander 840/900	Rockwell Turbo Commander	CNA441	2 - ME
AC95	12	Gulf Aero 695 Jetprop Commander 680/1000	Rockwell Turbo Commander	CNA441	2 - ME
SBR1	24	NA SABRELINER-265-65	Sabreliner	LEAR35	1 - JET
S76	3	Sikorsky Aircraft, Model S-76/ Spirit/ Eagle, S76	Sikorsky S-76A	S76	4 - HELO
SK76	2	Sikorsky s76 Helicopter	Sikorsky S-76A	S76	4 - HELO
SW3	8	SA-226TB, SA-227TT Merlin 3, Fairchild 300	Swearingen Merlin 3	CNA441	2 - ME
FAIR	1	Fairchild Metro	Swearingen Merlin 4	DHC6	2 - ME
SW4	2	SA-226AC, SA-227AC/AT Metro, Merlin 4, Expediter	Swearingen Merlin 4	DHC6	2 - ME
UH1	15	Bell Helicopter Textron, Biglifter/Bell 204/205/214A/B/AB-204, UH1	UH-1 Huey	B212	4 - HELO
H60	11	Schweizer Aircraft Corp, Blackhawk S-70 Series, H60	UH-60 Blackhawk	S70	5 - MIL
UH60	6	Schweizer Aircraft Corp, Blackhawk S-70 Series, H60	UH-60 Blackhawk	S70	5 - MIL
WW24	13	IAI 1124 Westwind	Westwind 1124	IA1125	1 - JET
	55312				

Legend		Legend	Legend	Legend	Legend
279 count		230 count	68 Count	37 count	7 count

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, BEECH A45, Malibu Meridian, ROCKWELL INTERNATIONAL 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

1 - JET
2 - ME
3 - SE
4 - HELO
5 - MIL
6 - OTHER
7 - UNKNOWN

TABLE B-3
Source Data Presented at "Model Combination" Level

Count of Day or Night			Day or Night A/D/O						
			D		D Total	N		N Total	Grand Total
Aircraft Sub Category	Model Combinations		A	D		A	D		
1 - JET	Astra 1125	IA1125	21	26	47				47
	Bae-125 (1000 Series)	LEAR35	8	8	16				16
	BAe-125 (400 Series)	LEAR35	6	8	14				14
	BAe-125 (800 Series)	LEAR35	194	186	380	8	13	21	401
	Beechjet 400	MU3001	450	472	922	36	17	53	975
	Canadair BD-100	CNA750	155	152	307	11	14	25	332
	Cessna 750	CNA750	177	186	363	14	8	22	385
	Challenger 600	CL600	69	70	139	5	5	10	149
	Citation 525/500	CNA500	336	341	677	21	17	38	715
	Citation 550/560	MU3001	1035	1085	2120	73	42	115	2235
	Citation 650	CIT3	31	30	61		2	2	63
	Citation 680	LEAR35	76	74	150	2	3	5	155
	CRJ-200	CLREGJ		1	1		1	1	2
	CRJ-700	GV	1	1	2				2
	Dornier 328	CL600	7	8	15	2	1	3	18
	ERJ 135/140	EMB145	10	11	21		1	1	22
	Falcon 10	LEAR35	32	29	61				61
	Falcon 20	CL600	58	56	114	3	3	6	120
	Falcon 2000	CL600	248	260	508	47	36	83	591
	Falcon 50	LEAR35	38	36	74		1	1	75
	Falcon 900	LEAR35	30	28	58	1		1	59
	Gulfstream 150	LEAR35	3	3	6				6
	Gulfstream 200	GII	16	16	32	1	1	2	34
	Gulfstream II	GII	7	8	15	1	1	2	17
	Gulfstream III	GIIB	10	9	19		1	1	20
	Gulfstream IV	GIV	48	46	94	1		1	95
	Gulfstream V	GV	14	14	28				28
	Lear 24/25	LEAR25	43	44	87	2	3	5	92
	Lear 31/35/40/45/55/60	LEAR35	350	342	692	34	41	75	767
	Mitsubishi MU300	CNA500	33	36	69	3		3	72
	Raytheon 390	LEAR35	11	10	21				21
	Sabreliner	LEAR35	12	11	23		1	1	24
	Westwind 1124	IA1125	6	6	12		1	1	13
1 - JET Total			3535	3613	7148	265	213	478	7626
2 - ME	Bae-3200 Jetstream	DHC6	2		2				2
	Bae-3200 Jetstream Super 31	DHC6	3	2	5		1	1	6
	Beech 1900	1900D	4	6	10	1		1	11
	Beech King Air	CNA441	329	375	704	71	44	115	819
	Beech Super King Air	DHC6	618	645	1263	114	85	199	1462
	Cessna Caravan II	CNA208				1		1	1
	Cessna Conquest	CNA441	72	76	148	5	3	8	156
	Diamond Twin Star	BEC58P	2	2	4				4
	EMB-120	EMB120	2	3	5				5
	Gulf Aero Commander	CNA441	3	3	6				6
	Mitsubishi MU2	DHC6	5	5	10				10
	Multiple Aircraft (1)	BEC58P	540	537	1077	85	51	136	1213
	P180 Avanti	C12	50	50	100				100
	Partinavia P68	BEC58P	29	31	60	10	1	11	71
	Piper Aerostar	BEC58P	10	7	17				17
	Piper Cheyenne	CNA441	164	163	327	8	6	14	341
	Piper Chieftain	PA31	637	390	1027	760	467	1227	2254
	Piper Comanche	PA30	74	63	137	3		3	140
	Rockwell Turbo Commander	CNA441	79	89	168	13	6	19	187
	Swearingen Merlin 3	CNA441	4	4	8				8
	Swearingen Merlin 4	DHC6	2	1	3				3
2 - ME Total			2629	2452	5081	1071	664	1735	6816
3 - SE	Cessna 150/152/172/172RG/177	CNA172	1008	747	1755	48	18	66	1821
	Cessna 180/182/206/210	CNA206	738	606	1344	28	15	43	1387
	Multiple Aircraft (2)	GASEPV	1502	1203	2705	69	64	133	2838
	Multiple Aircraft (3)	GASEPF	254	207	461	12	14	26	487
	Pilatus PC12	SD330	53	47	100	1	4	5	105
	Piper Warrior	PA28	222	199	421	16	4	20	441
3 - SE Total			3777	3009	6786	174	119	293	7079
4 - HELO	Aerospatiale AS-350	SA350D	45	50	95	24	17	41	136
	Eurocopter EC-135	EC130	104	292	396	23	87	110	506
	ROBINSON HELICOPTER R22 BETA	R22		1	1				1
	Sikorsky S-76A	S76	1	4	5				5
	UH-1 Huey	B212	7	2	9				9
4 - HELO Total			157	349	506	47	104	151	657
5 - MIL	H-47 Chinook 234	CH47D	2	3	5				5
	UH-60 Blackhawk	S70	14	6	20	2	1	3	23
5 - MIL Total			16	9	25	2	1	3	28
7 - UNKNOWN	_NCF	Unknown	13353	17736	31089	1010	1007	2017	33106
7 - UNKNOWN Total			13353	17736	31089	1010	1007	2017	33106
Grand Total			23467	27168	50635	2569	2108	4677	55312

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

TABLE B-4
Equalize Arrival/Departure Count

Base Data										Calculated Adjustments				Revised Totals						
	Aircraft		Day		Night		Totals			Day		Night		Day		Night		Totals		Grand Total
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep		Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	21	26			21	26	5	5	0	0	0	26	26	0	0	26	26	**52**
	Bae-125 (1000 Series)	LEAR35	8	8			8	8	0	0	0	0	0	8	8	0	0	8	8	**16**
	BAe-125 (400 Series)	LEAR35	6	8			6	8	2	2	0	0	0	8	8	0	0	8	8	**16**
	BAe-125 (800 Series)	LEAR35	194	186	8	13	202	199	-3	0	3	0	0	194	189	8	13	202	202	**404**
	Beechjet 400	MU3001	450	472	36	17	486	489	3	3	0	0	0	453	472	36	17	489	489	**978**
	Canadair BD-100	CNA750	155	152	11	14	166	166	0	0	0	0	0	155	152	11	14	166	166	**332**
	Cessna 750	CNA750	177	186	14	8	191	194	3	3	0	0	0	180	186	14	8	194	194	**388**
	Challenger 600	CL600	69	70	5	5	74	75	1	1	0	0	0	70	70	5	5	75	75	**150**
	Citation 525/500	CNA500	336	341	21	17	357	358	1	1	0	0	0	337	341	21	17	358	358	**716**
	Citation 550/560	MU3001	1,035	1,085	73	42	1,108	1,127	19	18	0	1	0	1,053	1,085	74	42	1,127	1,127	**2,254**
	Citation 650	CIT3	31	30		2	31	32	1	1	0	0	0	32	30	0	2	32	32	**64**
	Citation 680	LEAR35	76	74	2	3	78	77	-1	0	1	0	0	76	75	2	3	78	78	**156**
	CRJ-200	CLREGJ		1		1	0	2	2	2	0	0	0	2	1	0	1	2	2	**4**
	CRJ-700	GV	1	1			1	1	0	0	0	0	0	1	1	0	0	1	1	**2**
	Dornier 328	CL600	7	8	2	1	9	9	0	0	0	0	0	7	8	2	1	9	9	**18**
	ERJ 135/140	EMB145	10	11		1	10	12	2	2	0	0	0	12	11	0	1	12	12	**24**
	Falcon 10	LEAR35	32	29			32	29	-3	0	3	0	0	32	32	0	0	32	32	**64**
	Falcon 20	CL600	58	56	3	3	61	59	-2	0	2	0	0	58	58	3	3	61	61	**122**
	Falcon 2000	CL600	248	260	47	36	295	296	1	1	0	0	0	249	260	47	36	296	296	**592**
	Falcon 50	LEAR35	38	36		1	38	37	-1	0	1	0	0	38	37	0	1	38	38	**76**
	Falcon 900	LEAR35	30	28	1		31	28	-3	0	3	0	0	30	31	1	0	31	31	**62**
	Gulfstream 150	LEAR35	3	3			3	3	0	0	0	0	0	3	3	0	0	3	3	**6**
	Gulfstream 200	GII	16	16	1	1	17	17	0	0	0	0	0	16	16	1	1	17	17	**34**
	Gulfstream II	GII	7	8	1	1	8	9	1	1	0	0	0	8	8	1	1	9	9	**18**
	Gulfstream III	GIIB	10	9		1	10	10	0	0	0	0	0	10	9	0	1	10	10	**20**
	Gulfstream IV	GIV	48	46	1		49	46	-3	0	3	0	0	48	49	1	0	49	49	**98**
	Gulfstream V	GV	14	14			14	14	0	0	0	0	0	14	14	0	0	14	14	**28**
	Lear 24/25	LEAR25	43	44	2	3	45	47	2	2	0	0	0	45	44	2	3	47	47	**94**
	Lear 31/35/40/45/55/60	LEAR35	350	342	34	41	384	383	-1	0	1	0	0	350	343	34	41	384	384	**768**
	Mitsubishi MU300	CNA500	33	36	3		36	36	0	0	0	0	0	33	36	3	0	36	36	**72**
	Raytheon 390	LEAR35	11	10			11	10	-1	0	1	0	0	11	11	0	0	11	11	**22**
	Sabreliner	LEAR35	12	11		1	12	12	0	0	0	0	0	12	11	0	1	12	12	**24**
	Westwind 1124	IA1125	6	6		1	6	7	1	1	0	0	0	7	6	0	1	7	7	**14**
1 - JET Total			3,535	3,613	265	213	3,800	3,826		43	18	1	0	3,578	3,631	266	213	3,844	3,844	**7,688**
2 - ME	Bae-3200 Jetstream	DHC6	2				2	0	-2	0	2	0	0	2	2	0	0	2	2	**4**
	Bae-3200 Jetstream Super 31	DHC6	3	2		1	3	3	0	0	0	0	0	3	2	0	1	3	3	**6**
	Beech 1900	1900D	4	6	1		5	6	1	1	0	0	0	5	6	1	0	6	6	**12**
	Beech King Air	CNA441	329	375	71	44	400	419	19	16	0	3	0	345	375	74	44	419	419	**838**
	Beech Super King Air	DHC6	618	645	114	85	732	730	-2	0	2	0	0	618	647	114	85	732	732	**1,464**
	Cessna Caravan II	CNA208			1		1	0	-1	0	1	0	0	0	1	1	0	1	1	**2**
	Cessna Conquest	CNA441	72	76	5	3	77	79	2	2	0	0	0	74	76	5	3	79	79	**158**
	Diamond Twin Star	BEC58P	2	2			2	2	0	0	0	0	0	2	2	0	0	2	2	**4**
	EMB-120	EMB120	2	3			2	3	1	1	0	0	0	3	3	0	0	3	3	**6**
	Gulf Aero Commander	CNA441	3	3			3	3	0	0	0	0	0	3	3	0	0	3	3	**6**
	Mitsubishi MU2	DHC6	5	5			5	5	0	0	0	0	0	5	5	0	0	5	5	**10**
	Multiple Aircraft (1)	BEC58P	540	537	85	51	625	588	-37	0	34	0	3	540	571	85	54	625	625	**1,250**
	P180 Avanti	C12	50	50			50	50	0	0	0	0	0	50	50	0	0	50	50	**100**
	Partinavia P68	BEC58P	29	31	10	1	39	32	-7	0	7	0	0	29	38	10	1	39	39	**78**
	Piper Aerostar	BEC58P	10	7			10	7	-3	0	3	0	0	10	10	0	0	10	10	**20**
	Piper Cheyenne	CNA441	164	163	8	6	172	169	-3	0	3	0	0	164	166	8	6	172	172	**344**
	Piper Chieftain	PA31	637	390	760	467	1,397	857	-540	0	246	0	294	637	636	760	761	1,397	1,397	**2,794**
	Piper Comanche	PA30	74	63	3		77	63	-14	0	14	0	0	74	77	3	0	77	77	**154**
	Rockwell Turbo Commander	CNA441	79	89	13	6	92	95	3	3	0	0	0	82	89	13	6	95	95	**190**
	Swearingen Merlin 3	CNA441	4	4			4	4	0	1	0	-1	0	5	4	-1	0	4	4	**8**
	Swearingen Merlin 4	DHC6	2	1			2	1	-1	0	1	0	0	2	2	0	0	2	2	**4**
2 - ME Total			2,629	2,452	1,071	664	3,700	3,116		24	313	2	297	2,653	2,765	1,073	961	3,726	3,726	**7,452**
3 - SE	Cessna 150/152/172/172RG/177	CNA172	1,008	747	48	18	1,056	765	-291	0	284	0	7	1,008	1,031	48	25	1,056	1,056	**2,112**
	Cessna 180/182/206/210	CNA206	738	606	28	15	766	621	-145	0	141	0	4	738	747	28	19	766	766	**1,532**
	Multiple Aircraft (2)	GASEPV	1,502	1,203	69	64	1,571	1,267	-304	0	289	0	15	1,502	1,492	69	79	1,571	1,571	**3,142**
	Multiple Aircraft (3)	GASEPF	254	207	12	14	266	221	-45	0	42	0	3	254	249	12	17	266	266	**532**
	Pilatus PC12	SD330	53	47	1	4	54	51	-3	0	3	0	0	53	50	1	4	54	54	**108**
	Piper Warrior	PA28	222	199	16	4	238	203	-35	0	34	0	1	222	233	16	5	238	238	**476**
3 - SE Total			3,777	3,009	174	119	3,951	3,128		0	793	0	30	3,777	3,802	174	149	3,951	3,951	**7,902**
4 - HELO	Aerospatiale AS-350	SA350D	45	50	24	17	69	67	-2	0	1	0	1	45	51	24	18	69	69	**138**
	Eurocopter EC-135	EC130	104	292	23	87	127	379	252	206	0	46	0	310	292	69	87	379	379	**758**
	ROBINSON HELICOPTER R22 BE	R22	0	1			0	1	1	1	0	0	0	1	1	0	0	1	1	**2**
	Sikorsky S-76A	S76	1	4			1	4	3	3	0	0	0	4	4	0	0	4	4	**8**
	UH-1 Huey	B212	7	2			7	2	-5	0	5	0	0	7	7	0	0	7	7	**14**
4 - HELO Total			157	349	47	104	204	453		210	6	46	1	367	355	93	105	460	460	**920**
5 - MIL	H-47 Chinook 234	CH47D	2	3			2	3	1	1	0	0	0	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	14	6	2	1	16	7	-9	0	8	0	1	14	14	2	2	16	16	**32**
5 - MIL Total			16	9	2	1	18	10		1	8	0	1	17	17	2	2	19	19	**38**
7 - UNKNOW	NCF	Unknown	13,353	17,736	1,010	1,007	14,363	18,743	4,380	4,072	0	308	0	17,425	17,736	1,318	1,007	18,743	18,743	**37,486**
7 - UNKNOWN Total			13,353	17,736	1,010	1,007	14,363	18,743		4,072	0	308	0	17,425	17,736	1,318	1,007	18,743	18,743	**37,486**
Grand Total			**23,467**	**27,168**	**2,569**	**2,108**	**26,036**	**29,276**		**4,350**	**1,138**	**357**	**329**	**27,817**	**28,306**	**2,926**	**2,437**	**30,743**	**30,743**	**61,486**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310
Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole
Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota
Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier,
Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV
Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub
Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2,
RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I
Grumman Tiger

TABLE B-5
2007 Operational Fleet Mix

<u>Itinerant Operations</u>
<u>Local Operations</u>
<u>Total Operations</u>

2007 Itinerant Operations

Base Data			Adjusted Totals						
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	26	26	0	0	26	26	**52**
	Bae-125 (1000 Series)	LEAR35	8	8	0	0	8	8	**16**
	BAe-125 (400 Series)	LEAR35	8	8	0	0	8	8	**16**
	BAe-125 (800 Series)	LEAR35	194	189	8	13	202	202	**404**
	Beechjet 400	MU3001	453	472	36	17	489	489	**978**
	Canadair BD-100	CNA750	155	152	11	14	166	166	**332**
	Cessna 750	CNA750	180	186	14	8	194	194	**388**
	Challenger 600	CL600	70	70	5	5	75	75	**150**
	Citation 525/500	CNA500	337	341	21	17	358	358	**716**
	Citation 550/560	MU3001	1,053	1,085	74	42	1,127	1,127	**2,254**
	Citation 650	CIT3	32	30	0	2	32	32	**64**
	Citation 680	LEAR35	76	75	2	3	78	78	**156**
	CRJ-200	CLREGJ	2	1	0	1	2	2	**4**
	CRJ-700	GV	1	1	0	0	1	1	**2**
	Dornier 328	CL600	7	8	2	1	9	9	**18**
	ERJ 135/140	EMB145	12	11	0	1	12	12	**24**
	Falcon 10	LEAR35	32	32	0	0	32	32	**64**
	Falcon 20	CL600	58	58	3	3	61	61	**122**
	Falcon 2000	CL600	249	260	47	36	296	296	**592**
	Falcon 50	LEAR35	38	37	0	1	38	38	**76**
	Falcon 900	LEAR35	30	31	1	0	31	31	**62**
	Gulfstream 150	LEAR35	3	3	0	0	3	3	**6**
	Gulfstream 200	GII	16	16	1	1	17	17	**34**
	Gulfstream II	GII	8	8	1	1	9	9	**18**
	Gulfstream III	GIIB	10	9	0	1	10	10	**20**
	Gulfstream IV	GIV	48	49	1	0	49	49	**98**
	Gulfstream V	GV	14	14	0	0	14	14	**28**
	Lear 24/25	LEAR25	45	44	2	3	47	47	**94**
	Lear 31/35/40/45/55/60	LEAR35	350	343	34	41	384	384	**768**
	Mitsubishi MU300	CNA500	33	36	3	0	36	36	**72**
	Raytheon 390	LEAR35	11	11	0	0	11	11	**22**
	Sabreliner	LEAR35	12	11	0	1	12	12	**24**
	Westwind 1124	IA1125	7	6	0	1	7	7	**14**
1 - JET Total			3,578	3,631	266	213	3,844	3,844	**7,688**
2 - ME	Bae-3200 Jetstream	DHC6	2	2	0	0	2	2	**4**
	Bae-3200 Jetstream Super 31	DHC6	3	2	0	1	3	3	**6**
	Beech 1900	1900D	5	6	1	0	6	6	**12**
	Beech King Air	CNA441	345	375	74	44	419	419	**838**
	Beech Super King Air	DHC6	618	647	114	85	732	732	**1,464**
	Cessna Caravan II	CNA208	0	1	1	0	1	1	**2**
	Cessna Conquest	CNA441	74	76	5	3	79	79	**158**
	Diamond Twin Star	BEC58P	2	2	0	0	2	2	**4**
	EMB-120	EMB120	3	3	0	0	3	3	**6**
	Gulf Aero Commander	CNA441	3	3	0	0	3	3	**6**
	Mitsubishi MU2	DHC6	5	5	0	0	5	5	**10**
	Multiple Aircraft (1)	BEC58P	540	571	85	54	625	625	**1,250**
	P180 Avanti	C12	50	50	0	0	50	50	**100**
	Partinavia P68	BEC58P	29	38	10	1	39	39	**78**
	Piper Aerostar	BEC58P	10	10	0	0	10	10	**20**
	Piper Cheyenne	CNA441	164	166	8	6	172	172	**344**
	Piper Chieftain	PA31	637	636	760	761	1,397	1,397	**2,794**
	Piper Comanche	PA30	74	77	3	0	77	77	**154**
	Rockwell Turbo Commander	CNA441	82	89	13	6	95	95	**190**
	Swearingen Merlin 3	CNA441	4	4	0	0	4	4	**8**
	Swearingen Merlin 4	DHC6	2	2	0	0	2	2	**4**
	ALLOCATION								
	Piper Chieftain	PA31	1,505	1,535	131	101	1,636	1,636	**3,272**
	Beech Super King Air	DHC6	1,505	1,535	131	101	1,636	1,636	**3,272**
	Multiple Aircraft (1)	BEC58P	1,505	1,535	130	100	1,635	1,635	**3,270**
2 - ME Total			7,167	7,370	1,466	1,263	8,633	8,633	**17,266**

Base Data			Adjusted Totals						
	Aircraft		Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
3 - SE	Cessna 150/152/172/172RG/177	CNA172	1,008	1,031	48	25	1,056	1,056	**2,112**
	Cessna 180/182/206/210	CNA206	738	747	28	19	766	766	**1,532**
	Multiple Aircraft (2)	GASEPV	1,502	1,492	69	79	1,571	1,571	**3,142**
	Multiple Aircraft (3)	GASEPF	254	249	12	17	266	266	**532**
	Pilatus PC12	SD330	53	50	1	4	54	54	**108**
	Piper Warrior	PA28	222	233	16	5	238	238	**476**
	ALLOCATION								
	Multiple Aircraft (2)	GASEPV	2,793	2,917	527	403	3,320	3,320	**6,640**
	Cessna 150/152/172/172RG/177	CNA172	2,794	2,918	527	403	3,321	3,321	**6,642**
	Cessna 180/182/206/210	CNA206	2,793	2,917	527	403	3,320	3,320	**6,640**
3 - SE Total			12,157	12,554	1,755	1,358	13,912	13,912	**27,824**
4 - HELO	Aerospatiale AS-350	SA350D	45	51	24	18	69	69	**138**
	Eurocopter EC-135	EC130	310	292	69	87	379	379	**758**
	ROBINSON HELICOPTER R22 BETA	R22	1	1	0	0	1	1	**2**
	Sikorsky S-76A	S76	4	4	0	0	4	4	**8**
	UH-1 Huey	B212	7	7	0	0	7	7	**14**
	ALLOCATION								
	Eurocopter EC-135	AC130	1,225	1,175	304	354	1,529	1,529	**3,058**
	Aerospatiale AS-350	SA350D	1,030	988	256	298	1,286	1,286	**2,572**
	UH-1 Huey	B212	154	169	52	37	206	206	**412**
	Dauphin	SA365N	293	281	72	84	365	365	**730**
	Sikorsky S-76A	s76	33	33	9	9	42	42	**84**
	Robinson Helicopter R22 Beta	R22	2	2	1	1	3	3	**6**
4 - HELO Total			3,104	3,003	787	888	3,891	3,891	**7,782**
5 - MIL	H-47 Chinook 234	CH47D	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	14	14	2	2	16	16	**32**
	ALLOCATION								
	UH-60 Blackhawk	S70	96	96	32	32	128	128	**256**
5 - MIL Total			113	113	34	34	147	147	**294**
7 - UNKNOWN			0	0	0	0	0	0	**0**
7 - UNKNOWN Total			0	0	0	0	0	0	**0**
Grand Total			**26,119**	**26,671**	**4,308**	**3,756**	**30,427**	**30,427**	**60,854**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

2007 Local Operations

Base Data			Adjusted Totals						
Aircraft			Day		Night		Totals		Grand Total
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
2 - ME	Piper Chieftain	PA31	219	219			219	219	**438**
	Beech Super King Air	DHC6	219	219			219	219	**438**
	Multiple Aircraft (1)	BEC58P	218	218			218	218	**436**
2 - ME Total			656	656	0	0	656	656	**1,312**
3 - SE	Multiple Aircraft (2)	GASEPV	4,160	4,160			4,160	4,160	**8,320**
	Cessna 150/152/172/172RG/177	CNA172	4,159	4,159			4,159	4,159	**8,318**
	Cessna 180/182/206/210	CNA206	4,159	4,159			4,159	4,159	**8,318**
3 - SE Total			12,478	12,478	0	0	12,478	12,478	**24,956**
5 - MIL	UH-60 Blackhawk	S70	32	32			32	32	**64**
5 - MIL Total			32	32	0	0	32	32	**64**
Grand Total			**13,166**	**13,166**	**0**	**0**	**13,166**	**13,166**	**26,332**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

2007 Total Operations

Base Data			Adjusted Totals						
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	26	26	0	0	26	26	**52**
	Bae-125 (1000 Series)	LEAR35	8	8	0	0	8	8	**16**
	BAe-125 (400 Series)	LEAR35	8	8	0	0	8	8	**16**
	BAe-125 (800 Series)	LEAR35	194	189	8	13	202	202	**404**
	Beechjet 400	MU3001	453	472	36	17	489	489	**978**
	Canadair BD-100	CNA750	155	152	11	14	166	166	**332**
	Cessna 750	CNA750	180	186	14	8	194	194	**388**
	Challenger 600	CL600	70	70	5	5	75	75	**150**
	Citation 525/500	CNA500	337	341	21	17	358	358	**716**
	Citation 550/560	MU3001	1,053	1,085	74	42	1,127	1,127	**2,254**
	Citation 650	CIT3	32	30	0	2	32	32	**64**
	Citation 680	LEAR35	76	75	2	3	78	78	**156**
	CRJ-200	CLREGJ	2	1	0	1	2	2	**4**
	CRJ-700	GV	1	1	0	0	1	1	**2**
	Dornier 328	CL600	7	8	2	1	9	9	**18**
	ERJ 135/140	EMB145	12	11	0	1	12	12	**24**
	Falcon 10	LEAR35	32	32	0	0	32	32	**64**
	Falcon 20	CL600	58	58	3	3	61	61	**122**
	Falcon 2000	CL600	249	260	47	36	296	296	**592**
	Falcon 50	LEAR35	38	37	0	1	38	38	**76**
	Falcon 900	LEAR35	30	31	1	0	31	31	**62**
	Gulfstream 150	LEAR35	3	3	0	0	3	3	**6**
	Gulfstream 200	GII	16	16	1	1	17	17	**34**
	Gulfstream II	GII	8	8	1	1	9	9	**18**
	Gulfstream III	GIIB	10	9	0	1	10	10	**20**
	Gulfstream IV	GIV	48	49	1	0	49	49	**98**
	Gulfstream V	GV	14	14	0	0	14	14	**28**
	Lear 24/25	LEAR25	45	44	2	3	47	47	**94**
	Lear 31/35/40/45/55/60	LEAR35	350	343	34	41	384	384	**768**
	Mitsubishi MU300	CNA500	33	36	3	0	36	36	**72**
	Raytheon 390	LEAR35	11	11	0	0	11	11	**22**
	Sabreliner	LEAR35	12	11	0	1	12	12	**24**
	Westwind 1124	IA1125	7	6	0	1	7	7	**14**
1 - JET Total			3,578	3,631	266	213	3,844	3,844	**7,688**
2 - ME	Bae-3200 Jetstream	DHC6	2	2	0	0	2	2	**4**
	Bae-3200 Jetstream Super 31	DHC6	3	2	0	1	3	3	**6**
	Beech 1900	1900D	5	6	1	0	6	6	**12**
	Beech King Air	CNA441	345	375	74	44	419	419	**838**
	Beech Super King Air	DHC6	618	647	114	85	732	732	**1,464**
	Cessna Caravan II	CNA208	0	1	1	0	1	1	**2**
	Cessna Conquest	CNA441	74	76	5	3	79	79	**158**
	Diamond Twin Star	BEC58P	2	2	0	0	2	2	**4**
	EMB-120	EMB120	3	3	0	0	3	3	**6**
	Gulf Aero Commander	CNA441	3	3	0	0	3	3	**6**
	Mitsubishi MU2	DHC6	5	5	0	0	5	5	**10**
	Multiple Aircraft (1)	BEC58P	540	571	85	54	625	625	**1,250**
	P180 Avanti	C12	50	50	0	0	50	50	**100**
	Partinavia P68	BEC58P	29	38	10	1	39	39	**78**
	Piper Aerostar	BEC58P	10	10	0	0	10	10	**20**
	Piper Cheyenne	CNA441	164	166	8	6	172	172	**344**
	Piper Chieftain	PA31	637	636	760	761	1,397	1,397	**2,794**
	Piper Comanche	PA30	74	77	3	0	77	77	**154**
	Rockwell Turbo Commander	CNA441	82	89	13	6	95	95	**190**
	Swearingen Merlin 3	CNA441	4	4	0	0	4	4	**8**
	Swearingen Merlin 4	DHC6	2	2	0	0	2	2	**4**
	ALLOCATION								
	Piper Chieftain	PA31	1,724	1,754	131	101	1,855	1,855	**3,710**
	Beech Super King Air	DHC6	1,724	1,754	131	101	1,855	1,855	**3,710**
	Multiple Aircraft (1)	BEC58P	1,723	1,753	130	100	1,853	1,853	**3,706**
2 - ME Total			7,823	8,026	1,466	1,263	9,289	9,289	**18,578**

Base Data			Adjusted Totals						
	Aircraft		Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
3 - SE	Cessna 150/152/172/172RG/177	CNA172	1,008	1,031	48	25	1,056	1,056	**2,112**
	Cessna 180/182/206/210	CNA206	738	747	28	19	766	766	**1,532**
	Multiple Aircraft (2)	GASEPV	1,502	1,492	69	79	1,571	1,571	**3,142**
	Multiple Aircraft (3)	GASEPF	254	249	12	17	266	266	**532**
	Pilatus PC12	SD330	53	50	1	4	54	54	**108**
	Piper Warrior	PA28	222	233	16	5	238	238	**476**
	ALLOCATION								
	Multiple Aircraft (2)	GASEPV	6,953	7,077	527	403	7,480	7,480	**14,960**
	Cessna 150/152/172/172RG/177	CNA172	6,953	7,077	527	403	7,480	7,480	**14,960**
	Cessna 180/182/206/210	CNA206	6,952	7,076	527	403	7,479	7,479	**14,958**
3 - SE Total			24,635	25,032	1,755	1,358	26,390	26,390	**52,780**
4 - HELO	Aerospatiale AS-350	SA350D	45	51	24	18	69	69	**138**
	Eurocopter EC-135	EC130	310	292	69	87	379	379	**758**
	ROBINSON HELICOPTER R22 BETA	R22	1	1	0	0	1	1	**2**
	Sikorsky S-76A	S76	4	4	0	0	4	4	**8**
	UH-1 Huey	B212	7	7	0	0	7	7	**14**
	ALLOCATION								
	Eurocopter EC-135	AC130	1,225	1,175	304	354	1,529	1,529	**3,058**
	Aerospatiale AS-350	SA350D	1,030	988	256	298	1,286	1,286	**2,572**
	UH-1 Huey	B212	154	169	52	37	206	206	**412**
	Dauphin	SA365N	293	281	72	84	365	365	**730**
	Sikorsky S-76A	s76	33	33	9	9	42	42	**84**
	Robinson Helicopter R22 Beta	R22	2	2	1	1	3	3	**6**
4 - HELO Total			3,104	3,003	787	888	3,891	3,891	**7,782**
5 - MIL	H-47 Chinook 234	CH47D	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	14	14	2	2	16	16	**32**
	ALLOCATION								
	UH-60 Blackhawk	S70	128	128	32	32	160	160	**320**
5 - MIL Total			145	145	34	34	179	179	**358**
7 - UNKNOWN							0	0	**0**
7 - UNKNOWN Total			0	0	0	0	0	0	**0**
Grand Total			**39,285**	**39,837**	**4,308**	**3,756**	**43,593**	**43,593**	**87,186**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

TABLE B-6a
2012 Operational Fleet Mix

Itinerant Operations
Local Operations
Total Operations

2012 Itinerant Operations

Base Data									
	Aircraft		Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	34	34	0	0	34	34	**67**
	Bae-125 (1000 Series)	LEAR35	10	10	0	0	10	10	**21**
	BAe-125 (400 Series)	LEAR35	10	10	0	0	10	10	**21**
	BAe-125 (800 Series)	LEAR35	250	244	10	17	261	261	**521**
	Beechjet 400	MU3001	585	609	46	22	631	631	**1,262**
	Canadair BD-100	CNA750	200	196	14	18	214	214	**428**
	Cessna 750	CNA750	232	240	18	10	250	250	**501**
	Challenger 600	CL600	90	90	6	6	97	97	**194**
	Citation 525/500	CNA500	435	440	27	22	462	462	**924**
	Citation 550/560	MU3001	1,173	1,209	82	47	1,256	1,256	**2,512**
	Citation 650	CIT3	41	39	0	3	41	41	**83**
	Citation 680	LEAR35	98	97	3	4	101	101	**201**
	CRJ-200	CLREGJ	3	1	0	1	3	3	**5**
	CRJ-700	GV	1	1	0	0	1	1	**3**
	Dornier 328	CL600	9	10	3	1	12	12	**23**
	ERJ 135/140	EMB145	15	14	0	1	15	15	**31**
	Falcon 10	LEAR35	41	41	0	0	41	41	**83**
	Falcon 20	CL600	75	75	4	4	79	79	**157**
	Falcon 2000	CL600	321	335	61	46	382	382	**764**
	Falcon 50	LEAR35	49	48	0	1	49	49	**98**
	Falcon 900	LEAR35	39	40	1	0	40	40	**80**
	Gulfstream 150	LEAR35	4	4	0	0	4	4	**8**
	Gulfstream 200	GII	21	21	1	1	22	22	**44**
	Gulfstream II	GII	10	10	1	1	12	12	**23**
	Gulfstream III	GIIB	13	12	0	1	13	13	**26**
	Gulfstream IV	GIV	62	63	1	0	63	63	**126**
	Gulfstream V	GV	18	18	0	0	18	18	**36**
	Lear 24/25	LEAR25	58	57	3	4	61	61	**121**
	Lear 31/35/40/45/55/60	LEAR35	452	443	44	53	495	495	**991**
	Mitsubishi MU300	CNA500	43	46	4	0	46	46	**93**
	Raytheon 390	LEAR35	14	14	0	0	14	14	**28**
	Sabreliner	LEAR35	15	14	0	1	15	15	**31**
	Westwind 1124	IA1125	9	8	0	1	9	9	**18**
	VLJ's	CNA750	187	190	12	8	198	198	**397**
1 - JET Total			4,618	4,685	342	275	4,960	4,960	**9,920**
2 - ME	Bae-3200 Jetstream	DHC6	3	3	0	0	3	3	**5**
	Bae-3200 Jetstream Super 31	DHC6	4	3	0	1	4	4	**8**
	Beech 1900	1900D	6	8	1	0	8	8	**15**
	Beech King Air	CNA441	442	481	95	56	537	537	**1,074**
	Beech Super King Air	DHC6	2,721	2,796	314	238	3,035	3,035	**6,069**
	Cessna Caravan II	CNA208	0	1	1	0	1	1	**3**
	Cessna Conquest	CNA441	95	97	6	4	101	101	**202**
	Diamond Twin Star	BEC58P	3	3	0	0	3	3	**5**
	EMB-120	EMB120	4	4	0	0	4	4	**8**
	Gulf Aero Commander	CNA441	4	4	0	0	4	4	**8**
	Mitsubishi MU2	DHC6	6	6	0	0	6	6	**13**
	Multiple Aircraft (1)	BEC58P	2,621	2,699	276	197	2,896	2,896	**5,792**
	P180 Avanti	C12	64	64	0	0	64	64	**128**
	Partinavia P68	BEC58P	37	49	13	1	50	50	**100**
	Piper Aerostar	BEC58P	13	13	0	0	13	13	**26**
	Piper Cheyenne	CNA441	210	213	10	8	220	220	**441**
	Piper Chieftain	PA31	2,745	2,782	1,142	1,105	3,887	3,887	**7,773**
	Piper Comanche	PA30	95	99	4	0	99	99	**197**
	Rockwell Turbo Commander	CNA441	105	114	17	8	122	122	**243**
	Swearingen Merlin 3	CNA441	5	5	0	0	5	5	**10**
	Swearingen Merlin 4	DHC6	3	3	0	0	3	3	**5**
2 - ME Total			9,184	9,444	1,879	1,619	11,063	11,063	**22,126**

Base Data			Adjusted Totals						
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
3 - SE	Cessna 150/152/172/172RG/177	CNA172	4,652	4,832	704	524	5,355	5,355	**10,711**
	Cessna 180/182/206/210	CNA206	4,320	4,483	679	516	4,999	4,999	**9,999**
	Multiple Aircraft (2)	GASEPV	5,255	5,395	729	590	5,984	5,984	**11,969**
	Multiple Aircraft (3)	GASEPF	311	305	15	21	325	325	**651**
	Pilatus PC12	SD330	65	61	1	5	66	66	**132**
	Piper Warrior	PA28	272	285	20	6	291	291	**582**
3 - SE Total			14,875	15,360	2,147	1,662	17,022	17,022	**34,044**
4 - HELO	Aerospatiale AS-350	SA350D	1,370	1,324	357	403	1,727	1,727	**3,455**
	Eurocopter EC-135	EC130	1,957	1,870	475	562	2,432	2,432	**4,864**
	ROBINSON HELICOPTER R22 BETA	R22	4	4	1	1	5	5	**10**
	Sikorsky S-76A	S76	47	47	11	11	59	59	**117**
	UH-1 Huey	B212	205	224	66	47	272	272	**543**
	Dauphin	SA365N	374	358	92	107	465	465	**931**
4 - HELO Total			3,957	3,828	1,003	1,132	4,960	4,960	**9,920**
5 - MIL	H-47 Chinook 234	CH47D	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	109	109	34	34	142	142	**284**
5 - MIL Total			111	111	34	34	145	145	**290**
7 - UNKNOWN							0	0	**0**
7 - UNKNOWN Total			0	0	0	0	0	0	**0**
Grand Total			**32,745**	**33,429**	**5,405**	**4,721**	**38,150**	**38,150**	**76,300**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

2012 Local Operations

Base Data										
	Aircraft		Day		Night		Totals			Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep		
2 - ME	Beech Super King Air	DHC6	360	360	0	0	360	360		**720**
	Multiple Aircraft (1)	BEC58P	359	359	0	0	359	359		**717**
	Piper Chieftain	PA31	360	360	0	0	360	360		**720**
2 - ME Total			1,079	1,079	0	0	1,079	1,079		**2,158**
3 - SE	Cessna 150/152/172/172RG/177	CNA172	6,821	6,821	0	0	6,821	6,821		**13,643**
	Cessna 180/182/206/210	CNA206	6,821	6,821	0	0	6,821	6,821		**13,643**
	Multiple Aircraft (2)	GASEPV	6,823	6,823	0	0	6,823	6,823		**13,646**
3 - SE Total			20,466	20,466	0	0	20,466	20,466		**40,932**
5 - MIL	UH-60 Blackhawk	S70	30	30	0	0	30	30		**60**
5 - MIL Total			30	30	0	0	30	30		**60**
Grand Total			**21,575**	**21,575**	**0**	**0**	**21,575**	**21,575**		**43,150**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

2012 Total Operations

Base Data	Aircraft		Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	34	34	0	0	34	34	**67**
	Bae-125 (1000 Series)	LEAR35	10	10	0	0	10	10	**21**
	BAe-125 (400 Series)	LEAR35	10	10	0	0	10	10	**21**
	BAe-125 (800 Series)	LEAR35	250	244	10	17	261	261	**521**
	Beechjet 400	MU3001	585	609	46	22	631	631	**1,262**
	Canadair BD-100	CNA750	200	196	14	18	214	214	**428**
	Cessna 750	CNA750	232	240	18	10	250	250	**501**
	Challenger 600	CL600	90	90	6	6	97	97	**194**
	Citation 525/500	CNA500	435	440	27	22	462	462	**924**
	Citation 550/560	MU3001	1,173	1,209	82	47	1,256	1,256	**2,512**
	Citation 650	CIT3	41	39	0	3	41	41	**83**
	Citation 680	LEAR35	98	97	3	4	101	101	**201**
	CRJ-200	CLREGJ	3	1	0	1	3	3	**5**
	CRJ-700	GV	1	1	0	0	1	1	**3**
	Dornier 328	CL600	9	10	3	1	12	12	**23**
	ERJ 135/140	EMB145	15	14	0	1	15	15	**31**
	Falcon 10	LEAR35	41	41	0	0	41	41	**83**
	Falcon 20	CL600	75	75	4	4	79	79	**157**
	Falcon 2000	CL600	321	335	61	46	382	382	**764**
	Falcon 50	LEAR35	49	48	0	1	49	49	**98**
	Falcon 900	LEAR35	39	40	1	0	40	40	**80**
	Gulfstream 150	LEAR35	4	4	0	0	4	4	**8**
	Gulfstream 200	GII	21	21	1	1	22	22	**44**
	Gulfstream II	GII	10	10	1	1	12	12	**23**
	Gulfstream III	GIIB	13	12	0	1	13	13	**26**
	Gulfstream IV	GIV	62	63	1	0	63	63	**126**
	Gulfstream V	GV	18	18	0	0	18	18	**36**
	Lear 24/25	LEAR25	58	57	3	4	61	61	**121**
	Lear 31/35/40/45/55/60	LEAR35	452	443	44	53	495	495	**991**
	Mitsubishi MU300	CNA500	43	46	4	0	46	46	**93**
	Raytheon 390	LEAR35	14	14	0	0	14	14	**28**
	Sabreliner	LEAR35	15	14	0	1	15	15	**31**
	Westwind 1124	IA1125	9	8	0	1	9	9	**18**
	VLJ's	CNA750	187	190	12	8	198	198	**397**
1 - JET Total			4,618	4,685	342	275	4,960	4,960	**9,920**
2 - ME	Bae-3200 Jetstream	DHC6	3	3	0	0	3	3	**5**
	Bae-3200 Jetstream Super 31	DHC6	4	3	0	1	4	4	**8**
	Beech 1900	1900D	6	8	1	0	8	8	**15**
	Beech King Air	CNA441	442	481	95	56	537	537	**1,074**
	Beech Super King Air	DHC6	3,081	3,156	314	238	3,395	3,395	**6,790**
	Cessna Caravan II	CNA208	0	1	1	0	1	1	**3**
	Cessna Conquest	CNA441	95	97	6	4	101	101	**202**
	Diamond Twin Star	BEC58P	3	3	0	0	3	3	**5**
	EMB-120	EMB120	4	4	0	0	4	4	**8**
	Gulf Aero Commander	CNA441	4	4	0	0	4	4	**8**
	Mitsubishi MU2	DHC6	6	6	0	0	6	6	**13**
	Multiple Aircraft (1)	BEC58P	2,979	3,057	276	197	3,255	3,255	**6,509**
	P180 Avanti	C12	64	64	0	0	64	64	**128**
	Partinavia P68	BEC58P	37	49	13	1	50	50	**100**
	Piper Aerostar	BEC58P	13	13	0	0	13	13	**26**
	Piper Cheyenne	CNA441	210	213	10	8	220	220	**441**
	Piper Chieftain	PA31	3,105	3,142	1,142	1,105	4,247	4,247	**8,494**
	Piper Comanche	PA30	95	99	4	0	99	99	**197**
	Rockwell Turbo Commander	CNA441	105	114	17	8	122	122	**243**
	Swearingen Merlin 3	CNA441	5	5	0	0	5	5	**10**
	Swearingen Merlin 4	DHC6	3	3	0	0	3	3	**5**
2 - ME Total			10,263	10,523	1,879	1,619	12,142	12,142	**24,284**

Base Data									
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
3 - SE	Cessna 150/152/172/172RG/177	CNA172	11,473	11,653	704	524	12,177	12,177	**24,354**
	Cessna 180/182/206/210	CNA206	11,142	11,305	679	516	11,821	11,821	**23,642**
	Multiple Aircraft (2)	GASEPV	12,078	12,218	729	590	12,807	12,807	**25,615**
	Multiple Aircraft (3)	GASEPF	311	305	15	21	325	325	**651**
	Pilatus PC12	SD330	65	61	1	5	66	66	**132**
	Piper Warrior	PA28	272	285	20	6	291	291	**582**
3 - SE Total			35,341	35,826	2,147	1,662	37,488	37,488	**74,976**
4 - HELO	Aerospatiale AS-350	SA350D	1,370	1,324	357	403	1,727	1,727	**3,455**
	Eurocopter EC-135	EC130	1,957	1,870	475	562	2,432	2,432	**4,864**
	ROBINSON HELICOPTER R22 BETA	R22	4	4	1	1	5	5	**10**
	Sikorsky S-76A	S76	47	47	11	11	59	59	**117**
	UH-1 Huey	B212	205	224	66	47	272	272	**543**
	Dauphin	SA365N	374	358	92	107	465	465	**931**
4 - HELO Total			3,957	3,828	1,003	1,132	4,960	4,960	**9,920**
5 - MIL	H-47 Chinook 234	CH47D	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	139	139	34	34	172	172	**344**
5 - MIL Total			141	141	34	34	175	175	**350**
7 - UNKNOWN							0	0	**0**
7 - UNKNOWN Total			0	0	0	0	0	0	**0**
Grand Total			**54,320**	**55,004**	**5,405**	**4,721**	**59,725**	**59,725**	**119,450**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

TABLE B-6b
2027 Operational Fleet Mix

Itinerant Operations
Local Operations
Total Operations

2027 Itinerant Operations

Base Data									
	Aircraft		Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	51	51	0	0	51	51	**103**
	Bae-125 (1000 Series)	LEAR35	16	16	0	0	16	16	**32**
	BAe-125 (400 Series)	LEAR35	16	16	0	0	16	16	**32**
	BAe-125 (800 Series)	LEAR35	383	373	16	26	399	399	**797**
	Beechjet 400	MU3001	894	932	71	34	965	965	**1,931**
	Canadair BD-100	CNA750	306	300	22	28	328	328	**655**
	Cessna 750	CNA750	355	367	28	16	383	383	**766**
	Challenger 600	CL600	138	138	10	10	148	148	**296**
	Citation 525/500	CNA500	665	673	41	34	707	707	**1,413**
	Citation 550/560	MU3001	1,720	1,772	121	69	1,841	1,841	**3,682**
	Citation 650	CIT3	63	59	0	4	63	63	**126**
	Citation 680	LEAR35	150	148	4	6	154	154	**308**
	CRJ-200	CLREGJ	4	2	0	2	4	4	**8**
	CRJ-700	GV	2	2	0	0	2	2	**4**
	Dornier 328	CL600	14	16	4	2	18	18	**36**
	ERJ 135/140	EMB145	24	22	0	2	24	24	**47**
	Falcon 10	LEAR35	0	0	0	0	0	0	**0**
	Falcon 20	CL600	0	0	0	0	0	0	**0**
	Falcon 2000	CL600	492	513	93	71	584	584	**1,169**
	Falcon 50	LEAR35	0	0	0	0	0	0	**0**
	Falcon 900	LEAR35	59	61	2	0	61	61	**122**
	Gulfstream 150	LEAR35	6	6	0	0	6	6	**12**
	Gulfstream 200	GII	32	32	2	2	34	34	**67**
	Gulfstream II	GII	16	16	2	2	18	18	**36**
	Gulfstream III	GIIB	20	18	0	2	20	20	**39**
	Gulfstream IV	GIV	95	97	2	0	97	97	**193**
	Gulfstream V	GV	28	28	0	0	28	28	**55**
	Lear 24/25	LEAR25	0	0	0	0	0	0	**0**
	Lear 31/35/40/45/55/60	LEAR35	691	677	67	81	758	758	**1,516**
	Mitsubishi MU300	CNA500	65	71	6	0	71	71	**142**
	Raytheon 390	LEAR35	22	22	0	0	22	22	**43**
	Sabreliner	LEAR35	0	0	0	0	0	0	**0**
	Westwind 1124	IA1125	14	12	0	2	14	14	**28**
	VLJ's	CNA750	713	728	46	30	759	759	**1,518**
1 - JET Total			7,052	7,167	536	421	7,588	7,588	**15,176**
2 - ME	Bae-3200 Jetstream	DHC6	3	3	0	0	3	3	**7**
	Bae-3200 Jetstream Super 31	DHC6	5	3	0	2	5	5	**10**
	Beech 1900	1900D	9	10	2	0	10	10	**20**
	Beech King Air	CNA441	586	637	126	75	712	712	**1,424**
	Beech Super King Air	DHC6	3,608	3,708	416	316	4,024	4,024	**8,048**
	Cessna Caravan II	CNA208	0	2	2	0	2	2	**3**
	Cessna Conquest	CNA441	126	129	9	5	134	134	**269**
	Diamond Twin Star	BEC58P	3	3	0	0	3	3	**7**
	EMB-120	EMB120	5	5	0	0	5	5	**10**
	Gulf Aero Commander	CNA441	5	5	0	0	5	5	**10**
	Mitsubishi MU2	DHC6	9	9	0	0	9	9	**17**
	Multiple Aircraft (1)	BEC58P	3,475	3,579	365	262	3,840	3,840	**7,681**
	P180 Avanti	C12	85	85	0	0	85	85	**170**
	Partinavia P68	BEC58P	49	65	17	2	66	66	**133**
	Piper Aerostar	BEC58P	17	17	0	0	17	17	**34**
	Piper Cheyenne	CNA441	279	282	14	10	292	292	**585**
	Piper Chieftain	PA31	3,640	3,689	1,514	1,465	5,154	5,154	**10,308**
	Piper Comanche	PA30	126	131	5	0	131	131	**262**
	Rockwell Turbo Commander	CNA441	139	151	22	10	161	161	**323**
	Swearingen Merlin 3	CNA441	7	7	0	0	7	7	**14**
	Swearingen Merlin 4	DHC6	3	3	0	0	3	3	**7**
2 - ME Total			12,179	12,524	2,491	2,146	14,670	14,670	**29,340**

Base Data			Adjusted Totals						
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
3 - SE	Cessna 150/152/172/172RG/177	CNA172	5,628	5,846	851	634	6,479	6,479	**12,959**
	Cessna 180/182/206/210	CNA206	5,227	5,424	822	625	6,049	6,049	**12,097**
	Multiple Aircraft (2)	GASEPV	6,358	6,527	882	714	7,240	7,240	**14,480**
	Multiple Aircraft (3)		376	369	18	25	394	394	**788**
	Pilatus PC12	SD330	78	74	1	6	80	80	**160**
	Piper Warrior	PA28	329	345	24	7	352	352	**705**
3 - SE Total			17,996	18,584	2,598	2,010	20,594	20,594	**41,188**
4 - HELO	Aerospatiale AS-350	SA350D	2,096	2,026	546	616	2,642	2,642	**5,285**
	Eurocopter EC-135	EC130	2,993	2,861	727	860	3,721	3,721	**7,442**
	ROBINSON HELICOPTER R22 BETA	R22	6	6	2	2	8	8	**16**
	Sikorsky S-76A	S76	72	72	18	18	90	90	**179**
	UH-1 Huey	B212	314	343	101	72	415	415	**831**
	Dauphin	SA365N	571	548	140	164	712	712	**1,424**
4 - HELO Total			6,053	5,856	1,535	1,732	7,588	7,588	**15,176**
5 - MIL	H-47 Chinook 234	CH47D	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	109	109	34	34	142	142	**284**
5 - MIL Total			111	111	34	34	145	145	**290**
7 - UNKNOWN							0	0	**0**
7 - UNKNOWN Total			0	0	0	0	0	0	**0**
Grand Total			**43,392**	**44,242**	**7,193**	**6,342**	**50,585**	**50,585**	**101,170**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

2027 Local Operations

Base Data									
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
2 - ME	Beech Super King Air	DHC6	463	463	0	0	463	463	**925**
	Multiple Aircraft (1)	BEC58P	461	461	0	0	461	461	**921**
	Piper Chieftain	PA31	463	463	0	0	463	463	**925**
2 - ME Total			1,386	1,386	0	0	1,386	1,386	**2,772**
3 - SE	Cessna 150/152/172/172RG/177	CNA172	8,771	8,771	0	0	8,771	8,771	**17,541**
	Cessna 180/182/206/210	CNA206	8,771	8,771	0	0	8,771	8,771	**17,541**
	Multiple Aircraft (2)	GASEPV	8,773	8,773	0	0	8,773	8,773	**17,545**
3 - SE Total			26,314	26,314	26,314	26,314	26,314	26,314	**52,628**
5 - MIL	UH-60 Blackhawk	S70	30	30	0	0	30	30	**60**
5 - MIL Total			30	30	30	30	30	30	**60**
Grand Total			**27,730**	**27,730**	**26,344**	**26,344**	**27,730**	**27,730**	**55,460**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

2027 Total Operations

Base Data									
	Aircraft		Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
1 - JET	Astra 1125	IA1125	51	51	0	0	51	51	**103**
	Bae-125 (1000 Series)	LEAR35	16	16	0	0	16	16	**32**
	BAe-125 (400 Series)	LEAR35	16	16	0	0	16	16	**32**
	BAe-125 (800 Series)	LEAR35	383	373	16	26	399	399	**797**
	Beechjet 400	MU3001	894	932	71	34	965	965	**1,931**
	Canadair BD-100	CNA750	306	300	22	28	328	328	**655**
	Cessna 750	CNA750	355	367	28	16	383	383	**766**
	Challenger 600	CL600	138	138	10	10	148	148	**296**
	Citation 525/500	CNA500	665	673	41	34	707	707	**1,413**
	Citation 550/560	MU3001	1,720	1,772	121	69	1,841	1,841	**3,682**
	Citation 650	CIT3	63	59	0	4	63	63	**126**
	Citation 680	LEAR35	150	148	4	6	154	154	**308**
	CRJ-200	CLREGJ	4	2	0	2	4	4	**8**
	CRJ-700	GV	2	2	0	0	2	2	**4**
	Dornier 328	CL600	14	16	4	2	18	18	**36**
	ERJ 135/140	EMB145	24	22	0	2	24	24	**47**
	Falcon 10	LEAR35	0	0	0	0	0	0	**0**
	Falcon 20	CL600	0	0	0	0	0	0	**0**
	Falcon 2000	CL600	492	513	93	71	584	584	**1,169**
	Falcon 50	LEAR35	0	0	0	0	0	0	**0**
	Falcon 900	LEAR35	59	61	2	0	61	61	**122**
	Gulfstream 150	LEAR35	6	6	0	0	6	6	**12**
	Gulfstream 200	GII	32	32	2	2	34	34	**67**
	Gulfstream II	GII	16	16	2	2	18	18	**36**
	Gulfstream III	GIIB	20	18	0	2	20	20	**39**
	Gulfstream IV	GIV	95	97	2	0	97	97	**193**
	Gulfstream V	GV	28	28	0	0	28	28	**55**
	Lear 24/25	LEAR25	0	0	0	0	0	0	**0**
	Lear 31/35/40/45/55/60	LEAR35	691	677	67	81	758	758	**1,516**
	Mitsubishi MU300	CNA500	65	71	6	0	71	71	**142**
	Raytheon 390	LEAR35	22	22	0	0	22	22	**43**
	Sabreliner	LEAR35	0	0	0	0	0	0	**0**
	Westwind 1124	IA1125	14	12	0	2	14	14	**28**
	VLJ's	CNA750	713	728	46	30	759	759	**1,518**
1 - JET Total			7,052	7,167	536	421	7,588	7,588	**15,176**
2 - ME	Bae-3200 Jetstream	DHC6	3	3	0	0	3	3	**7**
	Bae-3200 Jetstream Super 31	DHC6	5	3	0	2	5	5	**10**
	Beech 1900	1900D	9	10	2	0	10	10	**20**
	Beech King Air	CNA441	586	637	126	75	712	712	**1,424**
	Beech Super King Air	DHC6	4,070	4,171	416	316	4,487	4,487	**8,973**
	Cessna Caravan II	CNA208	0	2	2	0	2	2	**3**
	Cessna Conquest	CNA441	126	129	9	5	134	134	**269**
	Diamond Twin Star	BEC58P	3	3	0	0	3	3	**7**
	EMB-120	EMB120	5	5	0	0	5	5	**10**
	Gulf Aero Commander	CNA441	5	5	0	0	5	5	**10**
	Mitsubishi MU2	DHC6	9	9	0	0	9	9	**17**
	Multiple Aircraft (1)	BEC58P	3,936	4,039	365	262	4,301	4,301	**8,602**
	P180 Avanti	C12	85	85	0	0	85	85	**170**
	Partinavia P68	BEC58P	49	65	17	2	66	66	**133**
	Piper Aerostar	BEC58P	17	17	0	0	17	17	**34**
	Piper Cheyenne	CNA441	279	282	14	10	292	292	**585**
	Piper Chieftain	PA31	4,103	4,152	1,514	1,465	5,617	5,617	**11,233**
	Piper Comanche	PA30	126	131	5	0	131	131	**262**
	Rockwell Turbo Commander	CNA441	139	151	22	10	161	161	**323**
	Swearingen Merlin 3	CNA441	7	7	0	0	7	7	**14**
	Swearingen Merlin 4	DHC6	3	3	0	0	3	3	**7**
2 - ME Total			13,565	13,910	2,491	2,146	16,056	16,056	**32,112**

Base Data									
Aircraft			Day		Night		Totals		Grand Totals
Aircraft Sub Category	Model Combinations	INM Equivalent	Arr	Dep	Arr	Dep	Arr	Dep	
3 - SE	Cessna 150/152/172/172RG/177	CNA172	14,399	14,616	851	634	15,250	15,250	**30,500**
	Cessna 180/182/206/210	CNA206	13,998	14,194	822	625	14,819	14,819	**29,638**
	Multiple Aircraft (2)	GASEPV	15,131	15,299	882	714	16,013	16,013	**32,026**
	Multiple Aircraft (3)	GASEPF	376	369	18	25	394	394	**788**
	Pilatus PC12	SD330	78	74	1	6	80	80	**160**
	Piper Warrior	PA28	329	345	24	7	352	352	**705**
3 - SE Total			44,310	44,898	2,598	2,010	46,908	46,908	**93,816**
4 - HELO	Aerospatiale AS-350	SA350D	2,096	2,026	546	616	2,642	2,642	**5,285**
	Eurocopter EC-135	EC130	2,993	2,861	727	860	3,721	3,721	**7,442**
	ROBINSON HELICOPTER R22 BETA	R22	6	6	2	2	8	8	**16**
	Sikorsky S-76A	S76	72	72	18	18	90	90	**179**
	UH-1 Huey	B212	314	343	101	72	415	415	**831**
	Dauphin	SA365N	571	548	140	164	712	712	**1,424**
4 - HELO Total			6,053	5,856	1,535	1,732	7,588	7,588	**15,176**
5 - MIL	H-47 Chinook 234	CH47D	3	3	0	0	3	3	**6**
	UH-60 Blackhawk	S70	139	139	34	34	172	172	**344**
5 - MIL Total			141	141	34	34	175	175	**350**
7 - UNKNOWN							0	0	**0**
7 - UNKNOWN Total			0	0	0	0	0	0	**0**
Grand Total			**71,122**	**71,972**	**7,193**	**6,342**	**78,315**	**78,315**	**156,630**

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340, Beech Mentor, Cessna 340, Piper Crusier

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV Greak Lakes, Piper Tomahawk, Aermacchi Spa, Aerospatiale Socata, Beech A45, Malibu Meridian, Rockwell International 114

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2, RV4, RV6, R10, Homeblt., Acro Sport, Experimental, Queststair, ,Beagle Airedale, Beagle Basset, Beech Skipper, Cessna Caravan I Grumman Tiger

A Test of the Proposed Inputs
To the Integrated Noise Model
For The Ohio State University Airport
Part 150 Noise Compatibility Study

March 26, 2008

Submitted by
Scott Whitlock and Kimberly Nixon-Bell

Introduction

Although we are not members of the Technical Advisory Committee for the Part 150 study, we have long advocated that study be done.[1] As members of the public we observed the first meeting of the Technical Advisory Committee on January 17, 2008. Although the proposed inputs for the integrated noise model were withdrawn at the beginning of that meeting and new inputs were presented, we were able to identify and present[2] three empirical[3] concerns with the data:

1. On their face the proposed inputs were incorrect using fractions of operations such as suggesting that there had been only one-third of a night-time landing by a Gulf Stream II jet (a stage 2 jet) during the year-long period used as the base period.
2. The proposed inputs understated the number of night-time Gulfstream II stage 2 jet operations which were known to have taken place based upon radar data furnished to the Overnight Flight Subcommittee.
3. The night-time operations of the LabCorp planes (PA31) were materially understated based upon data from both www.flightaware.com ("FlightAware") and data from The OSU Airport's flight information system www.webscene.info/WebScene/KOSU/console.html ("WebScene") a concern which was supported by Mr. Chris Lenfest, a member of the Technical Committee who reported that the Port Columbus Tower had furnished the consulting team with information showing six operations per night five nights a week which was

---

[1] Scott Whitlock has served as the City of Worthington representative on the Airport Advisory Board since its inception. Kimberly Nixon-Bell is a member of WOOSE and served as the WOOSE representative on the Airport Noise Committee from its inception. Upon its merger into the Airport Advisory Board she became an alternate to that board. Both the City of Worthington and WOOSE have asked for years that a Part 150 Study be done.

[2] The Technical Memorandum to the Technical Subcommittee of The Ohio State University Airport Part 150 Committee from David Full = RS&H Project Manager dated March 18, 2008 (the "Technical Memorandum") attributes the suggestions to "various Technical Subcommittee members" (p. 7) which is not correct.

[3] The Technical Memorandum (p.6) refers to the radar data, FlightAware data and WebScene data as "anecdotal sources" which is not correct.

substantially more than the less than one-half operation per night used in the proposed inputs.

The Technical Memorandum has now addressed these concerns:

1. All annual operations are shown as whole numbers.
2. The number of Gulfstream II stage 2 jet operations during the night-time hours has been increased at least to the number supported by the analysis of the radar data – GLF2 from .37 operations per year to 2 operations per year.
3. The number of PA31 night-time operations has been increased from 160 per year to 1,521.

Overall, the night-time operations have now been increased from 4,099 to 8,064. Unfortunately, the new inputs are the result of a number of assumptions and adjustments. The consultant team states[4] that the "total number of actual operations (both IFR and VFR) at the Airport for FY2007 was 87,156." Unfortunately no source is offered for that data point. The consultant team then obtained 55,312 records of operations from the Columbus Regional Airport Authority (CRAA) Noise Office.[5] No explanation for the discrepancy between the 55,312 records and the 87,156 actual operations is offered. Since the arrivals did not match the departures in the database from the CRAA Noise Office, the lower number was adjusted upward to the higher number at the Model Combination level[6] resulting in 61,486 operations.[7] No explanation is offered as to why this adjustment was not made at the individual aircraft type. The 61,486 operations were then adjusted upward by 25,670 operations based apparently entirely on undocumented anecdotal sources.[8]

Because the final inputs were not based entirely upon empirical data, we felt that it would be important to test the accuracy of at least some of the inputs using empirical data.[9]

Methodology

Because of very limited time before the meeting of the Technical Committee,[10] we chose to focus on night time (10:00 PM to 6:59 AM) operations since those

---

[4] Technical Memorandum p. 7

[5] Technical Memorandum p. 7 and Table B-1 pp. 23-29

[6] Technical Memorandum p. 22

[7] Technical Memorandum p.22 and Table B-3 pp 36-57

[8] The sources appear to have been "interviews with operators, Ohio Highway Patrol, OSU Flight School and OSUA air traffic control." Technical Memorandum p. 22. No documentation of these interviews or explanation of the methodology by which interviews were converted into data has been provided.

[9] Although one might expect that the consultants would perform some tests to check on the accuracy and reasonableness of the final results, there is no indication in the Technical Memorandum that any tests were performed.

[10] Although we had been the primary critics of the inputs at the first Technical Committee meeting, we were not furnished the Technical Memorandum or the c.d. which accompanied it. We were able to obtain copies from a member of the Technical Committee and had approximately four days in which to do our analysis.

operations have a significant impact on the model output. We chose the month of June because it was the last full month in the annual period of July 24, 2006 through July 23, 2007 used to develop the initial aircraft fleet mix.[11] The volume of data for just night time operations quickly dictated that the verification had to be limited to a single week and we used the first week in June beginning at 10:00 PM on May 31, 2007. Because data was apparently not recorded by WebScene for one night during that week, we had to substitute Tuesday-Wednesday night June 12-13 for Tuesday-Wednesday night June 5-6. We recognized that the Memorial Tournament would affect the first several nights of data, although the busiest night occurred after the tournament was over.

We utilized both WebScene and the data from FlightAware to identify all of the night-time operations during our test week. From WebScene we identified 177 total night-time operations during the test week[12]; from FlightAware we identified 69 total night-time operations. Interestingly, only 7 night-time operations appeared in both data bases, suggesting that it is important to use both data bases.[13] The 239 total night time operations is more than suggested by the proposed inputs to the INM (12,462 on an annualized basis compared to the 8,064 night-time operations proposed in the Technical Memorandum, approximately 55% more), but we do not believe that the test week is necessarily representative of total night-time operations.

The percentage of arrivals (59%) during the test week is a little higher than the percentage of arrivals (53%) proposed in the Technical Memorandum[14] but we cannot draw any conclusion from the difference.

We were able to identify aircraft types for 116 of the 239 operations, although in two instances there was a discrepancy between the aircraft type shown by WebScene and the type shown by FlightAware.[15] Using WebScene we were also able to observe flight tracks and identify local operations. Based upon the data we were able to draw three conclusions.

---

[11] Technical Memorandum p. 7

[12] We only included operations in which the aircraft was coded by WebScene as arriving (blue) or departing (red) the Airport. On two occasions aircraft suddenly popped up on WebScene on what appeared to be departure tracks. However they were coded as in transit and were not counted as night-time operations.

[13] We believe that it should be of concern to the Airport administration that so many operations were missing from WebScene. WebScene is the data source that The OSU Airport makes available to the public on a both real time (delayed 10 minutes) and historical basis. The fact that during the test week it provided data on only 75% of the operations is surprising and should be explained by the Airport administration.

[14] Technical Memorandum p. 45

[15] On one occasion WebScene identified an aircraft as an A320 while FlightAware identified what appears to be the same operation as a DA42; on another occasion WebScene identified an aircraft as an E145 while FlightAware identified what appears to be the same operation as a C172. Since the public relies on the data in The OSU Airport's WebScene system, we recommend that the Airport administration investigate these discrepancies.

Conclusions

1. Night-time Fleet Mix. We were able to identify aircraft types operating at the Airport during the night-time hours which are not included in the proposed inputs. Specifically, we observed the following aircraft types operating at night for which there does not seem to be input proposed:

   Airbus A320[16]
   Boeing 737-300[17]
   Boeing BBJ2 or 737-800[18]
   Canadair Bombardier Regional Jet CRJ-2000[19]
   Diamond DA-42[20]
   Dassault-Breguet Falcon 50[21]
   Embraer EMB135 and EMB 145[22]
   McDonnell-Douglas DC9[23]
   Piaggo P-180 Avanti[24]
   Piper Aerostar[25]

   Although we found only 20 or 21 night-time operations during the test week in which it appears that zero night-time operations for the year are proposed as inputs into the INM, we were only able to identify aircraft type in 116 operations. That is an understatement of at least 17%. Because we were comparing one week of test data against the total inputs for a year and demonstrating that the inputs were understated, it is likely that if additional test weeks are done the errors will

---

16 We suspect that WebScene may have incorrectly identified this aircraft. We found two arrivals during the test week. On one occasion FlightAware identified the aircraft as a Diamond DA-42 Twinstar. However, the proposed inputs are 0 night-time operations for the DA-42. Clearly the inputs are missing one operation or the other.

17 WebScene showed four night-time arrivals by Boeing 737-300 jets. There is no input proposed for the B737.

18 WebScene showed one night-time arrival by a B738 which could be either a Boeing BBJ2 or a 737-800. There is no input proposed for this operation.

19 We found two arrivals during the night-time hours during the test week. The proposed input for night-time operations for the year is zero arrivals, one departure. Technical Memorandum p. 44

20 See footnote 16.

21 We found one arrival and one departure during the test week. The proposed inputs show zero arrivals and one departure for the year. Technical Memorandum p. 44

22 These two aircraft types are combined as model types. Technical Memorandum p. 32. We found 2 EMB135 arrivals, 2 or 3 EMB145 arrivals, and 1 EMB145 departures. The proposed input for the combined model types is 0 arrivals and 1 departure. Technical Memorandum p.44. We are uncertain regarding one EMB145 arrival as AirScene identified the aircraft as a Cessna 172. Again, the Airport administration should investigate and explain the discrepancy.

23 On WebScene we found three DC9 arrivals at night during the test week. The Technical Memorandum does not propose to input any DC9 operations. Technical Memorandum p.44.

24 On the FlightAware we found one P180 departure at night during the test week. WebScene confirmed the operation but not the aircraft type. The Technical Memorandum proposes zero night-time operations for the P-180 for the year. Technical Memorandum p.44.

25 In the FlightAware data we found one arrival and one departure for the Piper Aerostar during the night-time hours. The Technical Memorandum proposes to input zero operations at night for the year. p. 44.

grow.[26] In addition, three-quarters of the missing inputs were jets. Finally, although the Technical Memorandum says that FlightAware data was used to formulate the aircraft fleet mix, some of the discrepancies were established or confirmed using the FlightAware data furnished by the consultants.

2. Local Operations. The Technical Memorandum proposes that local operations at night are zero. This seems to be contradicted by the fact that the Airport has received many complaints about local operations at night from Worthington residents. Observing the flight tracks available through WebScene we identified six departures and six arrivals with flight tracks affecting Worthington residents north of the Airport and three departures and three arrivals with flight tracks south of the Airport. We also identified one local operation through FlightAware. That would be 20 local operations in one week. The proposed inputs are clearly wrong and will cause the model to understate the noise impacts on Worthington residents.

3. Total Night-time Jet Operations. The proposed night-time inputs show 279 total jet operations for a year.[27] In one week of test data we observed 70 jet operations or about 15% of the total proposed input of night-time jet operations. Coupled with the findings in paragraph 1 above, it would seem that total night-time jet operations may be substantially understated. Because these are generally the noisiest operations drawing the largest number of complaints and having the biggest impact on the output of the Integrated Noise Model, these proposed inputs should be scrutinized carefully and should be subject to verification. Our test did not verify either the accuracy or reasonableness of the proposed night-time inputs for jet operations.

Recommendation

On the basis of these findings, we believe that the Technical Committee should not accept the proposed night-time inputs without further verification.

---

[26] For example, the Technical Memorandum proposes only 21 night-time operations for the BAe125(800), we found 10 night-time operations in just the test week. Either that is an extraordinary concentration of BAe125(800) operations into a single week, or the proposed inputs are too low. If additional test weeks are done, it seems likely that errors in the proposed BAe125(800) inputs will be conclusively established. However, we did not treat this as an error in this memorandum.

[27] The number of night-time jet operations proposed is 3.5% of total night-time operations; the number of day-time jet operations proposed is 9.2% of total day-time operations. Technical Memorandum pp. 44-45

ENGAGE COMMUNICATIONS
7759 Crawley Dr.
Dublin, OH 43017
(614) 565-2819

March 31, 2008

Jane Weislogel
WOOSE Vice President
6169 Middlebury Dr. West
Worthington, OH 43085

Dear Ms. Weislogel:

On Jan. 23, 2008 you provided comments to me with regard to the January 17, 2008 Technical Subcommittee of The Ohio State University Airport Part 150 Committee. We appreciate your input. On March 20, 2008 you should have received a memorandum and CD that includes responsive data and information on the issues raised during the Technical Subcommittee meeting, as well as those raised in your Jan. 23, 2008 letter.

As we discussed at the March 26th Technical Subcommittee meeting, the RS&H team took extraordinary steps and used multiple resources to review and double check the issues that were raised.

The material provided on March 20, as well as the follow-up discussion on March 26, should answer your concerns. We will address the submission Mr. Whitlock made at the March 26th meeting under separate cover.

Sincerely,

Marie S. Keister

Marie S. Keister
Facilitator, OSU Airport Part 150 Committee and Technical Subcommittee

cc: The Ohio State University Airport

ENGAGE COMMUNICATIONS
7759 Crawley Dr.
Dublin, OH 43017
(614) 565-2819

March 31, 2008

Mr. David W. Zoll
Zoll, Kranz and Borgess, LLC
6620 West Central Avenue
Suite 200
Toledo, OH 43617

Dear Mr. Zoll:

On Jan. 23, 2008 you provided comments to me with regard to the January 17, 2008 Technical Subcommittee of The Ohio State University Airport Part 150 Committee. We appreciate your input. On March 20, 2008 you should have received a memorandum and CD that includes responsive data and information on the issues raised during the Technical Subcommittee meeting, as well as those raised in your Jan. 23, 2008 letter.

As we discussed at the March 26th Technical Subcommittee meeting, the RS&H team took extraordinary steps and used multiple resources to review and double check the issues that were raised.

The material provided on March 20, as well as the follow-up discussion on March 26, should answer your concerns. We will address the submission Mr. Whitlock made at the March 26th meeting under separate cover.

Sincerely,

Marie S. Keister

Marie S. Keister
Facilitator, OSU Airport Part 150 Committee and Technical Subcommittee

cc: Matthew Greeson, City of Worthington
Scott N. Whitlock
The Ohio State University Airport

ZOLL KRANZ & BORGESS, LLC
Attorneys at Law

6620 West Central Avenue
Suite 200
Toledo, OH 43617
www.toledolaw.com
www.toledoconstructionlaw.com

Phone: 419-841-9623
Fax: 419-841-9719

March 31, 2008

Marie S. Keister
Engage
7759 Crawley Dr.
Dublin, Ohio 43017

Dear Marie:

The purpose of this letter is to follow up on our committee meeting of March 26, 2008. There were several issues raised which ought to be carefully reviewed and written comment provided by the analysis team to insure that the Part 150 study has credibility and the confidence of the community.

First, a careful written response to the concerns and issues raised by the Whitlock / Nixon-Bell paper presented to the committee should be prepared, addressing the concerns and irregularities disclosed in that report.

Second, I would like to see some authoritative support for the proposition that lower flight profiles do not result in higher noise impacts because the held down aircraft are flying at greater speed. While it is true that the aircraft may be flying faster, and thus the time of the noise exposure is shorter, I do not believe there is a linear relationship. The Single Event Level will definitely be higher, even if the time of the exposure is shorter. While shortening of the time exposure may result in a lower DNL impact, I do not believe it is a direct linear relationship, and I do not accept the opinion of the presenter as fact without some authoritative support. Nor do I believe that the FAA regulations would permit lower profiles to be disregarded in general (although they may accept lower profiles as irrelevant for other reasons in specific cases).

Please circulate this letter to those on the committee and to those who are "running the show."

Thank you.

Sincerely,

David W. Zoll

DWZ:cmg

David W. Zoll*
david@toledolaw.com
Michelle L. Kranz
michelle@toledolaw.com
Pamela A. Borgess
pamela@toledolaw.com
Wesley D. Merillat
wes@toledolaw.com
*Certified National Board of Trial Advocacy

MEMORANDUM

To:	Douglas E. Hammon, Airport Director The Ohio State University Airport	*From:*	David Full – RS&H Project Manager
Date:	April 4, 2008	*Subject:*	Whitlock/Nixon-Bell Paper dated 03/26/08

SUMMARY

The RS&H Team reviewed the information presented in the paper submitted by Scott Whitlock and Kimberly Nixon-Bell (W/N-B). The Team's response is organized around the three conclusions presented in the W/N-B paper.

- **Nighttime Fleet Mix** – It appears the authors did not understand that the time stamps on the FlightAware source data are in Greenwich Mean Time (GMT) and must be converted to local time in order to conduct a day/night analysis. ***When the day/night analysis is performed with the time stamps correctly converted from Greenwich Mean Time to OSU local time, the FlightAware data is very consistent with the INM Inputs set forth in the March 18, 2008 Technical Memorandum ("Tech Memo"). The few cases where there is a variance all support the use of the source data set forth in the Tech Memo, and not the use of the data presented in the W/N-B paper.***

- **Local Operations** – The authors' concerns about nighttime local operations appear to arise from a misunderstanding about what constitutes a "local operation" for the purposes of INM inputs. For INM, the only nighttime operations that would meet the definition of a local operation would be a "touch-and-go" training operation where the aircraft stays in a closed loop pattern near the airport for the entire maneuver. Touch-and-go operations are only permitted at the airport for one hour per night. ***Tower counts recorded a nightly average of 0.5 touch-and-go operations over the 12-month period. This is not a significant number of operations and the noise contours developed with or without the 0.5 touch-and-go per night would be identical. Since this additional data has been collected, it will be included in the final INM operations input.***

- **Total Nighttime Jet Operations** – There are a number of problems with the authors' conclusions on this issue.
  - The authors incorrectly referenced 279 jet operations in a year in their paper and made subsequent calculations based on this number. ***The correct number set forth in the Tech Memo is 479 nighttime jet operations (see page 44).***
  - Since the authors incorrectly used unadjusted Greenwich Mean times in their FlightAware data review, they mistakenly concluded FlightAware night operations should be added to WebScene night operations. The two data sources are independent and parallel sources and should not be added together. ***In fact, the W/N-B analysis of WebScene data, when correctly viewed as a stand-alone source, is consistent with the Tech Memo's total annual night operations of 8,064 and annual night jet operations of 479 and provides further confirmation of its validity.***

Please see the attached discussion for a detailed report of the RS&H Team review of the W/N-B paper.

INTRODUCTION

The RS&H Team reviewed the information presented in the paper submitted by Scott Whitlock and Kimberly Nixon-Bell (W/N-B). The team's response is organized around the three conclusions presented in the paper:

- Nighttime Fleet Mix
- Local Operations
- Total Nighttime Jet Operations

As demonstrated in this document, there is a fundamental flaw in the analyses conducted by the authors and that flaw invalidates the conclusions presented in the paper.

1. NIGHTTIME FLEET MIX

The authors failed to convert the FlightAware source data to local time before they conducted their analyses. All time stamps in the FlightAware source data are recorded in Greenwich Mean Time. [1] The conversion to Eastern Time Zone from GMT is -5 or -4 hours (for Standard time or Daylight Savings time).

> **All of the conclusions contained in the W/N-B paper based on the analysis of FlightAware data that have not been adjusted to Local time are invalid.** The authors were understandably unable to find matches between FlightAware and WebScene data -- the seven they said they did find are probably coincidental matches of N-Numbers or aircraft types, but are not actually the same operation.
>
> **FlightAware data and the Columbus Regional Airport Authority (CRAA) Noise Office data are in complete support of each other when compared using the correct time stamps**. These two data sources will not be exact duplicates of one another since the information is gathered from different systems and data variations will exist for a number of valid reasons. The RS&H Team has explained that the overlap in these two databases is the greatest for the jet category of operations conducted at OSUA. For the vast majority of all operations, jet aircraft operate on IFR flight plans and will appear in both databases.
>
> The RS&H Team conducted a review of the FlightAware and CRAA Noise Office databases for jet operations during the 12-month study period. Tabular data and charts of this analysis appear in Appendix A to this document. A summary of key findings from this review include the following:
>
> - A total of 58 jet aircraft codes appeared in the CRAA noise Office data for a total of 7,626 annual operations – 49 of the same codes were recorded in the FlightAware database. The total count of operations conducted by the 9 aircraft codes that appeared only in the CRAA Noise Office data is 17 (out of 7,626).
>
> - The charts compare the number of jet operations recorded (for annual total and annual night only) for each of the 58 aircraft codes. In almost all cases, the two sources yield nearly identical results for all aircraft types. The significant exceptions are four aircraft types that have significantly more operations in the CRAA Noise Office data than the FlightAware data. The difference between the two data sources results from the fact that operators of these four

[1] FlightAware data purchased from the vendor is provided in GMT. Time stamps visible through on-line access to FlightAware by the general public appear in local time.

aircraft types have requested that certain information about their operations be “blocked” and not included in the FlightAware records. Specifically, these four aircraft types are flown by significant users of OSUA who are known to have instructed FlightAware to block their identification data from being revealed to FlightAware customers who are not preapproved by the aircraft owner.

- In contrast to FlightAware, the operations of these four aircraft types *are* reflected in the CRAA Noise Office data, which is the data source that has been selected to develop the INM fleet mix input.

2. LOCAL OPERATIONS

The concerns expressed in the W/N-B paper about night time local operations may arise from a misunderstanding about what constitutes a “local operation” for the purposes of INM inputs. For the INM, “local operations” include: aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches in the traffic pattern. Local practice areas are not used at night, and operations at night that are within sight of the tower are limited by nighttime visibility to aircraft that are within the traffic pattern. Thus, the only nighttime operations that would meet the definition of a local operation would be “touch-and-go” and approach training operations where the aircraft stays within the OSUA traffic pattern. Touch-and-go and practice operations are prohibited at OSUA between 11 p.m. and 7 a.m. Since the FAA defines night hours in INM as 10 p.m. to 7 a.m., there is one hour per night, between 10 p.m. and 11 p.m. where touch-and-go and approach training operations would have been observed.

Tower counts recorded a nightly average of 0.5 touch-and-go operations over the 12-month period. In order to respond to the conclusion in the W/N-B paper and questions about community complaints related to local night time operations, the Consultant Team conducted additional research of the Air Traffic Control Tower counts and found there were 185 annual touch-and-go training operations recorded during INM night hours. This compares to the total annual local operations recorded by the tower of 26,332.

This is not a significant number of nighttime touch-and-go operations and the noise contours developed with or without the 0.5 touch-and-go per night would be identical. Since the additional data was collected and reviewed by the Consultant Team, the INM inputs have been modified to reflect 0.5 night-time touch-and-go operations instead of 0.0. This change will be reflected in the Part 150 documentation to be published in the final working paper documentation.

3. TOTAL NIGHTTIME JET OPERATIONS

<u>The authors incorrectly referenced 279 jet operations in a year in their paper and made subsequent calculations based on this number.</u> The correct number set forth in the Tech Memo is 479 nighttime jet operations (see page 44). It appears the authors made an error in adding 266 and 213. The incorrect number 279 was used as the numerator in various percentage calculations presented in the paper.

<u>The W/N-B analysis of WebScene data, when correctly viewed as a stand-alone source, is consistent with the Tech Memo's total annual night operations of 8,064 and annual night jet operations of 479 and provides further confirmation of the validity of the Tech Memo.</u> Since the authors incorrectly used unadjusted times in their FlightAware data review, they mistakenly concluded FlightAware night operations should be added to WebScene night operations. The two data sources are independent and parallel sources and should not be added together.

The W/N-B analysis of WebScene data identified 177 night operations during the test week. The analysis also noted that 10-15 of those operations were actually conducted at Port Columbus International Airport, which leaves 162-167 night operations at OSUA. This range compares to the average weekly night operations proposed in the Tech Memo of 155 (8,064 night operations ÷ 52 weeks = 155). The survey week selected for the W/N-B paper coincided with the historically busiest week of the year at OSUA, due to the Muirfield Memorial Golf Tournament. So it should be expected that the actual count of WebScene data would yield a number that exceeds an average weekly number (i.e., 162 vs. 155). The estimated number of weekly operations that was developed based on a year's worth of data will account for daily, monthly, and seasonal variations and should be considered more reliable.

<u>The concern expressed in the W/N-B paper about the assignment by WebScene of Port Columbus operations to OSUA is unfounded.</u> The RS&H Team did not use WebScene data to prepare the operational fleet mix for 2007. WebScene data was only used to define flight tracks for the INM inputs. But as discussed previously, we note that the type of analysis done by W/N-B of WebScene data –had time stamps been correctly interpreted and had calculation errors been avoided – would actually support the nighttime operations counts set forth in the Tech Memo and support the validity of the source data that has actually been used.

CONCLUSION

The findings of the W/N-B report are incorrect and the RS&H Team will proceed with the development of noise contours based on the inputs set forth in the Tech Memo. Please let me know if you have any questions.

APPENDIX A
FlightAware and CRAA Noise Office Data Comparisons

Table 1

Aircraft Code	Aircraft Type	Col C INM Night Operations FA (GMT)	Col D FA (Local)	Col E NO (Local)	E - C	E - D	Col G Total Operations FA (Local)	Col H NO (Local)	H-G
ASTR	IAI 1125 Astra (C-38)	5			-5	0	36	47	11
BE40	Beechcraft Beechjet 400	166	52	53	-113	1	948	975	27
C25A	Cessna 525A Citation CJ2	3			-3	0	20	18	-2
C25B	Cessna 525A Citation CJ2	10	1	1	-9	0	22	22	0
C500	Cessna 500 Citation, Citation 1	14	4	7	-7	3	54	80	26
C501	Cessna 501 Citation 1SP	3		1	-2	1	12	12	0
C525	Cessna 525 Citationjet Citation CJ1	117	25	29	-88	4	512	583	71
C550	550, S550, 552 Citation 2/S2/Bravo	85	19	22	-63	3	417	451	34
C560	560 Citation 5/5 Ultra/5Ultra Encore	189	52	73	-116	21	848	1412	564
C566	C560 - Citation V?				0	0	1	1	0
C56X	CESSNA 560XL Citation Excel	85	22	20	-65	-2	358	371	13
C650	Cessna 650 Citation 3/6/7	7	2	2	-5	0	50	63	13
C680	680 Citation Sovereign	20	5	5	-15	0	122	155	33
C750	Cessna 750 Citation 10	26	4	22	-4	18	116	385	269
CL30	Canadair BD-100 Challenger 300	68	28	25	-43	-3	331	332	1
CL60	CL-600/Challenger 699/601/604	21	9	10	-11	1	120	149	29
CRJ2	Canadair Bombardier, CL-600/Regional Jet CRJ-200/RJ-200, CRJ2			1	1	1		2	2
E135	EMB-135, ERJ-135/140	5		1	-4	1	18	20	2
E145	Embraer, EMB-145/ERJ-145 (R-99), E145				0	0		1	1
E45X	Embraer, EMB-145XR, E45X				0	0		1	1
F200	Falcon 2000				0	0		2	2
F2TH	Falcon 2000	4	1	83	79	82	40	589	549
F900	Falcon 900, Mystere 900	7	1	1	-6	0	33	59	26
FA10	Falcon 10/100, Mystere 10/100	3			-3	0	35	61	26
FA20	Falcon 20/100, Mystere 20/200, Gardian	17	2	6	-11	4	55	120	65
FA50	Falcon 50, Mystere 50	10		1	-9	1	35	75	40
G150	Gulfstream 150	2			-2	0	6	6	0
G200	Gulfstream 200				0	0	1	1	0
GALX	1126 Gulfstream 200	11	1	1	-10	0	31	31	0
GLEX	Bombardier, BD-700 Global Express/Sentinel, GLEX				0	0		2	2
GLF1	GULFSTREAM AEROSPACE G1159B			1	1	1		2	2
GLF2	G-1159, G-1159B Gulfstream 2/2B/2SP	4	2	2	-2	0	14	17	3
GLF3	G-1159A Gulfstream 3/SRA-1, SMA-3	4	1	1	-3	0	17	20	3
GLF4	G-1159C Gulfstream 4/4SP/SRA-4	4		1	-3	1	50	95	45
GLF5	G-1159D Gulfstream 5	2			-2	0	14	28	14
H25	British Aerospace (BAe), BAe HS 125 Series 1/2/3/400/600, H25A				0	0	1	5	4
H25A	BAe HS 125 Series 400A	2			-2	0	7	9	2
H25B	BAE 125 SERIES 800A	81	20	21	-60	1	355	397	42
H25C	BAe-125-1000	5			-5	0	16	16	0
HS25	BAe HS25 Hawker Sidley				0	0	1	4	3
J328	Fairchild Dornier 328JET, Envoy 3	11	2	3	-8	1	18	18	0
L45	Learjet 45			2	2	2		12	12
LJ24	Learjet 24	1	1	1	0	0	5	6	1
LJ25	Learjet 25	29	4	4	-25	0	83	86	3
LJ31	Learjet 31	6	1	39	33	38	53	363	310
LJ35	Learjet 35	33	17	18	-15	1	134	138	4
LJ36	Learjet 36				0	0		1	1
LJ40	Learjet 40	6	2	3	-3	1	33	35	2
LJ45	Learjet 45	22	6	6	-16	0	114	137	23
LJ55	Learjet 55	9	3	3	-6	0	17	19	2
LJ60	Learjet 60	11	3	3	-8	0	40	54	14
LR31	Learjet 31				0	0		1	1
LR35	Learjet 35	1			-1	0	4	6	2
LR45	Learjet 45			1	1	1	1	1	0
MU30	Mitsubishi MU-300 Diamond	6	4	3	-3	-1	67	72	5
PRM1	RAYTHEON AIRCRAFT COMPANY 390	2			-2	0	13	21	8
SBR1	NA SABRELINER-265-65	11	1	1	-10	0	22	24	2
WW24	IAI 1124 Westwind	2		1	-1	1	9	13	4
	Total	1130	295	478			5309	7626	
	FlightAware Blocked Operations		176				2243		
		1130	471	478			7552	7626	

Legend		E - C	E - D	H-G
		Count of Occurences		
(yellow)	NO is Equal to FA	11	32	9
(green)	NO is Lower than FA	41	3	1
(blue)	NO is Higher than FA	6	23	48

FA (GMT) FlightAware Data (greenwich Mean Time)
FA (Local) Flight Aware Data (Local Time)
NO (Local) Noise Office Data (Local Time)

Jet -Total Operations

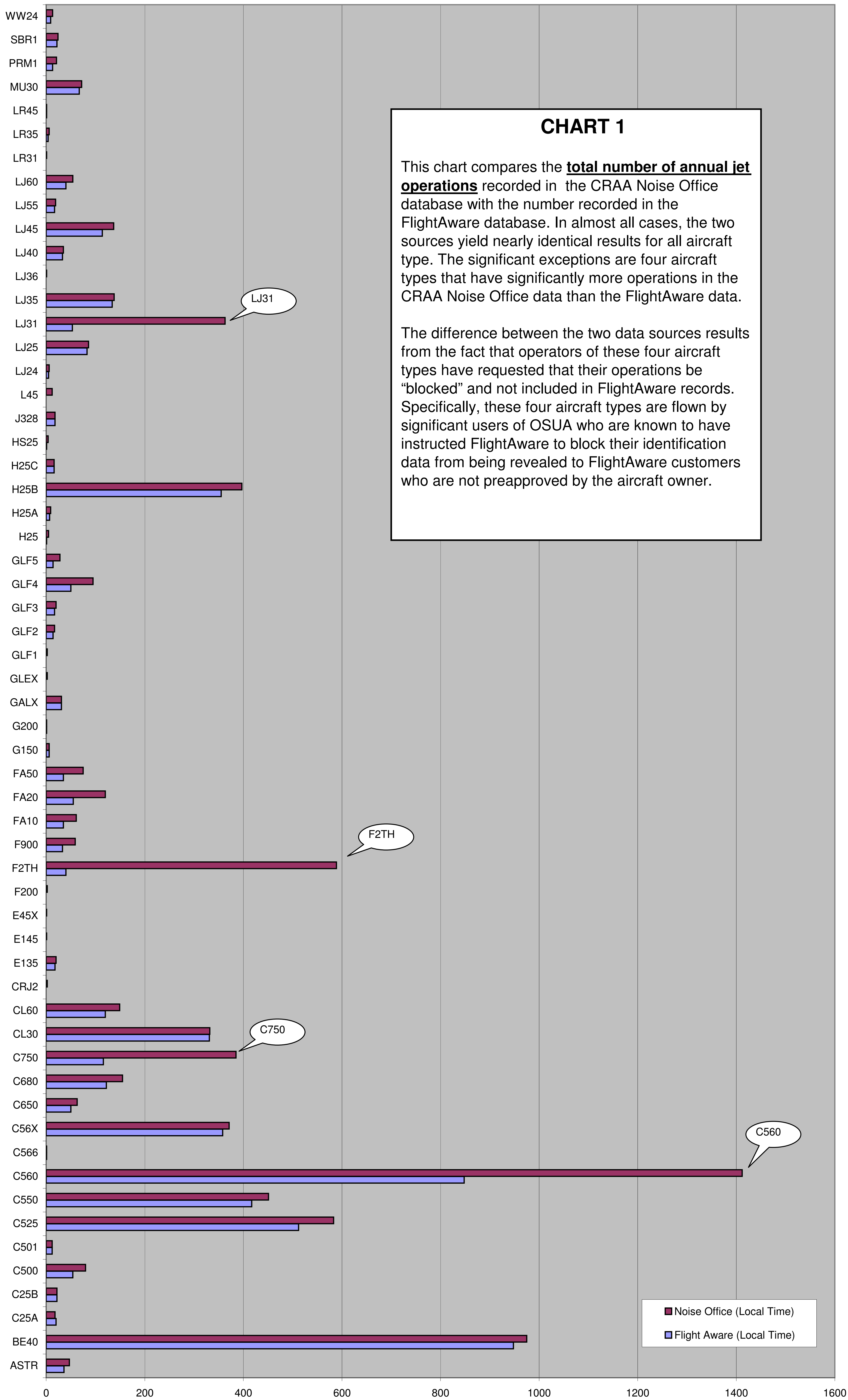
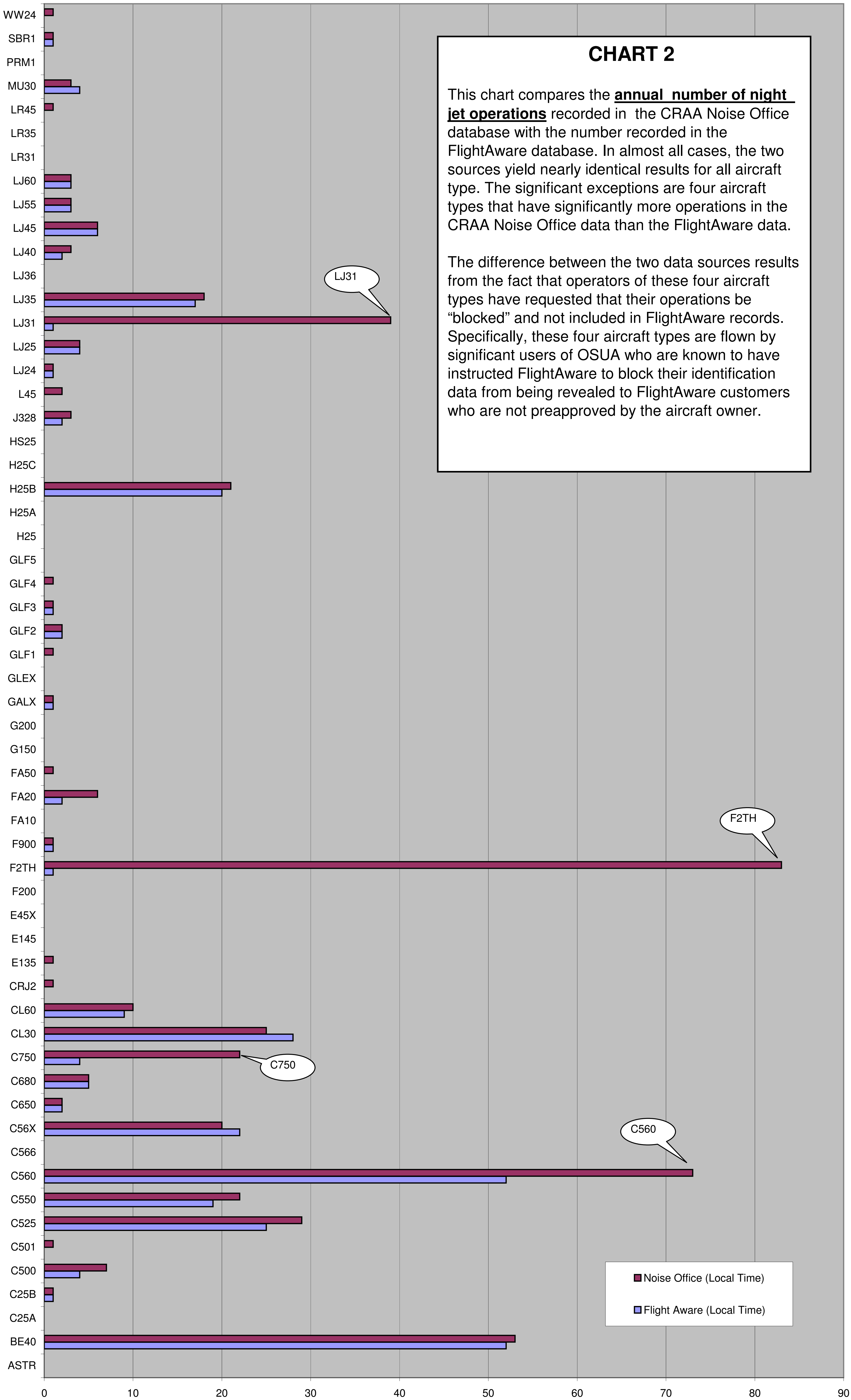


CHART 1

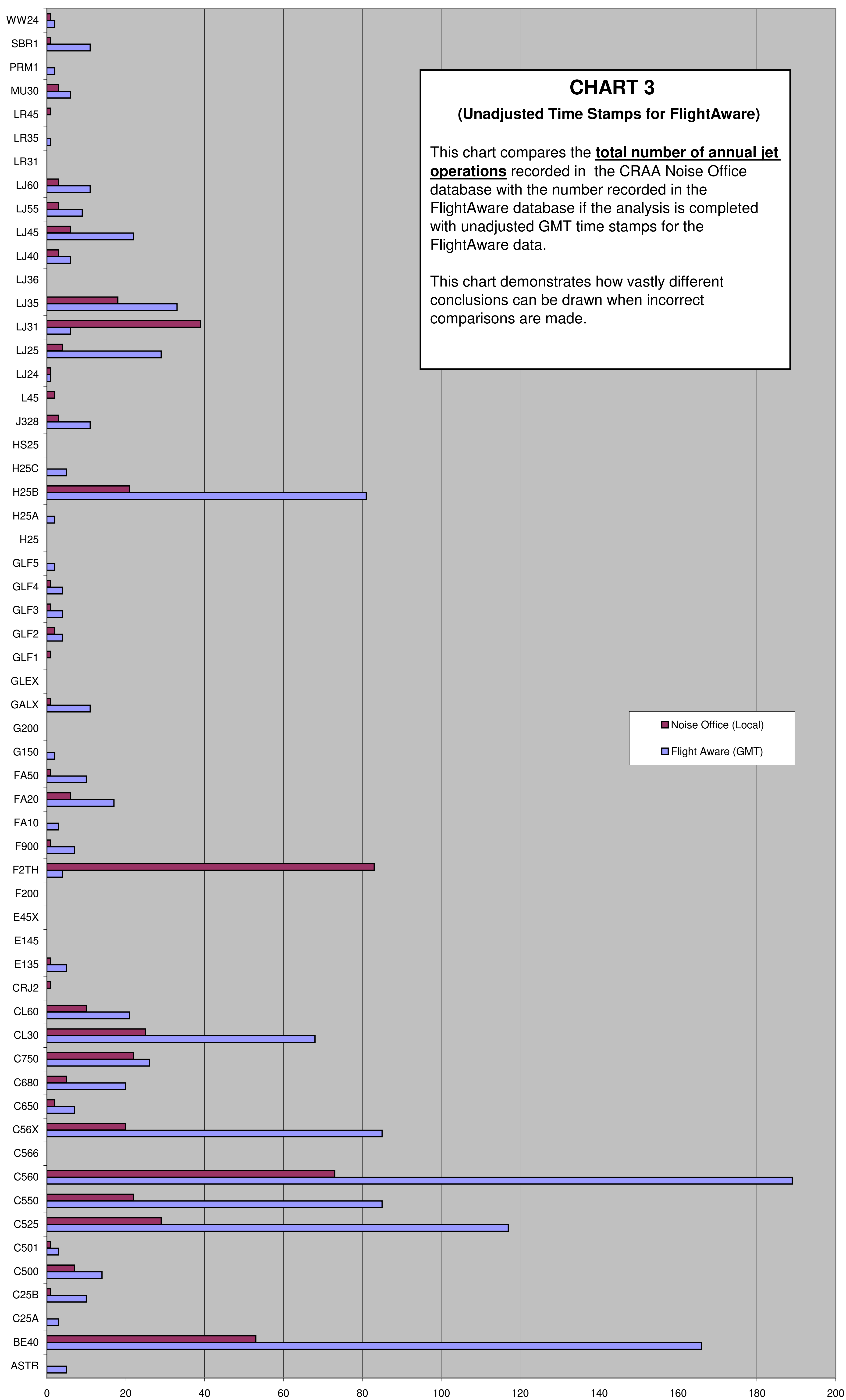
This chart compares the **total number of annual jet operations** recorded in the CRAA Noise Office database with the number recorded in the FlightAware database. In almost all cases, the two sources yield nearly identical results for all aircraft type. The significant exceptions are four aircraft types that have significantly more operations in the CRAA Noise Office data than the FlightAware data.

The difference between the two data sources results from the fact that operators of these four aircraft types have requested that their operations be "blocked" and not included in FlightAware records. Specifically, these four aircraft types are flown by significant users of OSUA who are known to have instructed FlightAware to block their identification data from being revealed to FlightAware customers who are not preapproved by the aircraft owner.

Jet -Total Night Operations



Jet -Total Night Operations



From: Kim Nixon-Bell [knixbel@columbus.rr.com]
Sent: Saturday, April 05, 2008 12:56 PM
To: 'Marie Keister'
Cc: Whitlsc@aol.com
Subject: RE: OSUA-Response to Whitlock/Nixon-Bell Paper

Follow Up Flag: Follow up
Flag Status: Flagged

Ms. Keister:

I have received the response to the paper which Mr Whitlock and I submitted to the Part 150 Technical Subcommittee on March 26, 2008.
In the response Mr. Full, RS&H Project Manager, reports that " the Consultant Team conducted additional research of the Air Traffic Control Tower counts and found that there were 185 annual touch-n-go training operations recorded during IMN night hours." I would appreciate it if you would send or have the Consultant Team send to me and Mr. Whitlock copies of the documentation supporting the quoted statement.

Thank you,

Kimberly Nixon-Bell

From: Marie Keister [mailto:mkeister@columbus.rr.com]
Sent: Friday, April 04, 2008 1:16 PM
To: al@aharding.com; Amanda Cooper; Bill Carleton; Chris Lenfest; David Zoll; Deral Carson; Don Peters; EJ Thomas; jweislogel@att.net; Matthew Brown; Dennis Shea
Cc: Amanda Cooper; vlrlted@columbus.rr.com; Scott Whitlock; knixbel@columbus.rr.com; maryjocusacklaw@aol.com
Subject: OSUA-Response to Whitlock/Nixon-Bell Paper

Part 150 Technical Subcommittee:

Please see the attached response to the Scott Whitlock-Kimberly Nixon-Bell paper submitted at the Technical Subcommittee meeting on March 26th.

Thanks,

Marie

Marie S. Keister, APR, AICP
Engage
7759 Crawley Dr.
Dublin, Ohio 43017
(614) 565-2819
mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

A Test of the Proposed Inputs
To the Integrated Noise Model
For The Ohio State University Airport
Part 150 Noise Compatibility Study

Originally submitted March 26, 2008
Revised April 7, 2008

Submitted by
Scott Whitlock and Kimberly Nixon-Bell

Introduction

Although we are not members of the Technical Advisory Committee for the Part 150 study, we have long advocated that study be done.[1] As members of the public we observed the first meeting of the Technical Advisory Committee on January 17, 2008. Although the proposed inputs for the integrated noise model were withdrawn at the beginning of that meeting and new inputs were presented, we were able to identify and present[2] three empirical[3] concerns with the data:

1. On their face the proposed inputs were incorrect using fractions of operations such as suggesting that there had been only one-third of a night-time landing by a Gulf Stream II jet (a stage 2 jet) during the year-long period used as the base period.
2. The proposed inputs understated the number of night-time Gulfstream II stage 2 jet operations which were known to have taken place based upon radar data furnished to the Overnight Flight Subcommittee.
3. The night-time operations of the LabCorp planes (PA31) were materially understated based upon data from both www.flightaware.com ("FlightAware") and data from The OSU Airport's flight information system www.webscene.info/WebScene/KOSU/console.html ("WebScene") a concern which was supported by Mr. Chris Lenfest, a member of the Technical Committee who reported that the Port Columbus Tower had furnished the consulting team with information showing six operations per night five nights a week which was

[1] Scott Whitlock has served as the City of Worthington representative on the Airport Advisory Board since its inception. Kimberly Nixon-Bell is a member of WOOSE and served as the WOOSE representative on the Airport Noise Committee from its inception. Upon its merger into the Airport Advisory Board she became an alternate to that board. Both the City of Worthington and WOOSE have asked for years that a Part 150 Study be done.

[2] The Technical Memorandum to the Technical Subcommittee of The Ohio State University Airport Part 150 Committee from David Full - RS&H Project Manager dated March 18, 2008 (the "Technical Memorandum") attributes the suggestions to "various Technical Subcommittee members" (p. 7) which is not correct.

[3] The Technical Memorandum (p.6) refers to the radar data, FlightAware data and WebScene data as "anecdotal sources" which is not correct.

substantially more than the less than one-half operation per night used in the proposed inputs.

The Technical Memorandum has now addressed these concerns:

1. All annual operations are shown as whole numbers.
2. The number of Gulfstream II stage 2 jet operations during the night-time hours has been increased at least to the number supported by the analysis of the radar data – GLF2 from .37 operations per year to 2 operations per year.
3. The number of PA31 night-time operations has been increased from 160 per year to 1,521.

Overall, the night-time operations have now been increased from 4,099 to 8,064. Unfortunately, the new inputs are the result of a number of assumptions and adjustments. The consultant team states[4] that the "total number of actual operations (both IFR and VFR) at the Airport for FY2007 was 87,156." Unfortunately no source is offered for that data point. The consultant team then obtained 55,312 records of operations from the Columbus Regional Airport Authority (CRAA) Noise Office.[5] No explanation for the discrepancy between the 55,312 records and the 87,156 actual operations is offered. Since the arrivals did not match the departures in the database from the CRAA Noise Office, the lower number was adjusted upward to the higher number at the Model Combination level[6] resulting in 61,486 operations.[7] No explanation is offered as to why this adjustment was not made at the individual aircraft type. The 61,486 operations were then adjusted upward by 25,670 operations based apparently entirely on undocumented anecdotal sources.[8]

Because the final inputs were not based entirely upon empirical data, we felt that it would be important to test the accuracy of at least some of the inputs using empirical data.[9] We have served on various subcommittees of the Don Scott Airport Advisory Board and Noise Committee including the 050 Turn Subcommittee, Overnight Flight Subcommittee and the Historic Data Analysis Subcommittee. As members of those subcommittees we emphasized and advocated the use of empirical data and strongly believe that the Part 150 Study should utilize empirical data to the greatest extent possible.

---

[4] Technical Memorandum p. 7
[5] Technical Memorandum p. 7 and Table B-1 pp. 23-29
[6] Technical Memorandum p. 22
[7] Technical Memorandum p.22 and Table B-3 pp 36-57
[8] The sources appear to have been "interviews with operators, Ohio Highway Patrol, OSU Flight School and OSUA air traffic control." Technical Memorandum p. 22. No documentation of these interviews or explanation of the methodology by which interviews were converted into data has been provided.
[9] Although one might expect that the consultants would perform some tests to check on the accuracy and reasonableness of the final results, there is no indication in the Technical Memorandum that any tests were performed.

Methodology

Because of very limited time before the meeting of the Technical Committee,[10] we chose to focus on night time (10:00 PM to 6:59 AM) operations since those operations have a significant impact on the model output. We chose the month of June because it was the last full month in the annual period of July 24, 2006 through July 23, 2007 used to develop the initial aircraft fleet mix.[11] The volume of data for just night time operations quickly dictated that the verification had to be limited to a single week and we used the first week in June beginning at 10:00 PM on May 31, 2007. Because data was apparently not recorded by WebScene for one night during that week, we had to substitute Tuesday-Wednesday night June 12-13 for Tuesday-Wednesday night June 5-6. We recognized that the Memorial Tournament would affect the first several nights of data, although the busiest two nights occurred after the tournament was over.

We utilized both WebScene and the data from FlightAware to identify all of the night-time operations during our test week. From WebScene we identified 177 total night-time operations during the test week[12]; from FlightAware we identified 46 total night-time operations only 5 of which we could not find in WebScene. The 182 total night time operations is more than suggested by the proposed inputs to the INM (9,490 on an annualized basis compared to the 8,064 night-time operations proposed in the Technical Memorandum, approximately 17% more), but we do not believe that the test week is necessarily representative of total night-time operations.

The percentage of arrivals (59%) during the test week is a little higher than the percentage of arrivals (53%) proposed in the Technical Memorandum[13] but we cannot draw any conclusion from the difference.

We were able to identify aircraft types for 74 of the 182 operations Using WebScene we were also able to observe flight tracks and identify local operations. Based upon the data we were able to draw three conclusions.

---

[10] Although we had been the primary critics of the inputs at the first Technical Committee meeting, we were not furnished the Technical Memorandum or the c.d. which accompanied it. We were able to obtain copies from a member of the Technical Committee and had approximately four days in which to do our analysis. Additional information was furnished to us in a memorandum dated April 4, 2008, from David Full – RS&H Project Manager to Douglas Hammon, Airport Director on the subject of Whitlock/Nixon-Bell Paper (the "Supplemental Memorandum").

[11] Technical Memorandum p. 7

[12] We only included operations in which the aircraft was coded by WebScene as arriving (blue) or departing (red) the Airport. On two occasions aircraft suddenly popped up on WebScene on what appeared to be departure tracks. However they were coded as in transit and were not counted as night-time operations.

[13] Technical Memorandum p. 45

Conclusions

1. Night-time Fleet Mix. We were able to identify aircraft types operating at the Airport during the night-time hours which are not included in the proposed inputs. Specifically, we observed the following aircraft types operating at night for which there does not seem to be input proposed:

   Airbus A320[14]
   Boeing 737-300[15]
   Boeing BBJ2 or 737-800[16]
   Canadair Bombardier Regional Jet CRJ-2000[17]
   Embraer EMB135 and EMB 145[18]
   McDonnell-Douglas DC9[19]

   Although we found 16 night-time operations during the test week in which it appears that zero night-time operations for the year are proposed as inputs into the INM, we were only able to identify aircraft type in 74 operations. The 16 night operations not included in the inputs represent an understatement of at least 18%. Because we were comparing one week of test data against the total inputs for a year and demonstrating that the actual operations in that week were greater than the inputs proposed for the year, it is likely that if additional test weeks are done the errors will grow.[20]

---

[14] We suspect that WebScene may have incorrectly identified this aircraft. We found two arrivals during the test week.

[15] WebScene showed four night-time arrivals by Boeing 737-300 jets. There is no input proposed for the B737.

[16] WebScene showed one night-time arrival by a B738 which could be either a Boeing BBJ2 or a 737-800. There is no input proposed for this operation.

[17] We found two arrivals during the night-time hours during the test week. The proposed input for night-time operations for the year is zero arrivals, one departure. Technical Memorandum p. 44

[18] These two aircraft types are combined as model types. Technical Memorandum p. 32. We found 2 EMB135 arrivals, 3 EMB145 arrivals, and 1 EMB145 departures. The proposed input for the combined model types is 0 arrivals and 1 departure. Technical Memorandum p.44.

[19] On WebScene we found three DC9 arrivals at night during the test week. The Technical Memorandum does not propose to input any DC9 operations. Technical Memorandum p.44.

[20] For example, the Technical Memorandum proposes to input only one departure for the Falcon 50. We found one departure during the test week. If any additional arrivals or departures are found for the Falcon 50, it will be clear that the proposed inputs are to low for that aircraft type. As another example, the Technical Memorandum proposes only 21 night-time operations for the BAe125(800), we found 4 night-time operations in just the test week. Either that is an unusual concentration of BAe125(800) operations into a single week, or the proposed inputs are too low. If additional test weeks are done, it seems likely that errors in the proposed BAe125(800) inputs will be established. However, we did not treat this as an error in this memorandum. As a third example, we noted in the FlightAware data was that during the test week there were regular night time operations of a BE58 Beech Baron. It may be that the category in which the BE58 is grouped - Multiple Aircraft (1) - is too low. There should be further verification of this issue.

2. Local Operations. The Technical Memorandum proposes that Local Operations at night are zero.[21] This seems to be contradicted by the fact that the Airport has received complaints about Local Operations at night from Worthington residents. Observing the flight tracks available through WebScene we identified six departures and six arrivals with flight tracks affecting Worthington residents north of the Airport and three departures and three arrivals with flight tracks south of the Airport. That would be 18 Local Operations in one week. The proposed inputs are clearly wrong and will cause the model to understate the noise impacts on Worthington residents.

2. Total Night-time Jet Operations. In the one test week we observed 40 jet operations. On an annualized basis that would be 2085 jet operations at night. The proposed night-time inputs show 479 total jet operations for a year.[22] We recognize that the Memorial Tournament may have inflated that numbers somewhat. However, coupled with the findings in paragraph 1 above, it would seem that total night-time jet operations may be substantially understated. Because these are generally the noisiest operations drawing the largest number of complaints and having the biggest impact on the output of the Integrated Noise Model, these proposed inputs should be scrutinized carefully and should be subject to verification. Our test did not verify either the accuracy or reasonableness of the proposed night-time inputs for jet operations.

Recommendation

On the basis of these findings, we believe that the Technical Committee should not accept the proposed night-time inputs without further verification.

[21] The Supplemental Memorandum proposes to use 0.5 operations per night. The Supplemental Memorandum is based upon observation ending at 11:00 p.m. The Supplemental Memorandum argues that there are zero local operations after 11:00 p.m. because of Airport "prohibits" them. Supplimental Memorandum, p.3. Actually the Airport merely "requests" that pilots follow its "Recommended noise abatement guidelines" The Ohio State University Airport Noise Abatement Guidelines). We found 18 Local Operations during the test week, or more than 5 times as many as the input now proposed in the Supplemental Memorandium. Six of those Local Operations occurred after midnight.

[22] The number of night-time jet operations proposed is 5.9% of total night-time operations; the number of day-time jet operations proposed is 9.1% of total day-time operations. Technical Memorandum pp. 44-45

Response to RS&H Memorandum
Regarding
A Test of the Proposed Inputs
To the Integrated Noise Model
For The Ohio State University Airport
Part 150 Noise Compatibility Study

April 7, 2008

Submitted by
Scott Whitlock and Kimberly Nixon-Bell

Introduction

At the Technical Subcommittee Meeting for The Ohio State University Airport Part 150 Noise Compatibility Study on March 26, 2008, we submitted a memorandum[1] (the "Test Report") reporting on our test of the proposed noise inputs for the integrated noise model (INM).[2] We concluded:

> On the basis of these findings, we believe that the Technical Committee should not accept the proposed night-time inputs without further Test.

RS&H asked for time to review and respond to our report. However, two days later, the Technical Subcommittee and we[3] were informed that the decision had been made to run the Integrated Noise Model before there had been consideration of or response to our Test Report. One week later, on April 4, 2008, we were e-mailed a memorandum analyzing and responding to the Test Report.[4] (the "RS&H Response Memorandum")

We said at the March 26 meeting that if we were provided new data, we would be happy to revise and reissue the Test Report. We appreciate the additional information which RS&H has provided. We have revised the Test Report based on the new information and attach a copy of the Revised Test Report.[5] (the "Revised Test Report") With the new information from RS&H we have been able to be more precise and

[1] A Test of the Proposed Inputs to the Integrated Noise Model for The Ohio State University Airport Part 150 Noise Compatibility Study, March 26, 2008, submitted by Scott Whitlock and Kimberly Nixon-Bell.
[2] The proposed inputs for the INM are set forth in the Technical Memorandum from David Full – RS&H Project Manager to Technical Subcommittee of The Ohio State University Airport March 18, 2008 subject January 17, 2008 Technical Subcommittee Meeting Follow-up. (the "Technical Memorandum")
[3] We are not members of the Technical Subcommittee and attended the committee session only as members of the general public.
[4] Memorandum from David Full – RS&H Project Manager to Douglas E, Hammon, Airport Director, The Ohio State University Airport dated April 4, 2008, subject Whitlock/Nixon-Bell Paper dated 03/26/08.
[5] A Test of the Proposed Inputs to the Integrated Noise Model for The Ohio State University Airport Part 150 Noise Compatibility Study, Originally submitted March 26, 2008, Revised April 7, 2008, submitted by Scott Whitlock and Kimberly Nixon-Bell.

accurate in our report. We have reconfirmed our conclusion that the proposed night-time inputs require further verification before being accepted for use in the INM model.

In this memorandum, we will (1) respond to the specific criticisms RS&H made of our Test Report, (2) discuss the deficiencies in the fundamental assumptions made and methodology used by RS&H in developing the proposed inputs and (3) suggest the importance of and the manner in which further verification of the proposed inputs can be done.

Response to Criticisms

RS&H made three criticisms of our report which we will deal with in the order presented in the RS&H Response Memorandum:

- **<u>Night-time Fleet Mix</u>** RS&H says that we "did not understand that the time stamps on the FlightAware source data are in Greenwich Mean Time (GMT) and must be converted to local time in order to conduct a day/night analysis."[6] RS&H is correct that we did not understand that the data RS&H provided from FlightAware was based on GMT. We relied on FlightAware's statement that "By default, FlightAware displays times in the airport's local time zone for US and Canadian airports."[7] RS&H appears to have chosen to provide the FlightAware arrival and departure times in GMT but did not label those times as being GMT. Nonetheless, we have now converted the times in the data provided by RS&H to Eastern Daylight Savings Time and the Revised Test Report is based on those converted times.

  RS&H claims that: "When the day/night analysis is performed with the time stamps correctly converted from Greenwich Mean time to OSU local time, The FlightAware data is very consistent with the INM Inputs set forth in the March 18, 2008 Technical Memorandum." Review of the attached Revised Test Report will show that RS&H's claim is not accurate.

  RS&H also goes to great lengths to try to show that the FlightAware data and the Columbus Regional Airport Authority (CRAA) Noise Office data are in complete support of each other when compared using the correct time stamps. RS&H claims that

  > In almost all cases, the two sources yield nearly identical results for all aircraft types. The significant exceptions are four aircraft types that have significantly more operations in the CRAA Noise Office data than the FlightAware data. The difference between the two data sources results from the fact that operators of these four aircraft types have requested that certain information about their operations be "blocked" and not included in the FlightAware records."

[6] RS&H Response Memorandum, p. 1
[7] http://flightaware.com/about/faq/rvt

On that basis RS&H has chosen to use the CRAA Noise Office data, which is not available to the public,[8] rather than FlightAware data, which is available to the public. However, RS&H appears not to understand fully the extent of the records in the FlightAware database which RS&H has provided. The operations of the four aircraft types which RS&H claim are not included are, in fact, included in the FlightAware data RS&H furnished to us, although in a coded form which permits the identification of the aircraft type but not the aircraft i.d. The aircraft operations of the four aircraft types which RS&H believes are missing from the FlightAware data are actually included in the data and were included in our test week analysis. As a result of RS&H's misunderstanding of the data from FlightAware, Chart 2 which included in the RS&H Response Memorandum is incorrect. ***The result is that there is no justifiable reason for RS&H to have chosen to use a restricted data base for developing their proposed inputs rather than a publicly available data base.***

RS&H appears to us to have ignored, without giving any reason, the database which The Ohio State University Airport makes available to the public – WebScene. In our Revised Test Report we were able to identify aircraft types for 74 of 182 operations. Fifty of those aircraft types were identified using WebScene and 45 were identified using FlightAware.[9] In most cases both WebScene and FlightAware confirmed the data contained in the other database. Clearly, it would have been better if RS&H had combined the data in the two publicly available data bases which is the methodology we used. In our approach, with combined data bases, we identified the aircraft type involved in more than 40% of the operations and made no assumptions about the aircraft type in the remaining operations. By contrast, RS&H actually identified the aircraft type involved in less that 26% of the total airport operations and assumed the identity of the aircraft involved in the remaining operations based on undocumented anecdotal evidence and assumptions that do not seem to stand a test of reasonableness.

- **Local Operations** For the first time of which we are aware, RS&H has provided a written definition of Local Operations and suggests that we may have "a misunderstanding of what constitutes a 'local operation' for purposes of INM inputs." How RS&H could make such a claim without reviewing our methodology for identifying Local Operations is not understandable. We offered at the March 26, 2008, meeting to sit down with RS&H personnel and review our methodology and supporting documents. RS&H has chosen to make its criticisms without availing themselves of our offer.

[8] In the Technical Memorandum RS&H notes that the database they chose to use "is restricted by the FAA and The Ohio State University Airport is only permitted to release information from this database in summary form." (Technical Memorandum, p. 10) A week ago we requested that the FAA authorize release of part of this database to us on a confidential basis so that we could use it to test the RS&H proposed inputs. We have not yet received a response from the FAA.

[9] We did use the coded information in FlightAware to identify aircraft which RS&H incorrectly claims are not included.

In the Revised Test Memorandum we strictly applied the RS&H definition of Local Operations, tracking the local operation on WebScene from departure to arrival. We report that we identified 18 Local Operations during the test week. That is more than five times the Local Operations used in the revised RS&H proposed input.

RS&H also claims that: "Touch-and-go and practice operations are prohibited at OSUA between 11 p.m. and 7 a.m." That statement is simply not true. The Noise Abatement Guidelines say that touch & goes and low practice approaches are "prohibited" between 11 p.m. and 7 a.m. but the Guidelines make clear that they are not mandatory. The Guidelines state that "the Airport **requests** that you follow these **recommended** noise abatement guidelines…."[10] [emphasis added] Not all pilots accede to the request; during the test week we found six instances of "prohibited" operations occurring after midnight.

- **Total Night-time Jet Operations** The RS&H Response Memorandum states that we "incorrectly referenced 279 jet operations in a year in their paper and made subsequent calculations based on that number."[11] RS&H is correct that 279 is wrong and that the correct number should be 479.[12] However, the following statement that we "made subsequent calculations based on that number" is wrong.[13] There was only one calculation in the text which followed that number: "In one week of test data we observed 70 jet operations or about 15% of the total proposed input of night-time jet operations."[14] The number 70 is in fact 14.6% of 479 or "about 15%." [15] Even though we made a typographical error in reporting the divisor, we used the correct divisor (479) in the calculation and reported the result correctly.[16]

  The RS&H Response Memorandum also makes the claim that our "analysis of WebScene data identified 177 night operations during the test week. The analysis also noted that 10-15 of those operations were actually conducted at Port Columbus International Airport…."[17] That statement is simply false; there is no reference in either our Test Report or our Revised Test Report to Port Columbus International Airport.

---

[10] The Ohio State University Airport Noise Abatement Guidelines.
[11] RS&H Response Memorandum p. 1 with the same claim repeated on page 4.
[12] Their statement as to how the typographical error happened is pure fantasy which they could have corrected with a simple telephone call or e-mail or by accepting our offer to review all of our underlying data with them.
[13] This is not the first time we have questioned RS&H methodology with respect to simple mathematics. The first thing we pointed out at the first Technical Subcommittee meeting on January 17, 2008, was a mathematical problem with RS&H's proposed inputs at that time. See Test Report and Revised Test Report. P. 1
[14] Test Report, p. 5
[15] If we had used 279 as the denominator, we would have said that 70 jet operations was abut 25% of the total, a statement which we did not make. Test Report p. 5.
[16] There was a calculation in footnote 27 of the Test Report which used the wrong divisor and which reported an incorrect result. That calculation has been corrected and appears in footnote 22 of the Revised Test Report.
[17] RS&H Response Memorandum, p. 4

RS&H Fundamental Assumptions and Methodology

We challenge the fundamental assumptions and methodology used by RS&H in two areas.

- **Assumption #1: The CRAA Noise Office data contains all of the jet flights.** At the Technical Subcommittee meeting on March 26, 2008, Mr. Don Andrews of RS&H stated that: "It is a reasonable assumption to say that FlightAware and CRAA are capturing all jet flights." Later, in response to a direct question from Mr. E. J. Thomas, Mr. Andrews said that he had "100% confidence" in the jet inputs.[18] There are two problems.

  First, if the CRAA Noise Office data were capturing all jet flights, RS&H would not have had to adjust it upward by 62 flights in order to equalize arrivals and departures.[19] That very adjustment indicates that the CRAA jet data is incomplete.

  Second, our more precise analysis combining WebScene and FlightAware data during the test week demonstrates that the CRAA Noise Office data did not capture all jet flights. Although we have some reservations about the accuracy of the WebScene data in a few instances,[20] it is conclusive that CRAA Noise Office data did not capture all jet flights. The question is: How many jet flights are left out of the proposed inputs? There seems to be little question that it is a substantial number.[21]

  After adjusting to equalize arrivals and departures, RS&H had only 24,000 operations out of 87,186 operations in which the aircraft type was believed to be known. In order to account for the remaining 51,186 operations in which the aircraft type was unknown, RS&H had to increase the number of aircraft types in each category. Apparently based upon Mr. Andrew's assertions of confidence that the CRAA Noise Office data accounted for all jet operations, an assumption which our one week test of night-time operations has demonstrated is clearly untrue, RS&H made the decision to increase the number of jet operations by zero. However RS&H increased operations by propeller driven multi-engine aircraft by 149%, operations by propeller driven single-engine aircraft by 568%, operations by helicopters by 746% and operations by military aircraft by 842%.[22] Compared to the total lack of adjustment to jet operations, those adjustments seem unreasonable. Our empirical data, although

---

[18] Contemporaneous notes of Scott Whitlock.
[19] Table B-4 "Equalize Arrival/Departure Count. Technical Memorandum, p. 39. Note that this adjustment was done only at the "Model Combination" level. If the adjustment had been done at the aircraft type level or, even more properly, at the individual aircraft level, the number might have been greater. See discussion in the Revised Test Report, p. 2.
[20] See footnotes beginning at footnote 14 in the Revised Test Report. We have asked (see footnote 13 to the Test Report), and the Worthington City Council has asked more than a year ago, that the Airport Administration take steps to be able to provide accurate numbers for night-time operations. To our knowledge, no steps have been taken by the Airport Administration.
[21] See pp. 4-5 of the Revised Test Report.
[22] Compare Technical Memorandum Table B-4, p. 39, to Table B-5, pp. 44-45.

developed under extreme time pressure and limited in scope, suggests that the RS&H methodology is very materially wrong.

- **<u>Assumption #2 The newly discovered tower log establishes that there are only .05 Local Operations on average per night.</u>** In the Technical Memorandum RS&H proposed to base the model on the assumption that there were no Local Operations during the night-time hours. In response to our Test Report, RS&H now proposes to increase night-time Local Operations to an average of ½ of one operation per night.[23] That is equivalent to one touch-and-go every four nights. Although our Test Report discussing this suggested that the RS&H original input was "contradicted by the fact that the Airport has received many complaints about local operations at night from Worthington residents", the RS&H team still apparently ignores the data contained in the complaint records.

  The RS&H team dismisses the problem of understating night-time touch-and-go operations on the basis that "the noise contours developed with or without the 0.5 touch-and-go per night would be identical."[24] Leaving aside for the moment the question of whether an accurate number of night-time local operations would affect the contours,[25] the RS&H team apparently has no concern about whether the supplemental single event noise data is accurate.[26]

  Our Revised Test Report, utilizing RS&H's newly provided definition of Local Operations, suggests that the RS&H assumption and resulting proposed input for Local Operations at night is materially wrong.[27]

<u>Further Verification of Proposed Inputs</u>

It is important that the affected communities and their citizens have confidence in the results of this Part 150 Study. Unfortunately, we do not have confidence that INM will be either accurate or useful. In every case in which we have been able to test the RS&H assumptions, data and proposed inputs we have found errors, all of which go in the direction of understating the noise impacts on the surrounding communities. In addition, in every case in which the RS&H team has had the choice of using public data

---

[23] The tower records are claimed by RS&H to show that "there were 185 annual touch-and-go training operations recorded during INM nighttime hours." It is unclear to us whether those records count a touch (arrival) and a go (departure) as one training operation or two training operations. We have asked the RS&H to make available to us a copy of the tower records for night-time operations so that we may establish what the number 185 means and compare the records to the records we have developed independently using WebScene.

[24] RS&H Response Memorandum, p. 3

[25] Our test week number for night-time Local Operations is more than five times the RS&H proposed input. Revised Test Report, p. 5

[26] It should be noted that the Worthington City Council has emphasized the importance of single event noise data for planning purposes. City of Worthington, Ohio, Comprehensive Plan Update and 2005 Strategic Plan for Worthington, October, 2005, p. 107.

[27] Revised Test Report, p. 5.

against which their work could be checked or restricted data not available to the public, the RS&H team has chosen to use restricted data.

At this point the The OSU Airport and the RS&H team have a decision as to whether it would be better from the standpoint of public confidence and efficiency to engage in further verification or to proceed with the development of a new fleet mix for use in the INM. We are prepared to undertake further verification and have asked the FAA to give us access to the records which RS&H has used to develop the currently proposed fleet mix.

Thus far, RS&H has apparently had no method for verifying its fleet mix once it is developed. We do not suggest that the tests that we have done are the ideal verification methodology but they are certainly better than nothing. We note that with one exception every issue we have raised has resulted in RS&H making changes in the fleet mix – increasing fraction operations to whole numbers, adding Stage 2 jet operations which took place, increasing the number of night-time operations by the LabCorp planes from 160 to 1,521, and adding Local Operations at night.[28] Only in the case of jet operations during the night-time hours has RS&H refused to make any change in the fleet mix. Unfortunately, as is demonstrated in the attached Revised Test Report, the current RS&H proposal clearly omits jet operations which actually occurred during the base period. What we don't know at this point is the full scope of the problem, but further verification will help to refine the scope of the problem. There are clearly a number of additional issues, some of them quite specific, which should be addressed by further verification.[29]

If the decision is made now to redevelop the fleet mix, we suggest that the inputs should be based upon empirical data to the greatest extent possible. We have used a combination of WebScene and FlightAware data in our analysis. We would suggest that both data sources should be used. It should be noted that the RS&H team used WebScene extensively (and apparently exclusively) to develop the flight tracks to be used in the INM,[30] but did not use WebScene to develop the flight mix. If data were available from the Columbus Regional Airport Authority webtrak system,[31] we would suggest that data be used as in our experience it is more complete and possibly the most accurate data available. Unfortunately it may not be available for the base period. If the FAA would consent to making CRAA Noise Office data so that its use could be independently verified, then we would suggest that it be used together with the WebScene and FlightAware data. Finally, if Tower logs are available, those logs should be used to confirm all inputs for hours during which the The OSU Airport Tower is open.[32] Only after empirical sources have been exhausted should the inputs be based on anecdotal

[28] In the last example, however, we believe that the night-time Local Operations may still be materially understated.
[29] See footnote 20 in the Revised Test Report.
[30] We have not questioned the flight track inputs although there were some questions raised at the March 26, 2008, Technical Subcommittee meeting about the altitude of the Citation 560 jet during the first three nautical miles after the start of roll.
[31] See www.columbusairports.com/noise/webtrak.asp.
[32] We expect that those logs are public records under Ohio law and can be made available to he public for review.

evidence and assumptions and the anecdotal evidence and assumptions should be fully documented.

We suggest that the consultants should review the data available from official actions of city governments, such as Worthington, data available from the City of Worthington, WOOSE and The OSU Airport[33] noise complaint systems (which provide a guide to the perceived noise impacts on surrounding communities), and the work done by the Airport Advisory Board, the Airport Noise Committee and their subcommittees.

Finally, we suggest that an empirical and independently verifiable data base be developed for the base period fleet mix. We have developed one methodology for doing that and although we do not suggest that ours is the only methodology,[34] it appears that RS&H does not have any methodology which is based on empirical and independently verifiable data.

---

[33] We caution that there are many documented and uncorrected problems with The OSU Airport noise complaint system and that the data from that system cannot be used without correcting for the problems. As one example, it has come to our attention that Worthington residents being affected by Local Operations are having their complaints about multiple single events combined and treated as a single complaint. That may hold down the numbers in the statistics about noise complaints which The OSU Airport publishes to the communities, but the end result is to grossly understate the daily impact of Local Operations on Worthington residents who live under the flight patterns.

[34] We continue to stand ready to share all of our worksheets and methodology with RS&H provided only that RS&H shares its worksheets with us.

From: Marie Keister [mkeister@engagepublicaffairs.com]
Sent: Friday, April 11, 2008 5:23 PM
To: David Zoll (david@toledolaw.com); 'christy@toledolaw.com'
Cc: maryjocusacklaw@aol.com; knixbel@columbus.rr.com; Scott Whitlock (whitlsc@aol.com); vlrlted@columbus.rr.com; rosemarielisko@sbcglobal.net; 'Amanda Cooper (amanda.cooper@ohr.state.oh.us)'; 'al@aharding.com'; 'Bill Carleton (wcarleto@columbus.rr.com)'; 'Chris Lenfest (Chris.Lenfest@faa.gov)'; 'Deral Carson (osu@midwestatc.com)'; 'Don Peters (dwpeters@columbus.rr.com)'; 'EJ Thomas (EJ@EJThomas.us)'; 'jweislogel@att.net'; 'Matthew Brown (mybrown@franklincountyohio.gov)'; Dennis Shea (dennis.shea@faa.gov); Don Peters (dwpeters@columbus.rr.com)
Subject: FW: City of Worthington - OSU Part 150 Noise Study
Attachments: _0331150627_001.pdf; RSH_Team_Response_to_31_March_2008_Zoll_Letter.pdf; Response Memo to Whitlock-NixonBell Paper (FINAL).pdf

Mr. Zoll,

Thank you for your letter regarding the OSU Part 150 Noise Study. Please find your letter, the RS&H Team Response and the Response Memo to the Whitlock-Nixon-Bell Paper, attached.

We look forward to seeing you at the Part 150 Committee meeting and public open house on April 24th.

Marie

Marie S. Keister
ENGAGE
7759 Crawley Dr.
Dublin, OH 43017
mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

From: Christy Gallardo [mailto:Christy@ToledoLaw.Com]
Sent: Monday, March 31, 2008 3:12 PM
To: mkeister@engagepublicaffairs.com
Subject: City of Worthington - OSU Part 150 Noise Study

Dear Ms. Keister:

Enclosed please find a letter from Mr. Zoll in regard to the above captioned matter.

If you have any questions or concerns, please do not hesitate to contact me.

Christy M. Gallardo
Legal Assistant
ZOLL, KRANZ & BORGESS, LLC
6620 W. Central Avenue, Suite 200
Toledo, Ohio 43617

Phone: 419-841-9623
Fax: 419-841-9719
Email: christy@toledolaw.com
Website: www.toledolaw.com

ESA Airports

8950 Cal Center Drive
Building 3, Suite 300
Sacramento, CA 95826
916.564.4500 phone
916.564.4501 fax

www.esassoc.com

April 11, 2008

Mr. David W. Zoll
Attorney at Law
Zoll Kranz & Borgess, LLC
6620 West Central Avenue, Suite 200
Toledo, Ohio 43617

Subject: Your Letter Dated March 31, 2008 Regarding the March 26, 2008 OSU Airport Part 150 Technical Subcommittee Meeting

Dear: Mr. Zoll:

Thank you for your March 31, 2008 letter in which you made two requests for additional information and analysis regarding the March 26, 2008 OSU Airport Part 150 Technical Subcommittee Meeting. This letter provides the RS&H Team's response to both of your requests.

Your first request was that the RS&H Team prepare a "careful written response to the concerns and issues raised by the Whitlock/Nixon-Bell paper. . .", which was provided to the Technical Subcommittee at the March 26, 2008 meeting. The RS&H Team prepared a responsive, nine-page technical memo on the issues raised in Whitlock/Nixon-Bell white paper. Our technical memo regarding the white paper was distributed to the Technical Subcommittee members on Friday, April 4, 2008. We trust that technical memo addressed any questions or concerns you have about the issues raised.

In your second request, you asked for "authoritative support for the proposition that lower flight profiles do not result in higher noise impacts because the held down aircraft are flying at greater speed." As we explained in our March 18, 2008 Technical Memorandum, upon which our March 26, 2008 presentation was based, there are very few actual hold-downs for jet departures to the east. But as you noted during the March 26, 2008 meeting, at some locations along the altitude profile there are a number of actual departure profiles for the C560 that are lower than the INM default profile (at other locations there are also a number of actual departure profiles that are higher than the INM default). Overall, the MU3001 INM altitude profile falls within the range of the actual altitude profiles and is a suitable representation of the C560 east departures for the purposes of FAR 150.

In order to change the INM default altitude profile at the locations where it is closer to, but not above, the highest actual altitude profiles (e.g., at a track distance of 12,000 feet), one must develop custom INM profile inputs that decreases the throttle setting/thrust level for that aircraft. If the throttle setting is not reduced, the airspeed of the aircraft must be increased to reflect the decreased climb angle of the aircraft. The point we wanted to convey at the March 26, 2008 presentation is that in either case, the customized profile inputs would require changes to either airspeed or thrust levels that would have a mitigating affect on the aircraft noise exposure at ground level. At the altitude variances between the INM and actual profiles for the C560, the difference in noise level on the ground due to lowering the altitude of the INM profile would be very small because achieving those altitude reductions would require either a reduction in thrust or an increase in airspeed.

Your specific question related to a scenario where one would customize the INM altitude profile by reducing altitude without reducing thrust. Specifically, you indicated that, "While it is true that the aircraft may be flying faster, and thus the time of noise exposure is shorter, I do not believe there is a linear relationship. The Single Event Level (sic) will definitely be higher, even if the time of exposure is shorter." The RS&H Team did not state that there is a linear relationship between the time of exposure and the speed of the aircraft, and you are correct that the relationship is not linear (it is logarithmic). However, time is a key variable in the calculation of both SEL and DNL under 14 CFR Part 150.

Sound Exposure Level is a metric that encompasses all the sound energy of an event and is a combination of both the magnitude of the sound level and the duration of the event. Therefore, all else being equal, the shorter the duration of an event, the lower the Sound Exposure Level will be. This is an established acoustical fact that is reflected in the calculation of Sound Exposure Level as required by 14 CFR Part 150:

> "Sound exposure level must be computed in accordance with the following formula:
>
> $$L_{AE}=10\log_{10}\left(\frac{1}{t_o}\int_{t_1}^{t_2}10^{L_A(t)/10}\,dt\right) \quad (5)$$
>
> where t_o is one second and LA(t) is the time-varying A-weighted sound level in the time interval t1 to t2."

When using this formula to calculate the Sound Exposure Level as required by FAR Part 150, a reduction in the time of exposure will result in a reduction in the Sound Exposure Level.

You also wrote, "While shortening of the time of exposure may result in a lower DNL impact, I do not believe it is a direct linear relationship, and I do not accept the opinion of the presenter as fact without some authoritative support." The RS&H Team did not state that there is a direct linear relationship between shortening the time of exposure and a lower DNL impact, and you are correct that it is not linear relationship (it is logarithmic).

Although we did not discuss the relationship of the time of exposure and the DNL at the March 26, 2008 meeting, it is also a well established acoustical fact that time is inherent in the calculation of DNL as required by 14 CFR Part 150:

ESA Airports

"Day-night average sound level (individual day) must be computed in accordance with the following formula:

$$L_{dn} = 10 \log_{10}\left[\frac{1}{86400}\left(\int_{0000}^{0700} 10^{[L_A(t)+10]/10}\,dt + \int_{0700}^{2200} 10^{L_A(t)/10}\,dt + \int_{2200}^{2400} 10^{[L_A(t)+10]/10}\,dt\right)\right] \quad (3)$$

Time is in seconds, so the limits shown in hours and minutes are actually interpreted in seconds."

When using this formula to calculate DNL as required by FAR Part 150, a reduction in the time of exposure will result in a reduction in the DNL.

Finally, you conclude by stating, "Nor do I believe that the FAA regulations would permit lower profiles to be disregarded in general (although they may accept lower profiles as irrelevant for other reasons in specific cases)." FAA considers the INM altitude profiles to be representative of the nominal departure and arrival profiles of the aircraft they represent and expects them to be used "as is" for the development of all FAR Part 150 Noise Exposure Maps. In rare cases, in which the nominal INM altitude profiles do not fall within the range of the actual aircraft profiles, FAA provides for a process to demonstrate that custom profiles are needed and to submit data that would support their use. Our review of the OSU Airport actual jet departure and arrival profiles for the BE400 and C560 indicated that the MU3001 INM profile falls within the bounds of the actual altitude profiles being flown at OSU Airport. Therefore, there is no basis to submit a request to FAA to change the default INM altitude profile or to expect that the FAA would approve the use of custom altitude profiles for the OSU Part 150.

Again, we appreciate the opportunity to clarify the concerns you had related to our presentation on March 26, 2008. We trust that the April 4, 2006 technical memo and this letter address any remaining questions or concerns you had about the INM inputs. Please let us know if you have any additional questions or concerns.

Sincerely,

Steven R. Alverson, Director
ESA Airports

Cc: OSU Part 150 Technical Subcommittee

April 16, 2008

RS&H Team Response to Scott Whitlock and Kimberly Nixon-Bell Memos Submitted on April 7, 2008

From: Marie Keister [mailto:mkeister@columbus.rr.com]
Sent: Wednesday, April 16, 2008 2:07 PM
To: 'al@aharding.com'; 'Amanda Cooper (amanda.cooper@ohr.state.oh.us)'; 'Bill Carleton (wcarleto@columbus.rr.com)'; 'Chris Lenfest (Chris.Lenfest@faa.gov)'; 'David Zoll (david@toledolaw.com)'; Dennis Shea (dennis.shea@faa.gov); 'Deral Carson (osu@midwestatc.com)'; 'Don Peters (dwpeters@columbus.rr.com)'; 'EJ Thomas (EJ@EJThomas.us)'; 'jweislogel@att.net'; 'Matthew Brown (mybrown@franklincountyohio.gov)'
Cc: Scott Whitlock (whitlsc@aol.com); knixbel@columbus.rr.com; rosemarielisko@sbcglobal.net; vlrlted@columbus.rr.com; maryjocusacklaw@aol.com; baeslack.1@osu.edu; Amanda Cooper (amanda.cooper@ohr.state.oh.us)
Subject: 080416_SW_KNB Response to RS&H Memorandum

Technical Subcommittee,

The RS&H Team has reviewed the additional reports provided by Scott Whitlock and Kim Nixon-Bell on April 7th and appreciates that additional review and input. After that review, the RS&H Team remains confident that no further technical analysis of the data inputs is necessary and that the INM inputs will generate accurate noise contours. The research and analysis conducted by the RS&H Team to verify the data goes well beyond FAA guidelines, and is considerably more comprehensive than the analysis typically employed at general aviation airports across the nation that have conducted similar studies.

Marie

Marie S. Keister, APR, AICP
ENGAGE
7759 Crawley Dr.
Dublin, OH 43017
(614) 565-2819
mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

From: Kim Nixon-Bell [mailto:knixbel@columbus.rr.com]
Sent: Monday, April 07, 2008 7:19 PM
To: 'Marie Keister'; al@aharding.com; 'Amanda Cooper'; 'Bill Carleton'; 'Chris Lenfest'; 'David Zoll'; 'Deral Carson'; 'Don Peters'; 'EJ Thomas'; jweislogel@att.net; 'Matthew Brown'; 'Dennis Shea'
Cc: 'Amanda Cooper'; vlrlted@columbus.rr.com; 'Scott Whitlock'; maryjocusacklaw@aol.com; 'Bud Baeslack'; 'Kim Nixon-Bell'
Subject: Response to RS&H Memorandum

Ms Keister and the Part 150 Technical Subcommittee:

Please see the attached two documents. The first is a response the to RS&H Memorandum we received from Ms. Keister on April 4, 2008. You will see that we have accepted their information regarding Greenwich Mean Time (GMT) and have found a calculation error in one footnote. However, the rest of their criticisms do not appear to be valid. We have also found that RS&H is incorrect in their statement that information is not included in the FlightAware data base. We found the information needed for the preparation of flight mix including the information regarding the four aircraft types which RS&H stated were omitted. Based upon our investigation, there is no need for RS&H to have used a restricted data base as the sole data base for the preparation of the flight mix.

The second document is an update of our test study revised to reflect Greenwich Mean Time (GMT). You will see that we have combined the data from WebScene, which the RS&H team used to develop flight tracks but not fleet mix, with the data from FlightAware including data on the supposedly omitted operations of certain aircraft. We believe that our resulting data base is significantly more complete than the data base RS&H used. Further, in reaching our conclusions we relied only on the empirical information contained in the two data bases and did not use any unverified assumptions or anecdotal information.

As we originally stated on March 26, 2008, and now following the revision of our test report, we continue to recommend that the Part 150 Technical Subcommittee should not accept the proposed night-time inputs without further verification.

In order to permit us to do a more detailed verification of the proposed fleet mix we have contacted FAA Representative Ms. Annette Davis to request access to the Columbus Regional Airport Authority Noise Office data which was used by RS&H to prepare the fleet mix. We await her reply.

Kimberly Nixon-Bell
Scott Whitlock

From: Marie Keister [mailto:mkeister@columbus.rr.com]
Sent: Friday, April 04, 2008 1:16 PM
To: al@aharding.com; Amanda Cooper; Bill Carleton; Chris Lenfest; David Zoll; Deral Carson; Don Peters; EJ Thomas; jweislogel@att.net; Matthew Brown; Dennis Shea
Cc: Amanda Cooper; vlrlted@columbus.rr.com; Scott Whitlock; knixbel@columbus.rr.com; maryjocusacklaw@aol.com
Subject: OSUA-Response to Whitlock/Nixon-Bell Paper

Part 150 Technical Subcommittee:

Please see the attached response to the Scott Whitlock-Kimberly Nixon-Bell paper submitted at the Technical Subcommittee meeting on March 26th.

Thanks,

Marie

Marie S. Keister, APR, AICP
Engage
7759 Crawley Dr.
Dublin, Ohio 43017
(614) 565-2819

mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

From: Marie Keister [mkeister@columbus.rr.com]
Sent: Wednesday, April 16, 2008 2:07 PM
To: 'al@aharding.com'; 'Amanda Cooper (amanda.cooper@ohr.state.oh.us)'; 'Bill Carleton (wcarleto@columbus.rr.com)'; 'Chris Lenfest (Chris.Lenfest@faa.gov)'; 'David Zoll (david@toledolaw.com)'; Dennis Shea (dennis.shea@faa.gov); 'Deral Carson (osu@midwestatc.com)'; 'Don Peters (dwpeters@columbus.rr.com)'; 'EJ Thomas (EJ@EJThomas.us)'; 'jweislogel@att.net'; 'Matthew Brown (mybrown@franklincountyohio.gov)'
Cc: Scott Whitlock (whitlsc@aol.com); knixbel@columbus.rr.com; rosemarielisko@sbcglobal.net; vlrlted@columbus.rr.com; maryjocusacklaw@aol.com; baeslack.1@osu.edu; Amanda Cooper (amanda.cooper@ohr.state.oh.us)
Subject: 080416_SW_KNB Response to RS&H Memorandum
Attachments: Response to RS&H April 7, 2008.doc; Memo - Night Operations Test Week Analysis. Rev. April 7 doc.doc; 080318_Tech_Subcommittee_Memo.pdf; Whitlock_Nixon-Bell White Paper_080326.pdf; Response Memo to Whitlock-NixonBell Paper_080404.pdf

Technical Subcommittee,

The RS&H Team has reviewed the additional reports provided by Scott Whitlock and Kim Nixon-Bell on April 7th and appreciates that additional review and input. After that review, the RS&H Team remains confident that no further technical analysis of the data inputs is necessary and that the INM inputs will generate accurate noise contours. The research and analysis conducted by the RS&H Team to verify the data goes well beyond FAA guidelines, and is considerably more comprehensive than the analysis typically employed at general aviation airports across the nation that have conducted similar studies.

Marie

Marie S. Keister, APR, AICP
ENGAGE
7759 Crawley Dr.
Dublin, OH 43017
(614) 565-2819
mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

From: Kim Nixon-Bell [mailto:knixbel@columbus.rr.com]
Sent: Monday, April 07, 2008 7:19 PM
To: 'Marie Keister'; al@aharding.com; 'Amanda Cooper'; 'Bill Carleton'; 'Chris Lenfest'; 'David Zoll'; 'Deral Carson'; 'Don Peters'; 'EJ Thomas'; jweislogel@att.net; 'Matthew Brown'; 'Dennis Shea'
Cc: 'Amanda Cooper'; vlrlted@columbus.rr.com; 'Scott Whitlock'; maryjocusacklaw@aol.com; 'Bud Baeslack'; 'Kim Nixon-Bell'
Subject: Response to RS&H Memorandum

Ms Keister and the Part 150 Technical Subcommittee:

Please see the attached two documents. The first is a response the to RS&H Memorandum we received from Ms. Keister on April 4, 2008. You will see that we have accepted their information regarding Greenwich Mean Time

(GMT) and have found a calculation error in one footnote. However, the rest of their criticisms do not appear to be valid. We have also found that RS&H is incorrect in their statement that information is not included in the FlightAware data base. We found the information needed for the preparation of flight mix including the information regarding the four aircraft types which RS&H stated were omitted. Based upon our investigation, there is no need for RS&H to have used a restricted data base as the sole data base for the preparation of the flight mix.

The second document is an update of our test study revised to reflect Greenwich Mean Time (GMT). You will see that we have combined the data from WebScene, which the RS&H team used to develop flight tracks but not fleet mix, with the data from FlightAware including data on the supposedly omitted operations of certain aircraft. We believe that our resulting data base is significantly more complete than the data base RS&H used. Further, in reaching our conclusions we relied only on the empirical information contained in the two data bases and did not use any unverified assumptions or anecdotal information.

As we originally stated on March 26, 2008, and now following the revision of our test report, we continue to recommend that the Part 150 Technical Subcommittee should not accept the proposed night-time inputs without further verification.

In order to permit us to do a more detailed verification of the proposed fleet mix we have contacted FAA Representative Ms. Annette Davis to request access to the Columbus Regional Airport Authority Noise Office data which was used by RS&H to prepare the fleet mix. We await her reply.

Kimberly Nixon-Bell
Scott Whitlock

From: Marie Keister [mailto:mkeister@columbus.rr.com]
Sent: Friday, April 04, 2008 1:16 PM
To: al@aharding.com; Amanda Cooper; Bill Carleton; Chris Lenfest; David Zoll; Deral Carson; Don Peters; EJ Thomas; jweislogel@att.net; Matthew Brown; Dennis Shea
Cc: Amanda Cooper; vlrlted@columbus.rr.com; Scott Whitlock; knixbel@columbus.rr.com; maryjocusacklaw@aol.com
Subject: OSUA-Response to Whitlock/Nixon-Bell Paper

Part 150 Technical Subcommittee:

Please see the attached response to the Scott Whitlock-Kimberly Nixon-Bell paper submitted at the Technical Subcommittee meeting on March 26th.

Thanks,

Marie

Marie S. Keister, APR, AICP
Engage
7759 Crawley Dr.
Dublin, Ohio 43017
(614) 565-2819
mkeister@engagepublicaffairs.com
www.engagepublicaffairs.com

ZOLL KRANZ & BORGESS, LLC
Attorneys at Law
6620 West Central Avenue
Suite 200
Toledo, OH 43617
www.toledolaw.com
www.toledoconstructionlaw.com
Phone: 419-841-9623
Fax: 419-841-9719

David W. Zoll*
david@toledolaw.com
Michelle L. Kranz
michelle@toledolaw.com
Pamela A. Borgess
pamela@toledolaw.com
Wesley D. Merillat
wes@toledolaw.com
*Certified National Board of Trial Advocacy

April 17, 2008

Matthew Greeson
City of Worthington
6550 North High Street
P.O. Box 480
Worthington, Ohio 43085

Re: Status Report Part 150 Study by Ohio State University

Dear Mr. Greeson:

The purpose of this letter is to bring Council up to date on the status of the OSUA Part 150 Noise Study. Council will recall that they appointed Jane Weislogel and I as representatives to the Technical Advisory Committee. In this role we have attended a number of meetings and reviewed various reports and presentations made by the consultants. In addition, Scott Whitlock and Kim Nixon – Bell prepared several written critiques that were presented to the consultants. These too have been reviewed.

The initial main goal, adopted by the Committee, was to insure that the Noise Study is as accurate as possible so that the Community can have confidence in the Noise Exposure Maps. The consultants have now completed the preparation of the inputs. The Noise Exposure Maps (NEM) will be presented on April 24, 2008.

So this is a good time to review the input process, explore some of the issues that have been raised surrounding the inputs, and generally describe the next steps. While there have been several questions raised on the accuracy of the input data, I am generally satisfied that the study has been conducted properly, and that the Community can have confidence in the result.

The Concerns

Fleet Mix / Database

Because the Noise Maps strive to accurately depict existing conditions, the inputs must accurately reflect the type of aircraft (fleet mix), the frequency of aircraft, and the flight paths and altitudes of aircraft using the airport. The first concern, then, is to identify which aircraft are using the field.

The first attempt at this task was less than satisfactory. Scott and Kim identified a particular aircraft that was not captured in the fleet mix to the degree in which it was flying. As a result, the consultants had to completely redo the entire fleet mix by substituting a different database. The new database relied on was the database generated by CRAA – Columbus Regional Airport Authority.

The CRAA Noise Office database consists of data collected from the FAA Standard Terminal Automation Replacement System (STARS). STARS is a digital radar/flight data processing and display system used by air traffic controllers. The system tracks all aircraft movements in the Columbus area and provides, as available from aircraft transponders, aircraft identification information. This information is transmitted to the CRAA Noise Office software, which uses the flight track position data to identify the airport and runway used by each aircraft.

This database contained all aircraft filing instrument flight plans and all aircraft, which had identifying transponder information. It is the most complete database of those available for review.

There remained a concern that even the CRAA database did not contain all of the aircraft. This was the primary concern, which I raised at the last meeting.

There are several key facts, which must be understood. First, the aircraft, which drive the noise contours, are jets, and especially nighttime jets. And these aircraft are captured in the CRAA database because that database captures jets using transponders and those filing flight plans. (All aircraft flying instruments must file a flight plan.)

Second, those aircraft that practice take offs and landings ("touch and go's") are, for the most part, <u>not</u> included in the CRAA database. These "Local Operations" account for a significant number of flights at the airport, and are consistent with the role of the airport as a training facility.

Attached are two exhibits (Chart One and Chart Two), which show the discrepancy between the two databases, and also show that the two databases are consistent. The Flight Aware databases had operations from several aircraft type "blocked" from disclosure. The CRAA database did not have these aircraft type blocked.

While the new database may not reflect each and every operation at the airport, I do believe that it reasonably captures most of the operations. More importantly, I believe that the FAA will find the proposed fleet mix to be acceptable and the use of the CRAA database to be reasonable.

<u>Departure Profiles</u>

The closer an airplane is to the ground the louder it sounds. The computer program used to develop the noise maps ("Integrated Noise Model" (INM)) assigns altitudes and noise footprints to each aircraft. The main aircraft we are concerned about are nighttime jet departure aircraft heading east. These aircraft will drive the noise model.

One concern, which we raised, was whether these aircraft were lower than the altitude depicted by the model. If the aircraft are lower, then the ground noise levels are higher. To address this concern the airport prepared profiles of the two most common jets. Those profiles are attached as Figures 1 and 2.

The jet departures in Figure 1 are consistent with the assigned INM profile, while there is some degree of variation at lower altitudes in the aircraft in Figure 2.

OSU's consultants argue that the variation in altitude in Figure 2 is inconsequential for two reasons. First, because the discrepancy isn't significant. Second, because the aircraft are flying at higher speeds, since they are at full power. Therefore they will be moving faster and therefore not around as long. Because time is an element in the calculation of noise metrics, the shorter period of time offsets, to some degree, the increased noise level.

Critically, the INM program does not permit the consultant to assign lower departure altitudes for the type of aircraft in question. Thus the only way to address this concern would be to petition the FAA to adopt a custom profile (called "stage length") for these aircraft. It is highly unlikely that the FAA would permit or pay for such action, nor is it apparent that doing so would materially affect the output.

Conclusion

At this time I do not believe there is any value in continuing to argue over either the database or the flight profiles for two reasons:

- Although not perfect, the INM inputs are reasonable and will be found by the FAA to meet the requirements for INM inputs.
- The Community will be best served by accepting the inputs and focusing on the next step in the process, which will involve a review of the noise maps and the preparation of Noise Abatement Procedures that can best minimize impacts of aircraft operations on the Community.
- The inputs will result in a reasonably accurate Noise Exposure Map, which can be used for the purpose of identifying noise impacts and pursuing the next step in the process.

The Noise Exposure Maps will be delivered to the Committee and the Public on Thursday, April 24. The next step in the process will be the review of a noise abatement program to reduce or eliminate noise exposure to the community where feasible.

I plan to meet with Council on Monday April 21, 2008 to review these matters in more detail. At that time I hope to answer any questions that Council may have about the inputs or the process.

Sincerely,

David W. Zoll

Jet -Total Operations

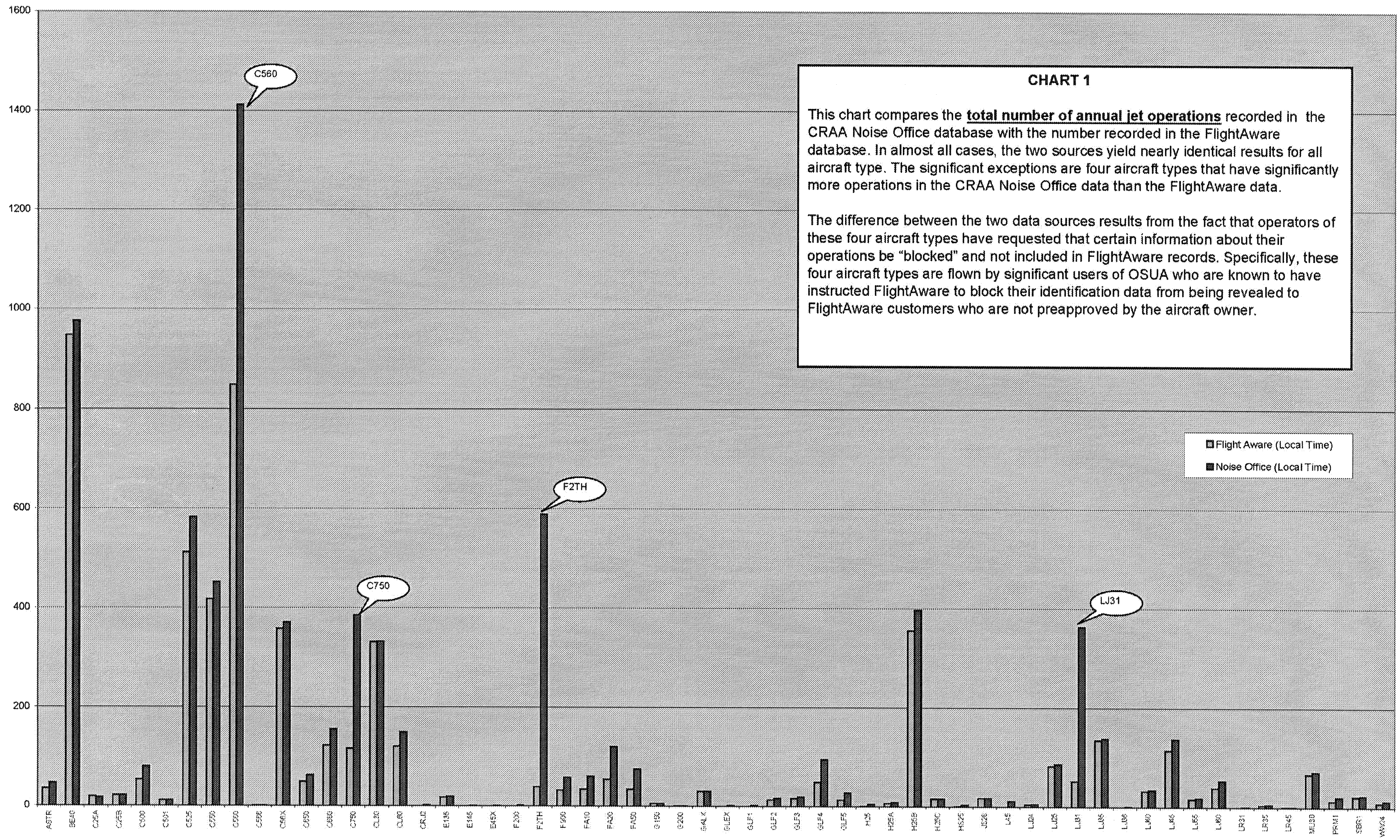


CHART 1

This chart compares the **total number of annual jet operations** recorded in the CRAA Noise Office database with the number recorded in the FlightAware database. In almost all cases, the two sources yield nearly identical results for all aircraft type. The significant exceptions are four aircraft types that have significantly more operations in the CRAA Noise Office data than the FlightAware data.

The difference between the two data sources results from the fact that operators of these four aircraft types have requested that certain information about their operations be "blocked" and not included in FlightAware records. Specifically, these four aircraft types are flown by significant users of OSUA who are known to have instructed FlightAware to block their identification data from being revealed to FlightAware customers who are not preapproved by the aircraft owner.

Jet -Total Night Operations

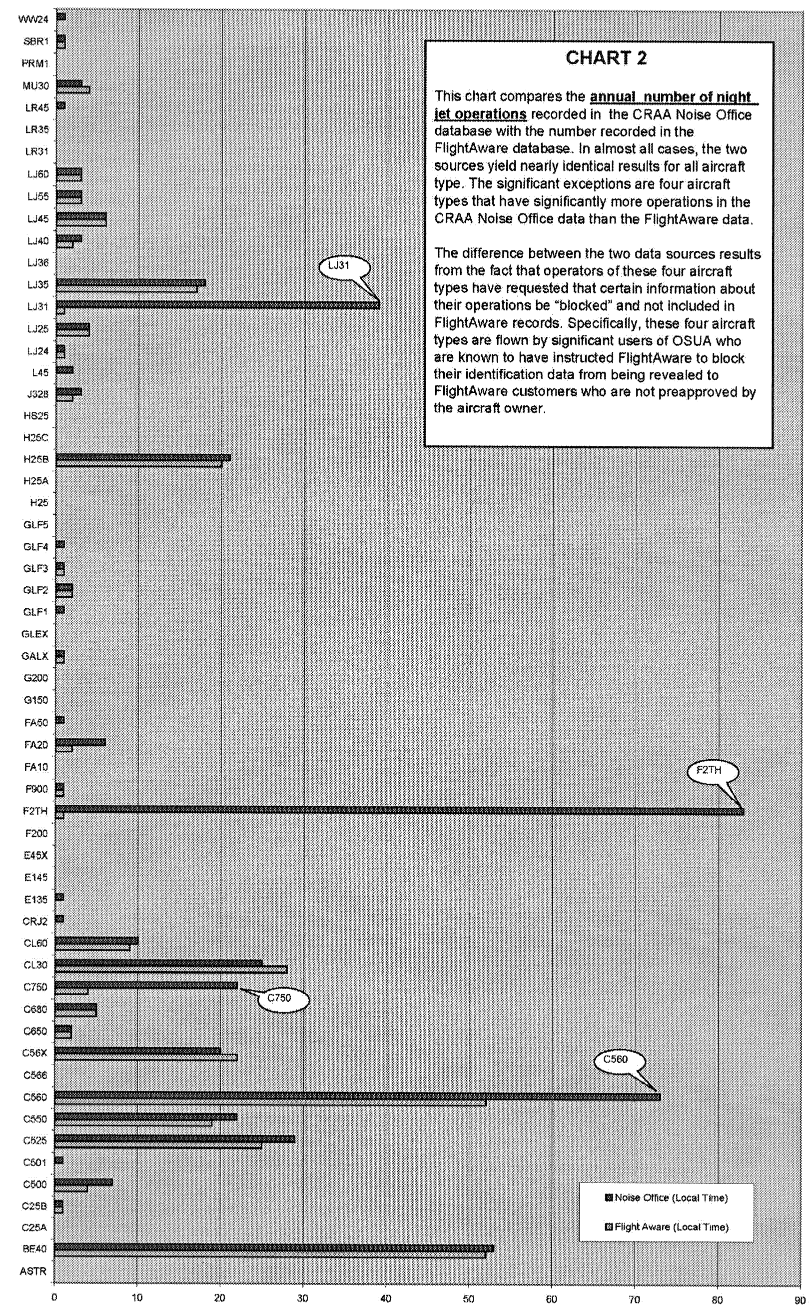


Figure 1 - BE400 Departure Profiles
Actual vs. INM

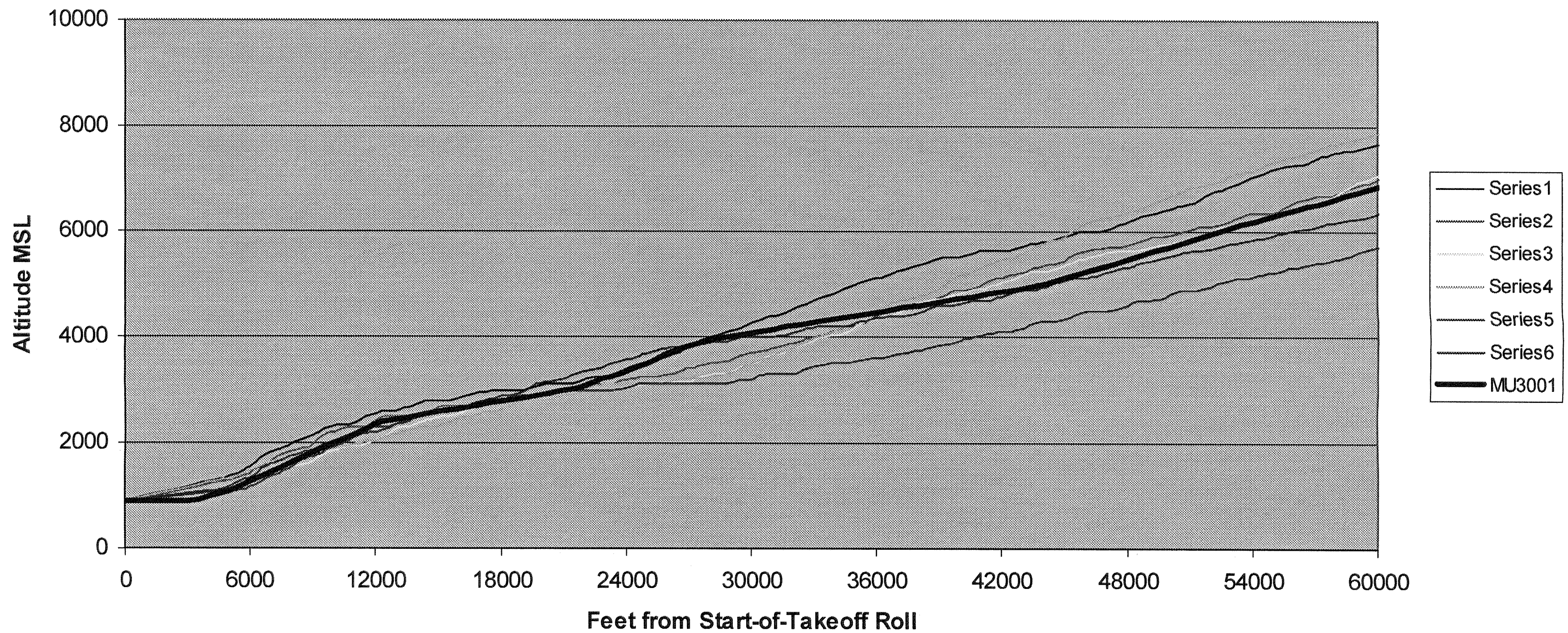
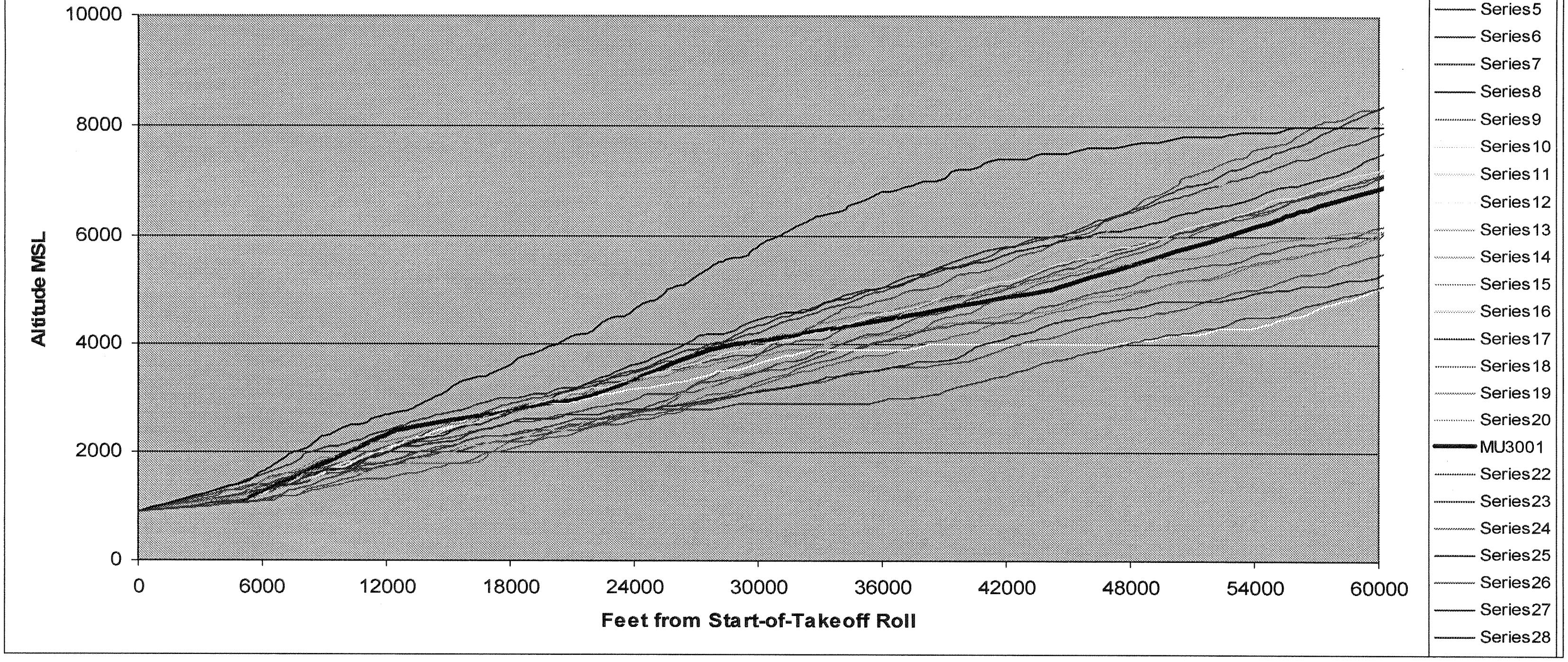


Figure 2 - C560 Departure Profiles
Actual vs. INM



The Ohio State University Airport

Part 150 Technical Subcommittee
Meeting #1 – SUMMARY[1]

9:30 – 12:30 a.m.
January 17, 2008
OSU Airport Administration Building
2160 West Case Rd., Columbus, 43235

This is a summary of the January 17, 2008 meeting of the Ohio State University Airport's Part 150 Committee's Technical Subcommittee.

Participation on this Subcommittee was open to all members of the Part 150 Committee. Eight members volunteered. The meeting was used to review and learn more about the detailed technical data that will be used to develop Noise Exposure Maps for the University's airport.

The following summarizes key informational and action items from the meeting.

Participants

Part 150 Technical Subcommittee Members Present

City of Worthington, David Zoll
Franklin County, Matthew Brown
Northwest Civic Association, Bill Carlton
We Oppose Ohio State University Airport Expansion, Jane Weislogel
Midwest (OSU) Air Traffic Control, Deral Carson
Port Columbus Air Traffic Control (FAA), Chris Lenfest
Aircraft Owners & Pilots Association, E.J. Thomas
Columbus Flight Watch, Al Harding for Don Peters

OSU/Consultant Team Members Present

Dean Bud Baeslack, Doug Hammon, Cathy Ferrari, Elizabeth Ike (OSU)
David Full, Don Andrews and Joe Jackson (RS&H)
Steve Alverson and Ron Seymour (ESA Airports)

[1] This Summary is intended to provide a paraphrased overview of presentations made, materials discussed, questions asked and comments made. It is not intended to be a word-for-word representation of the Subcommittee proceedings.

Marie Keister (Engage)
Bill Habig and Latane Montague (consultants)

Public Observers
Kim Nixon-Bell, Dennis Shea, Vera Tedrick, Bob Tedrick, Scott Whitlock

Materials Reviewed at the Meeting

- Agenda *(sent in advance)*
- Integrated Noise Model data inputs *(drafts sent in advance; updated versions provided at the meeting)*
- Integrated Noise Model flight tracks *(drafts sent in advance)*
- PowerPoint Presentation

Meeting Summary

Meeting Introductions
Marie Keister, the facilitator, convened the meeting at 9:30 a.m.

Review of Meeting Goals
Ms. Keister explained that, in response to a Part 150 Committee request made at the September 2007 study kick-off meeting, the University established the Technical Subcommittee to enable committee members the opportunity to comment on data inputs to the Integrated Noise Model (INM) prior to the development of the Noise Exposure Maps.

Thus, the goals of this meeting were to:

- Review Federal Airport Regulation (FAR) Part 150 noise modeling requirements
- Provide background on the Integrated Noise Model and Noise Exposure Maps
- Describe aircraft noise modeling concepts
- Review draft information to be used in the development of the existing and future OSU Airport Day-Night Average Sound Level (DNL) Contours

Meeting Ground Rules
Ms. Keister briefly reviewed the purpose and operating guidelines of the Part 150 Committee and the Technical Subcommittee, emphasizing the committees are advisory in nature. The University and FAA have the statutory decision-making authority in the FAR Part 150 process. The Technical Subcommittee meeting was open to the public, but the focus would be on first ensuring that Subcommittee members had the opportunity to share their comments and questions.

Ms. Keister noted that her role as facilitator was to clarify, communicate and to keep the Subcommittee and consultant team on track and on time. She noted that the January 17th meeting was intended to be less formal than the Part 150 Committee meetings, and that the team's objective was to review complex data, seek questions and receive comments throughout meeting.

Introduction to Aircraft Noise Modeling

Ms. Keister introduced Steve Alverson, Part 150 Study Task Manager and Ron Seymour, Deputy Task Manager, who will be working with the Integrated Noise Model; and Don Andrews, Part 150 Study Project Officer and Joe Jackson, Project Quality Advisor, who created the OSU Airport Activity Forecasts. These forecasts form the basis of the aircraft operations used in the noise modeling effort. The modeling will result in draft noise contours that will be shared at the next Part 150 Committee meeting and at a public meeting later that same day. Ms. Keister said all four team-members would likely be responding to questions and comments during the Subcommittee meeting.

Mr. Alverson noted that the draft operations and fleet mix tables forwarded to the Subcommittee prior to the meeting had been updated. The revised documents were distributed.

To help everyone understand the purpose of noise modeling and how it works, Mr. Alverson summarized the following (*see "Technical Subcommittee Presentation")*:

- Noise modeling in a FAR Part 150 Study
- Background on the INM
- Aircraft Noise Modeling Concepts

Questions and Comments (OSU/Consultant Team Responses in Italics)

1. Aircraft Owners and Pilots Association representative E.J. Thomas asked if foliage such as trees and such affect terrain and are taken into consideration during the modeling effort. *Mr. Alverson said no, the INM does not account for foliage on trees because it has little effect on the propagation of sound. The model does account for terrain, although because OSU Airport is located in a relatively flat location that won't likely be an issue here. Modeling assumes a "soft ground" condition for the propagation of noise from aircraft on the ground such as taxiing. You can change parameters based on unique conditions around the airport that could affect sound. For example, San Francisco International Airport modeling efforts take into consideration the large body of water – the San Francisco Bay -- right beside the airport.*
2. Public observer Vera Tedrick asked if this modeling effort will look at how the Scioto and Olentangy Rivers, located to the west and east of the airport, affect noise. She noted that bicyclists have reported immense noise in these areas. *Mr. Alverson said because the aircraft are in the air over the rivers, the water surface probably won't affect the noise exposure. Rivers are not usually a factor in noise propagation, and aircraft fly high enough over these rivers that there will likely be no difference in noise exposure due to noise propagation from the rivers. He said the team would double-check this to see if the INM could account for the effect of the rivers on noise propagation for aircraft in flight.*

3. WOOSE representative Jane Weislogel commented that OSU Airport is unique in that a low ceiling for departures is required here due to the Port Columbus landing patterns. Will that be considered in this effort? *Mr. Alverson said the team is reviewing the departure/arrival profiles at OSU Airport to see if there is a condition that would require them to ask the FAA to make an adjustment to modeling parameters. He said he would let the Subcommittee know how this analysis turns out.*

Review of OSU Airport Noise Model Inputs

Mr. Alverson and Mr. Seymour then reviewed draft data tables and flight tracks that will be used to create noise contours for 2007, 2012 and 2027.

Questions and Comments (OSU/Consultant Team Responses in Italics)

1. Public observer Kim Nixon-Bell asked if "local" operations noted on the tables included flights from OSU Airport to nearby airports in Mansfield and similar cities, or did "local" only include flights in OSU Airport's airspace. *Mr. Alverson said local operations are only those in OSU Airport's airspace or under the watch of the OSU Air Traffic Control Tower.*
2. WOOSE representative Jane Weislogel asked if pilots who opt out of the Flight Aware program are still included in the data used for the INM? *Yes.*
3. Ms. Weislogel commented that helicopters do not operate on instruments even when they operate at night. Are these accounted for in the data? *Yes.*
4. City of Worthington representative David Zoll asked that source documents be made available to the Technical Subcommittee so members could verify the accuracy of the data inputs. *Mr. Alverson said that to the extent allowable, source information would be forwarded to the Subcommittee. He said some of the data may be subject to confidentiality agreements that prevent their release. Doug Hammon, OSU Airport Manager, said that even OSU Airport has to make formal requests to Port Columbus and the FAA for information.* Chris Lenfest, Port Columbus Air Traffic Tower (FAA) representative, agreed this was true. It was also noted there may be security issues with STARS data, for example.
5. Mr. Zoll asked why the fleet mix data summarized on Table 2.8, for example, didn't provide actual numbers for 2006 and 2007, and provided only estimates. How can you be sure the numbers are accurate? *Don Andrews responded that all data inputs are called estimates because none of the data sources provide 100 percent of what is needed for the modeling effort. Because the information is pulled from a variety of sources, these tables are considered "estimates".*
6. Mr. Zoll questioned the day versus night operations splits being used in the INM inputs. *Mr. Alverson explained that there was an arithmetic error and it had been fixed. He said that a benefit of the Technical Subcommittee review was to give everyone an opportunity to review and verify the data, and to gain a better understanding of how the modeling process works.*
7. Public observer Scott Whitlock asked how the team had arrived at some of its findings, including why the Lear25 Jet data showed .007 departures, for example. *Joe Jackson explained that the data comes from a variety of sources: OSU Tower records and STARS (radar) data when the tower is closed. The team also reviews OSU's based aircraft list to*

note any exceptions or allow for unknowns that might otherwise be missed. We must take what we know, make informed judgments about what we can't know for sure, then extrapolate from there. Once this is done, the total annual number is divided by 365 days per year, which in most cases will be a fraction or decimal number.

8. Mr. Zoll asked the team to clarify how they account for unidentified aircraft. *Don Andrews explained that when they didn't know the exact total, they distributed the estimated data in the same proportions as the other flight operations. Mr. Jackson added that the underlying philosophy was to be conservative, and to assume noisier aircraft were in use when it couldn't be determined the exact aircraft being used.*

9. Mr. Whitlock asked for more detail on the percentage of unknown aircraft in Flight Aware, as he thought night-time operations were understated. Mr. Zoll offered that there are a number of unknowns and that when rounding occurs, it is rounded up, not down. Mr. Zoll asked the Subcommittee to share any data they had access to that was different from that presented at the meeting. Mr. Whitlock said it was his impression the team would review the Advisory Committee's (draft) Overnight Flight Subcommittee report developed after several meetings in 2006, but it didn't appear from this data to be the case. *Mr. Alverson and OSU Airport representative Cathy Ferrari said they would re-confirm that the team had this information.*

10. Mr. Whitlock asked for clarification on the timeframes used for collecting source data. *Ron Seymour said there were different timeframes for different data sources, and that revised tables and flight tracks would be sent to the Subcommittee with that information noted where applicable.*

11. Mr. Zoll asked if there was any data on how the Kawasaki BK-117 helicopter compares to the Bell Jet Ranger, since it appears to be a big driver of the data. How do you determine whether a substituted aircraft is viable? *Mr. Alverson explained that the FAA looks at gross weight, engine-type, and certified or estimated noise levels to select a noise match for an aircraft type.*

12. Mr. Whitlock said that the Piper Chieftain data appeared to show fewer operations than the data developed by the Nighttime Data Operations Subcommittee of the Airport Advisory Committee. Ms. Weislogel added that she sees Piper Chieftains three times a night five days per week, and are big complaint generators. How did the team arrive at the estimate being presented? Mr. Lenfest, representing Port Columbus Air Traffic, said he provided information confirming six operations per night Monday through Friday. *Mr. Jackson said he would review the data sources.*

13. Mr. Whitlock asked how the Subcommittee could have confidence in the data if non-technical members of the Subcommittee were finding errors.

14. Aircraft Owners & Pilots Association representative E.J. Thomas said it was not productive for anyone to subscribe malevolence to this effort. He asked participants to give the technical team a chance to hear the Subcommittee's input and take it under advisement, which was why the Subcommittee was formed.

15. Mr. Zoll asked why there appeared to be a problem in receiving or incorporating the accurate data from the Port Columbus tower and who had asked the data to be changed. *Mr. Alverson responded that no one had asked that the data be changed. Mr. Montague added that this issue will be reviewed to ensure the right data is being used, the* *appropriate corrections are made if needed, and if any breakdown in communication occurred. The findings will be reported to the Subcommittee.*

16. Franklin County representative Matt Brown noted that the data calculations for the nighttime operation of the Piper Chieftain seemed close to six operations per night, five days per week.
17. Mr. Zoll asked if prevailing winds were used to calculate jet operations. OSU Air Traffic Control representative Deral Carson explained that prevailing winds are the main driver of jet operations, although there are many exceptions based on safety considerations, such as other aircraft, mowing, construction on or near the runways, etc. *Mr. Seymour added that the team used two sets of runway use data from the OSU Tower, and seven months of AirScene data, to estimate annual jet operations.*
18. Mr. Whitlock asked what time period was used in the data collection for jet operations. *Mr. Seymour reiterated that seven days of data from four quarters of the year were used, which included both east and west wind flows and various jet aircraft. This also provided data on the 50 degree turn over Worthington that pilots make when they depart to the east of the airport.*
19. Mr. Zoll asked if the 50 degree turn was assumed in all of the future forecasts. *Mr. Seymour said that it was because there is no reason at this point to indicate that the procedure is going to change. This effort will establish the baseline exposure in the Noise Exposure Maps for 2007, 2012 and 2027 based on existing flight tracks. Based on those findings, the team would look at what changes could be made to address any identified concerns. This work will occur in the Noise Compatibility Program phase of the study.*
20. Ms. Nixon-Bell asked how the team accounts for aircraft flying without transponders. *Mr. Seymour said that radar picks up these aircraft when AirScene does not, although radar does not provide aircraft identification information. As a result, we believe our operations estimates are an accurate representation of what is occurring.*
21. Ms. Nixon-Bell expressed a concern about whether the flight tracks accurately depicted the flow of aircraft departing to the east and making a 50 degree turn. *Mr. Seymour said that the team would look at this and any other concerns the Subcommittee might have about a particular flight corridor. Mr. Alverson said he thought the 50 degree heading was accurately reflected on these maps.* Mr. Carson explained that when the OSU Tower issues this direction to the pilots, pilots don't always take a true 50 degree departure for a variety of reasons, such as clouds and other aircraft in the area. The decision is ultimately up to the pilot how to follow this instruction safely.
22. Mr. Zoll commented that the 50 degree turn is a driver of Worthington issues. Ms. Weislogel helped clarify on the map the location of Worthington City Hall and the Village Green. Mr. Zoll said if all tracks were consolidated onto the 50 degree track, it could increase noise. Spreading out the tracks would reduce noise.
23. Ms. Weislogel asked if the 50 degree turn issue would be open for discussion during the Noise Compatibility Phase of the study. *Mr. Alverson said yes, that once FAA approves the noise contours in the Noise Exposure Maps, the team can start looking at how to change the impacts.*
24. Mr. Lenfest expressed his opinion that flight racks 2, 4, and 6 all funneled into the same track into the airport. These tracks also illustrate that they need to be heading in this direction to avoid Port Columbus airspace.

25. Ms. Nixon-Bell commented that one pilot told her he starts his 50 degree turn at 400 feet.
26. Mr. Zoll asked if flight tracks 9 and 10 depicted on the flight track maps were headed into Port Columbus airspace, and wasn't this banned? Mr. Lenfest said it is not a problem when they're flying above the Port Columbus corridor. There are some instances where this is the case. For example, aircraft departing Port Columbus are to climb to 5,000 feet, and to ensure 1000 feet separation. Observer Dennis Shea, also from Port Columbus Air Traffic Control – FAA, further clarified why they needed OSU Airport pilots to use the 50 degree turn some times and not others, based on winds and which runways both airports were using. Mr. Lenfest said that flying directly over Port Columbus International Airport is very safe, because aircraft operating at Port Columbus are on or near the ground.
27. Mr. Zoll asked for more details on preferential abatement procedures at OSU Airport. Mr. Lenfest, Air Traffic Control manager for Port Columbus, explained that when there are calm winds at Port Columbus, Runway #10 at Port Columbus Airport is preferred. Under calm wind conditions, the OSU Tower prefers to use Runway #27.
28. Mr. Zoll asked what conflicts exist when OSU is using Runway #9 and Port Columbus is using Runway #28. Mr. Carson said there are not any conflicts because Port Columbus Tower makes the initial runway heading assignments for OSU departures. Mr. Lenfest from Port Columbus said OSU can only release Instrument Flight Rules (IFR) aircraft with Port Columbus Tower's permission.
29. Mr. Whitlock asked why there were no flight tracks designated for #10 and #11 on the Jet Departures/East Flow flight tracks? *Mr. Alverson responded that flight tracks 10 and 11 are arrival tracks.*
30. Mr. Whitlock asked if flight tracks for night and day will be separated. He expressed his opinion that night time flight tracks are much more concentrated. Mr. Zoll said he expected to see more head to head arrivals and departures, and more U-turns at night. Mr Carson said he didn't think flight tracks would be that much different on night-time aircraft arrivals and departures. *Mr. Alverson said the team would review the night-time tracks and determine if they are substantially different from daytime tracks.*
31. Mr. Whitlock said their experience with the arrivals and departures of the PA31 was different than what was displayed on the flight tracks. His experience is that they arrive from the north and are west of the Olentangy River, not following the flight tracks displayed on the maps. Why? Mr. Zoll added that it appeared Barons were also under-represented. *The team said they would look into this and provide a response.*
32. Ms. Weislogel asked for clarification on the 2012 tracks. Runway #14/32 is shown to be closed. When would this actually happen? *Mr. Hammon said the runway closure is assumed to happen roughly the same time as a new runway opened – they both would be part of the same project.*
33. Mr. Whitlock asked why there were no flight track use tables for Turbo-Props. *Mr. Seymour said one of the charts was mislabeled. The document titled "Propeller Aircraft" should be titled "Turbo-Prop Aircraft".*
34. Regarding the 2012 INM input data, Ms. Nixon-Bell asked if Very Light Jets (VLJ) were assumed to increase in 2012. *Mr. Jackson said that was the case. VLJ are reflected in both the Air Taxi and General Aviation categories.*

35. Mr. Zoll asked what the noise footprint is for VLJs. *Mr. Alverson said FAA hasn't provided that information yet, but they will be much quieter than typical business jets. For now, modeling efforts use today's most quiet jets as a VLJ substitution for estimating purposes.*
36. Mr. Zoll asked if the model would provide a "No-Build" scenario for 2012 to show the Noise Exposure Map if no new runway is built. *Mr. Alverson said this scenario would not be produced during the Noise Exposure Map development phase of the study. It is important that the maps show the build-out scenario assumed in the draft Master Plan so that the technical experts and the public can identify any potential noise concerns created by the extension of the runway. This will provide direction on what mitigation and/or abatement measures should be considered during the Noise Compatibility phase. During this second study phase, it may be appropriate to consider a "No-Build" scenario in the review of noise compatibility measures. That could be one of the measures suggested by the community when we seek input on possible noise abatement measures.* Mr. Zoll said he thought not showing a No-Build contour as this point in the process would be a mistake. Running the No-Build scenario now would be a good way to demonstrate at the upcoming public meeting that OSU Airport will not make a decision on the draft Master Plan and the proposed runway extension until after the Part 150 Study is completed. *Mr. Alverson said Mr. Zoll's point was well taken, but for the development of the Noise Exposure Maps, FAA requires that we include future airfield development depicted on the airport layout plan.*
37. Ms. Weislogel asked if the 731 operations listed on page 214 of Chapter 2 of the draft Activity Forecast are seasonally based. Have you allotted for additional traffic during the Memorial Tournament in May? Why not extend the runway longer to accommodate some of these planes? Can I get a copy of the based aircraft? *Based aircraft will be provided. Mr. Hammon said that the maximum length of the north runway is restricted by geography – by Sawmill to the west, and train tracks to the east.*
38. Mr. Zoll asked why all the jet operations are not being modeled on the north runway for 2012? *Mr. Alverson said they are using the runway use percentages in the 2004 Draft Master Plan which indicated some continued use of the south runway by business jets.*
39. Mr. Montague asked if touch and go operations affect Worthington. Mr. Carson said they do, especially when the winds are to the east. He added, however, that he didn't think all of the noise concerns in Worthington are generated by touch and go operations. There are other aircraft mixed into that flight pattern that are affecting the area.

Draft Activity Forecasts

Mr. Don Andrews gave a brief summary of the draft Activity Forecast chapter.

1. Regarding the draft Activity Forecasts, Ms. Nixon-Bell asked for the underlying assumptions in Tables 2.9 and 2.11. *Mr. Andrews summarized the assumptions.*
2. Ms. Weislogel asked if the Activity Forecast chapter could note that air carriers won't fly into OSU Airport. *Mr. Andrews said that could be done.*

Next Steps/Action Items

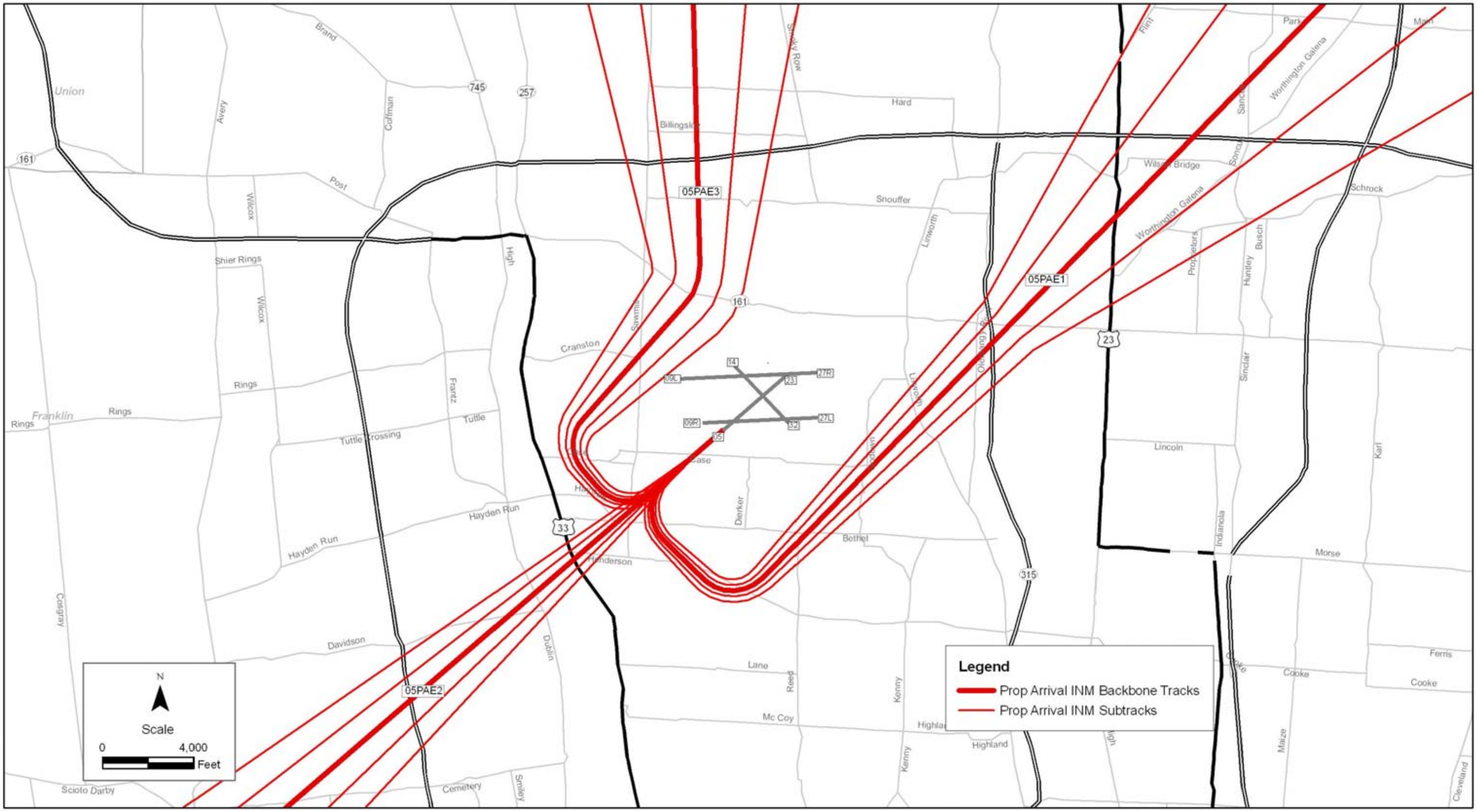
Ms. Keister reviewed the action items identified at the meeting, which included:

1. Subcommittee members will forward their comments to Marie Keister within the next week.
2. The technical team will provide the latest versions of all documents presented at the Jan. 17th meeting. All materials should have dates, sources and page numbers, and be labeled appropriately.
3. The technical team will gather all source documents from team members and distribute them to the Subcommittee. When something can't be provided, the team will explain why and provide guidance on how Subcommittee members can pursue the data through other channels.
4. The technical team will review all comments provided by the Technical Subcommittee, re-check all the data tables and maps, make revisions as appropriate, and report findings to the Technical Subcommittee.
5. The technical team will review the process for receiving/incorporating data (e.g. from Port Columbus ATCT) and re-check base data to ensure all tables are accurate, e.g. Lear 25 Jets, Piper Chieftains, Barons, PA131s. If anything changes, summarize what changed and why.
6. The technical team will look at whether breaking night time tracks out separately provides any additional, useful information different than what is shown by existing flight track exhibits
7. The technical team will continue researching corridors on propeller aircraft departures and arrivals and provide an update to the Subcommittee
8. The technical team will provide information on aircraft based at OSUA

After Ms. Keister recapped the action items, it was asked if the team would consider holding another Technical Subcommittee meeting and postponing the Part 150 Committee and public meetings scheduled for February 12th. *Ms. Keister said they would review the comments provided today and next week and let the Subcommittee know. She asked those representing area residents if they thought postponing the meetings would be acceptable to those concerned about keeping to a tight schedule.* Ms. Weislogel, Ms. Nixon-Bell and Mr. Zoll said changing the date would be acceptable and likely be encouraged by the residents.

Adjourn

The meeting adjourned at 12:45 p.m.

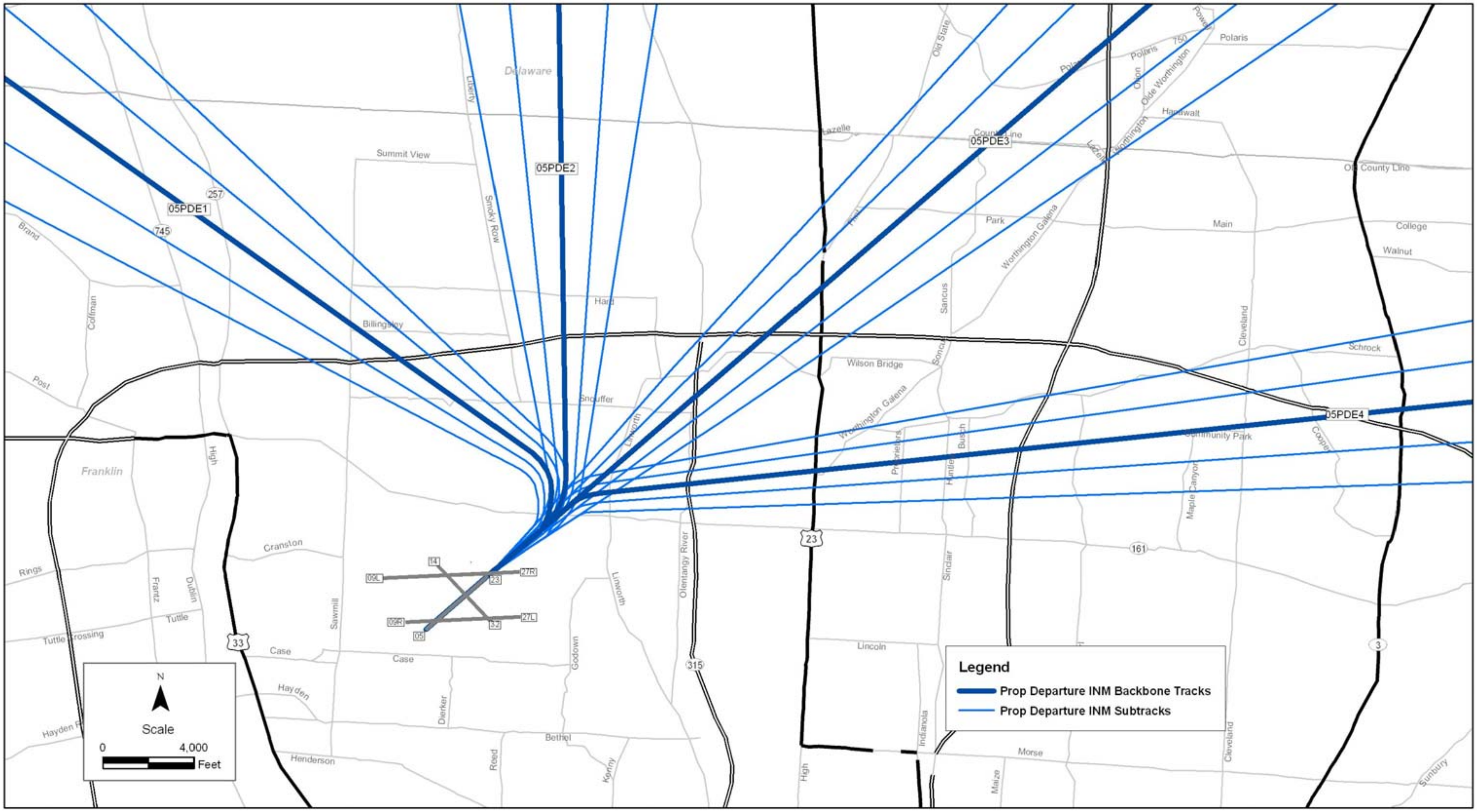


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Prop Arrivals - Runway 05

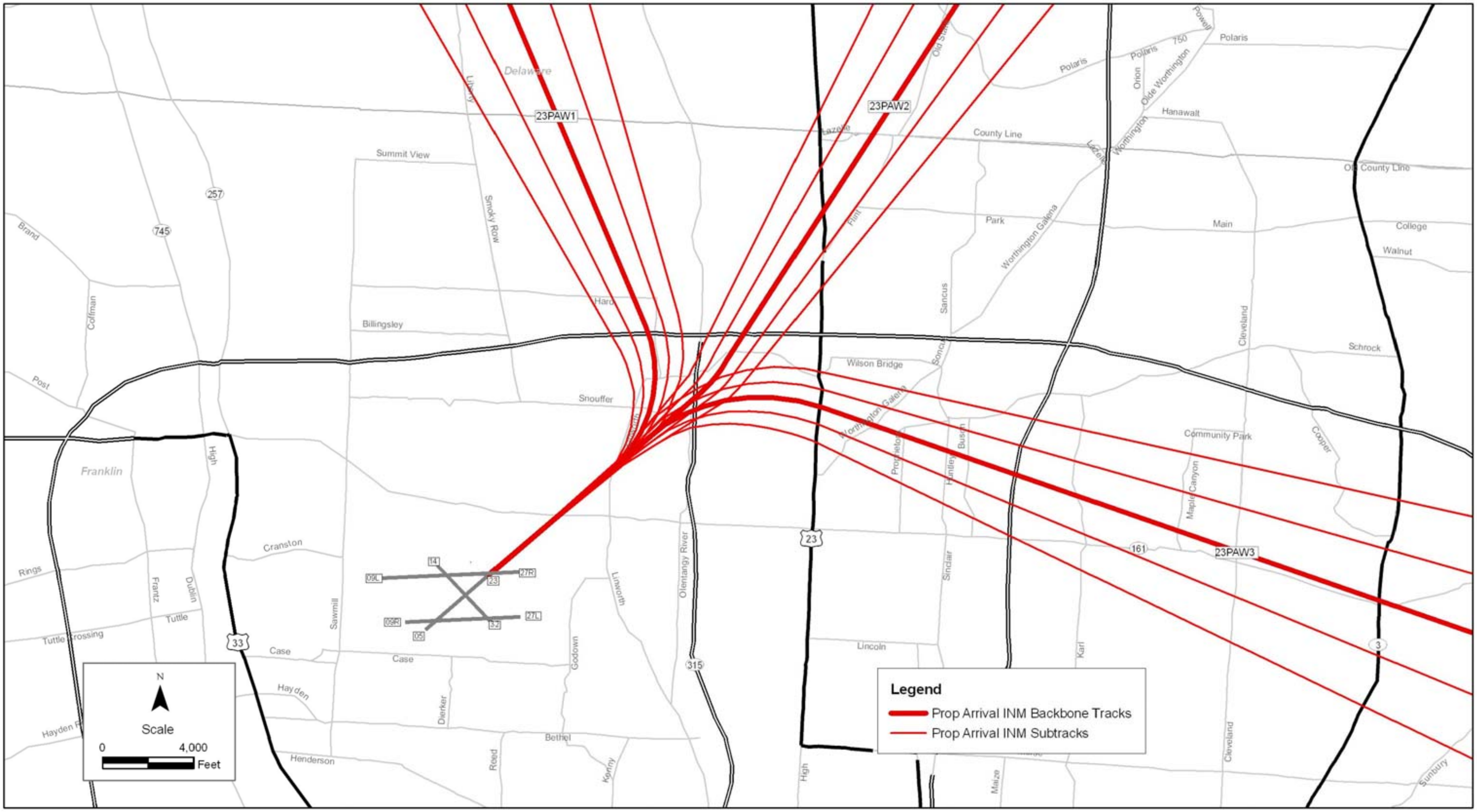


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Prop Departures - Runway 05



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

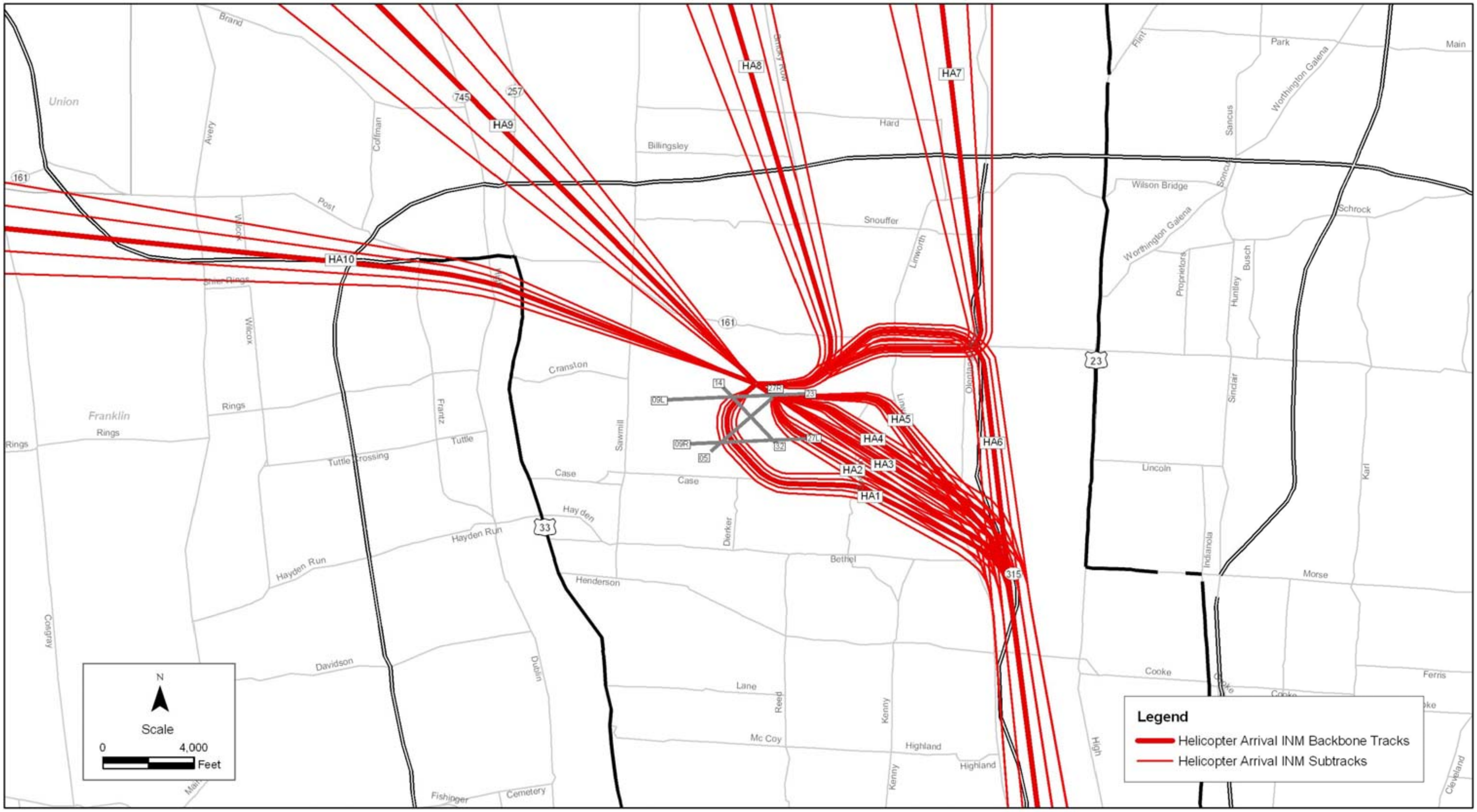
Future 2012/2027 Prop Arrivals - Runway 23

SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

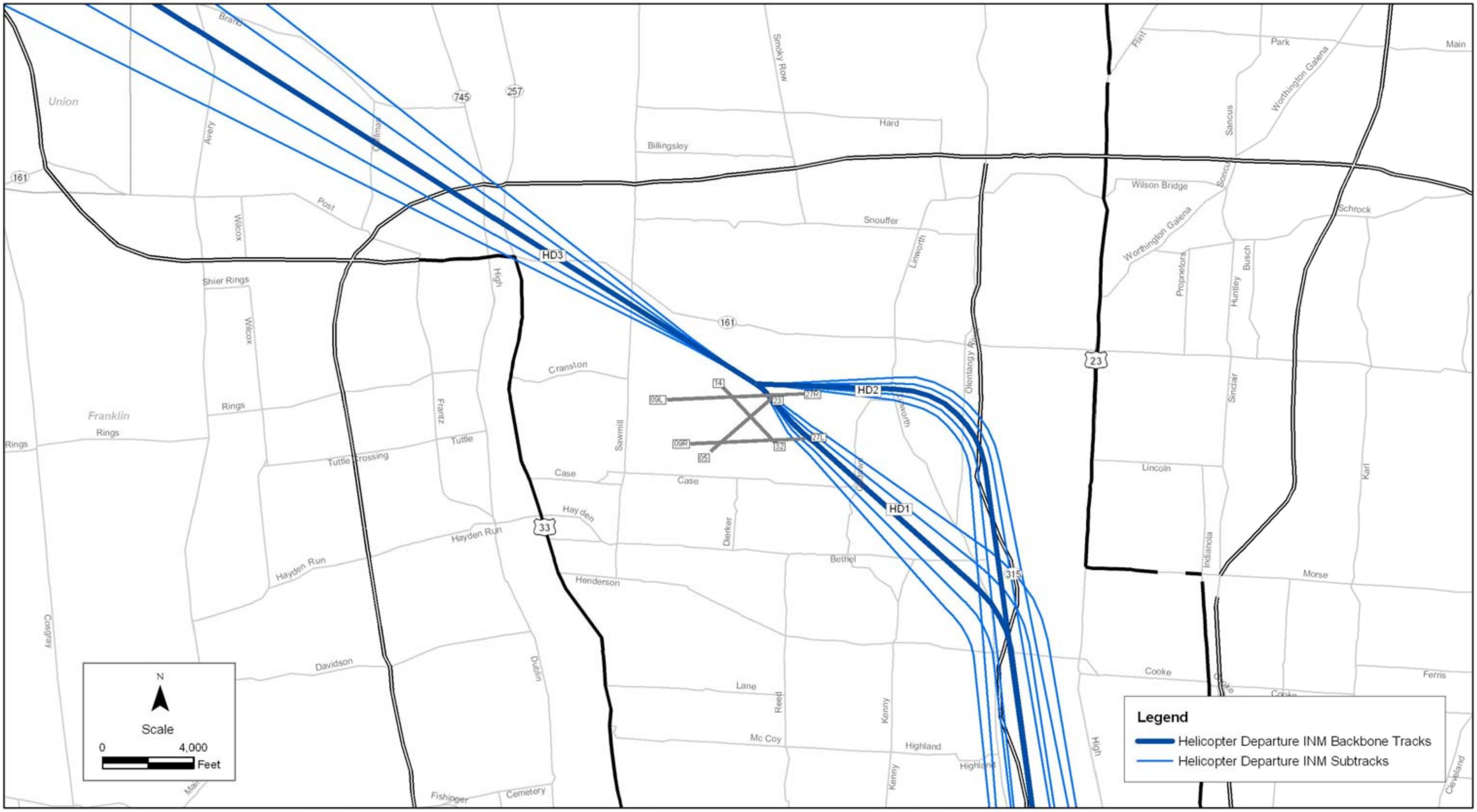
Future 2012/2027 Prop Departures - Runway 23



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X
Future 2012/2027 Helicopter Arrivals

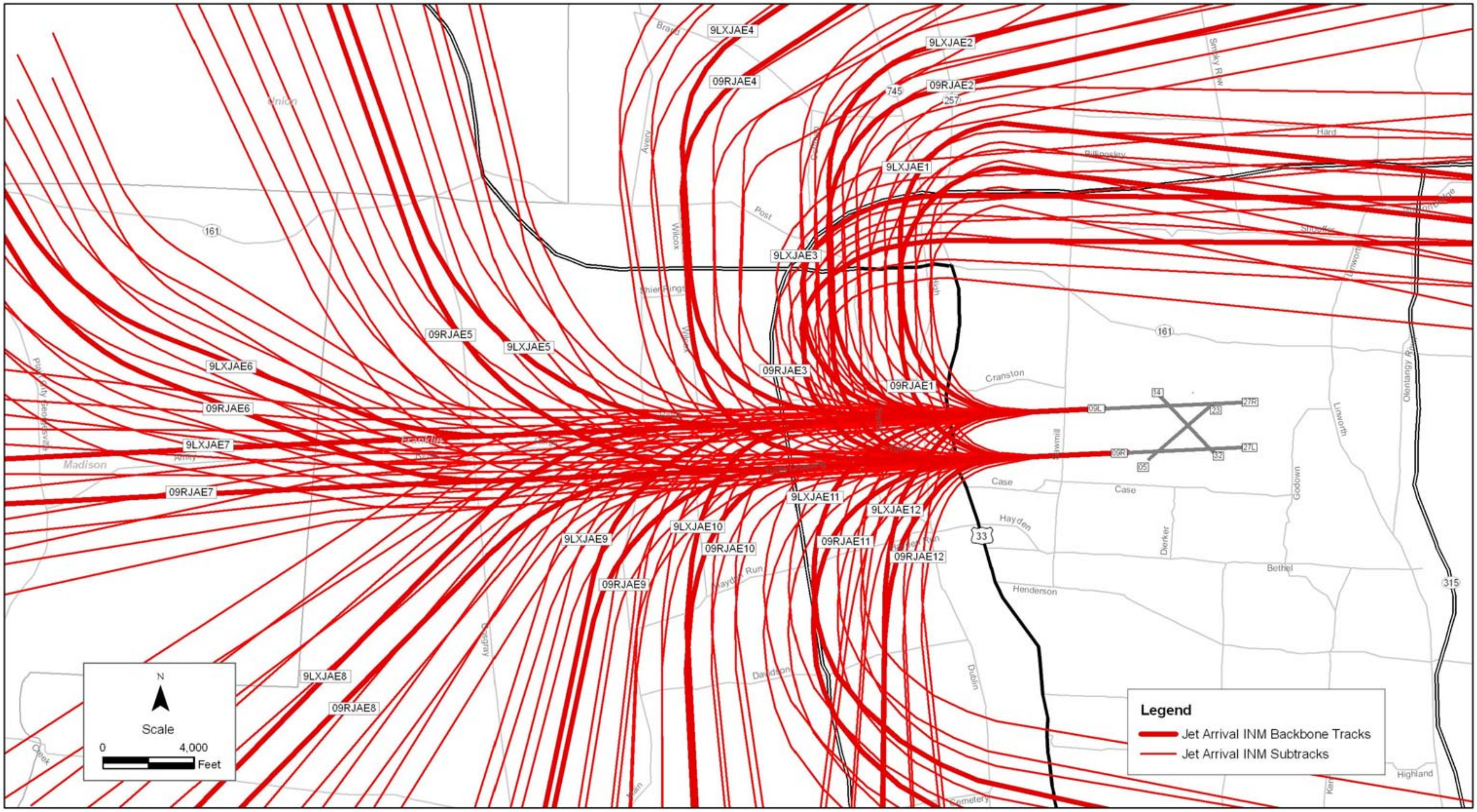


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Helicopter Departures

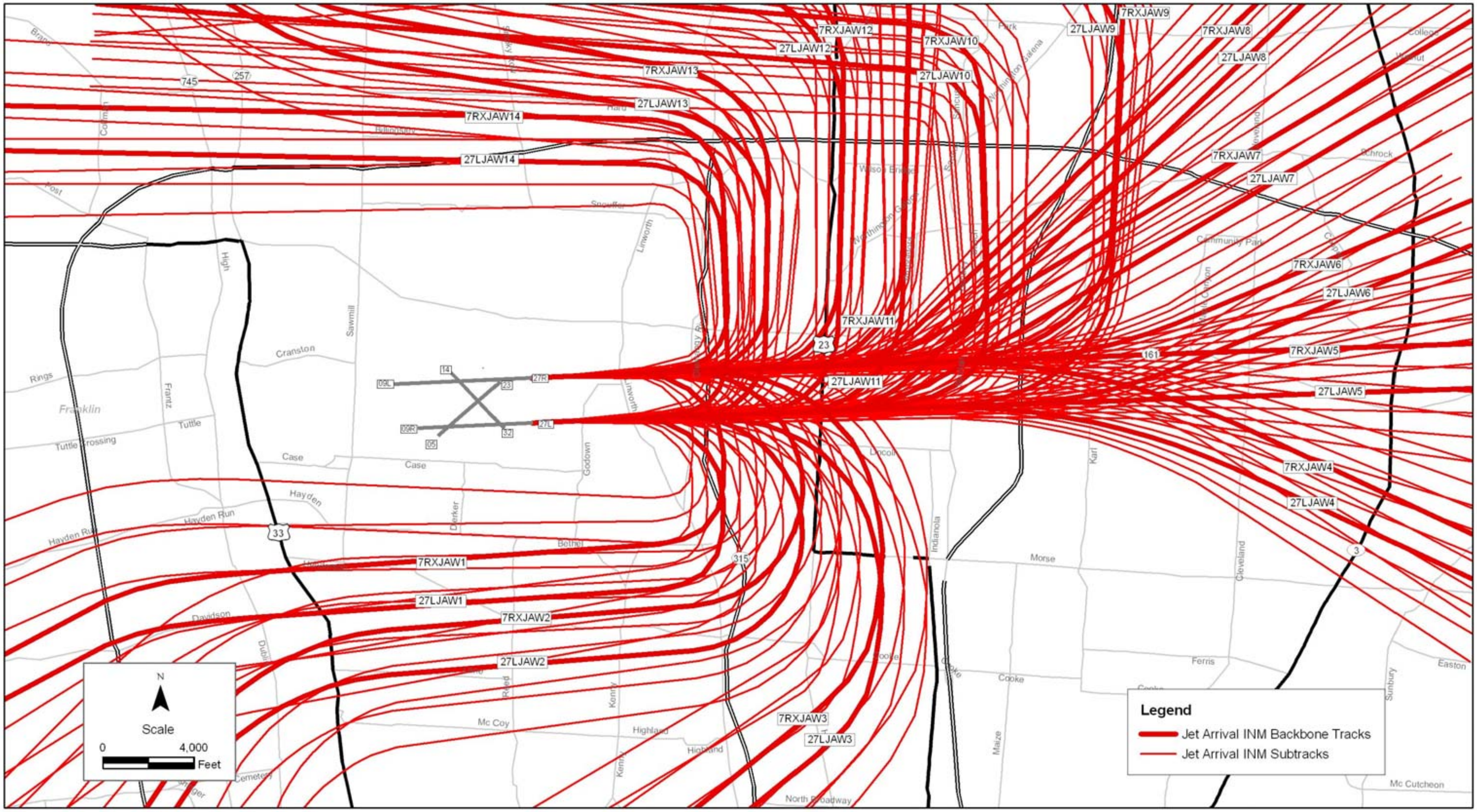


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Jet Arrivals - East Flow

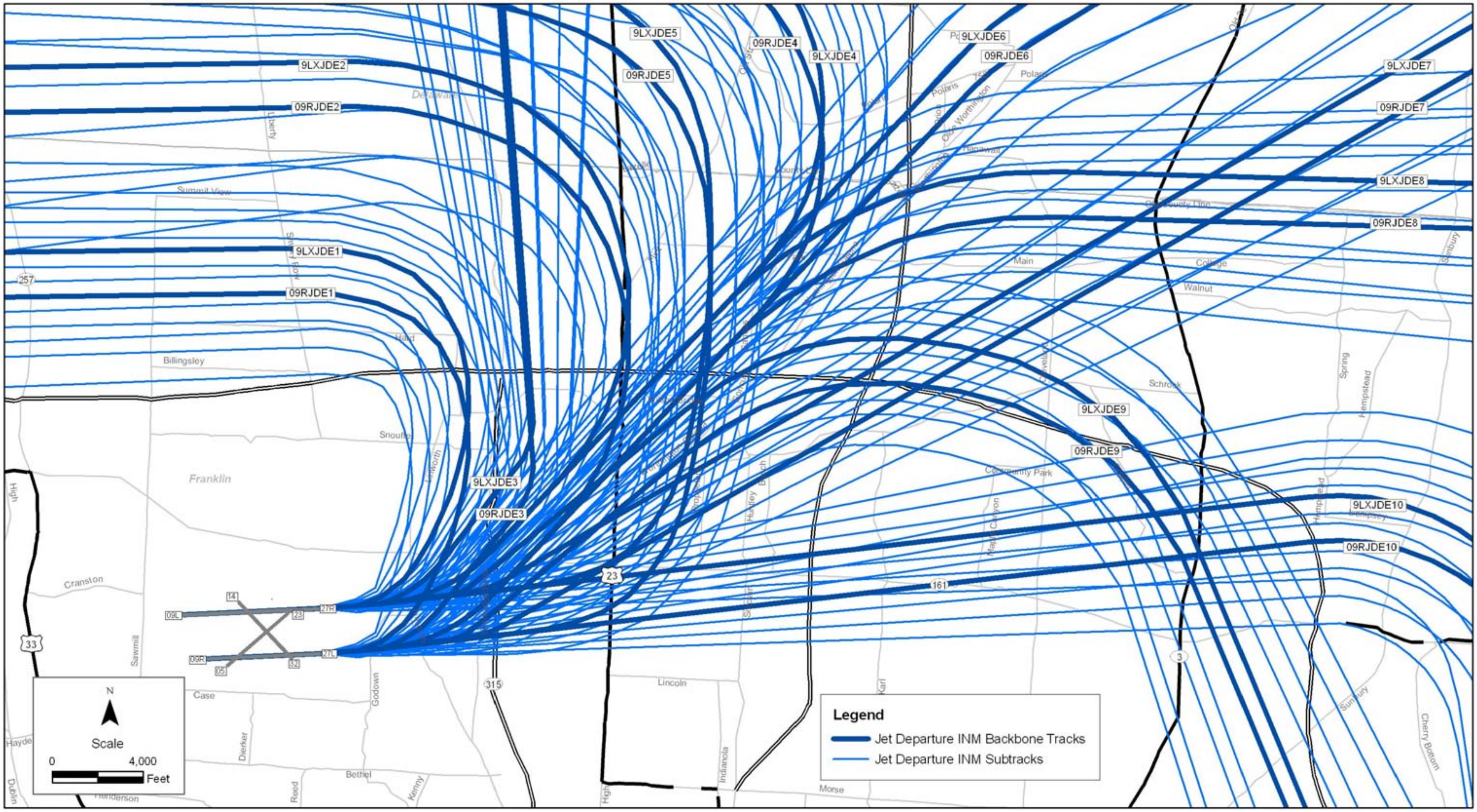


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Jet Arrivals - West Flow

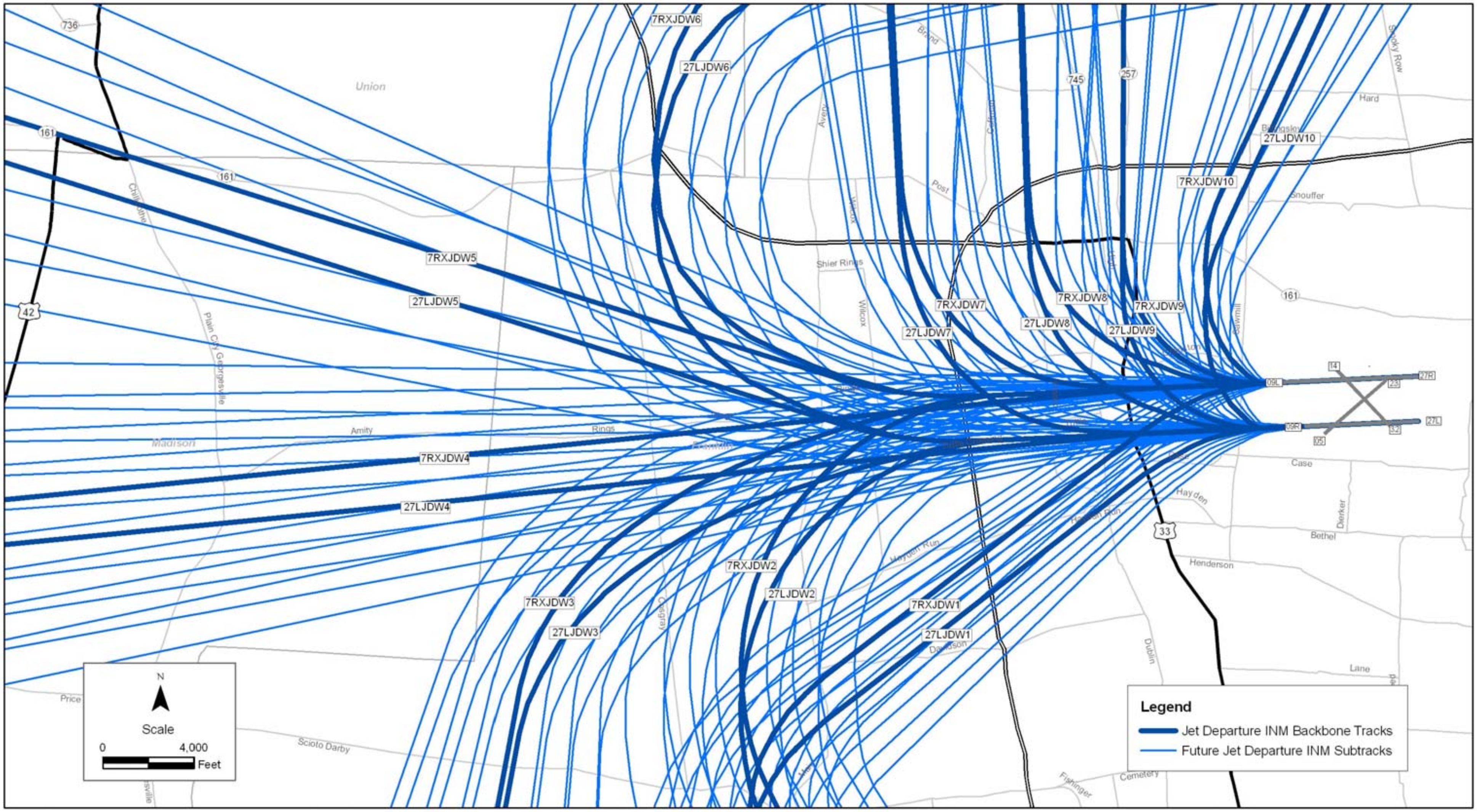


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Jet Departures - East Flow



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Jet Departures - West Flow

SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

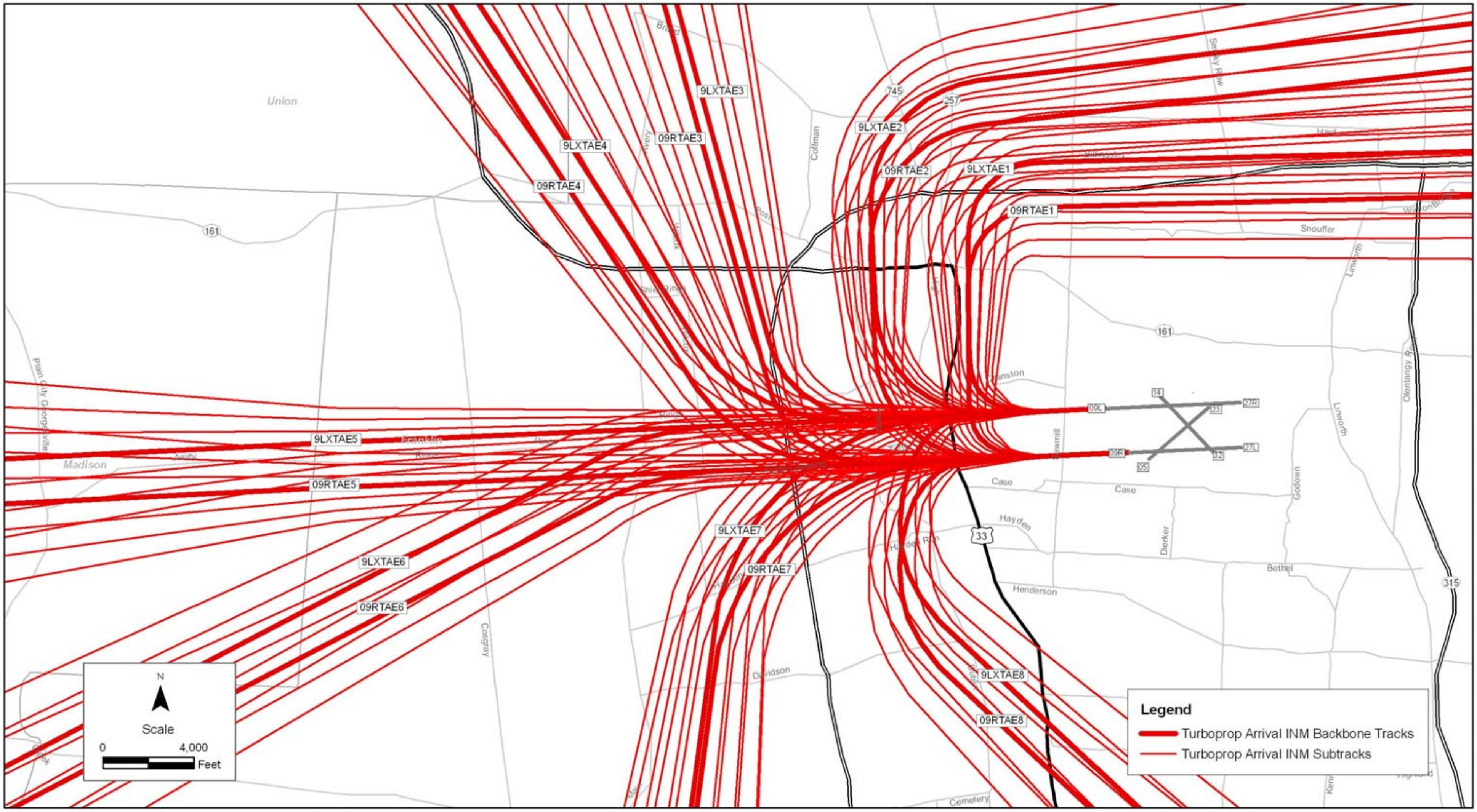
Future 2012/2027 Touch and Go Tracks - East Flow

SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Touch and Go Tracks - West Flow

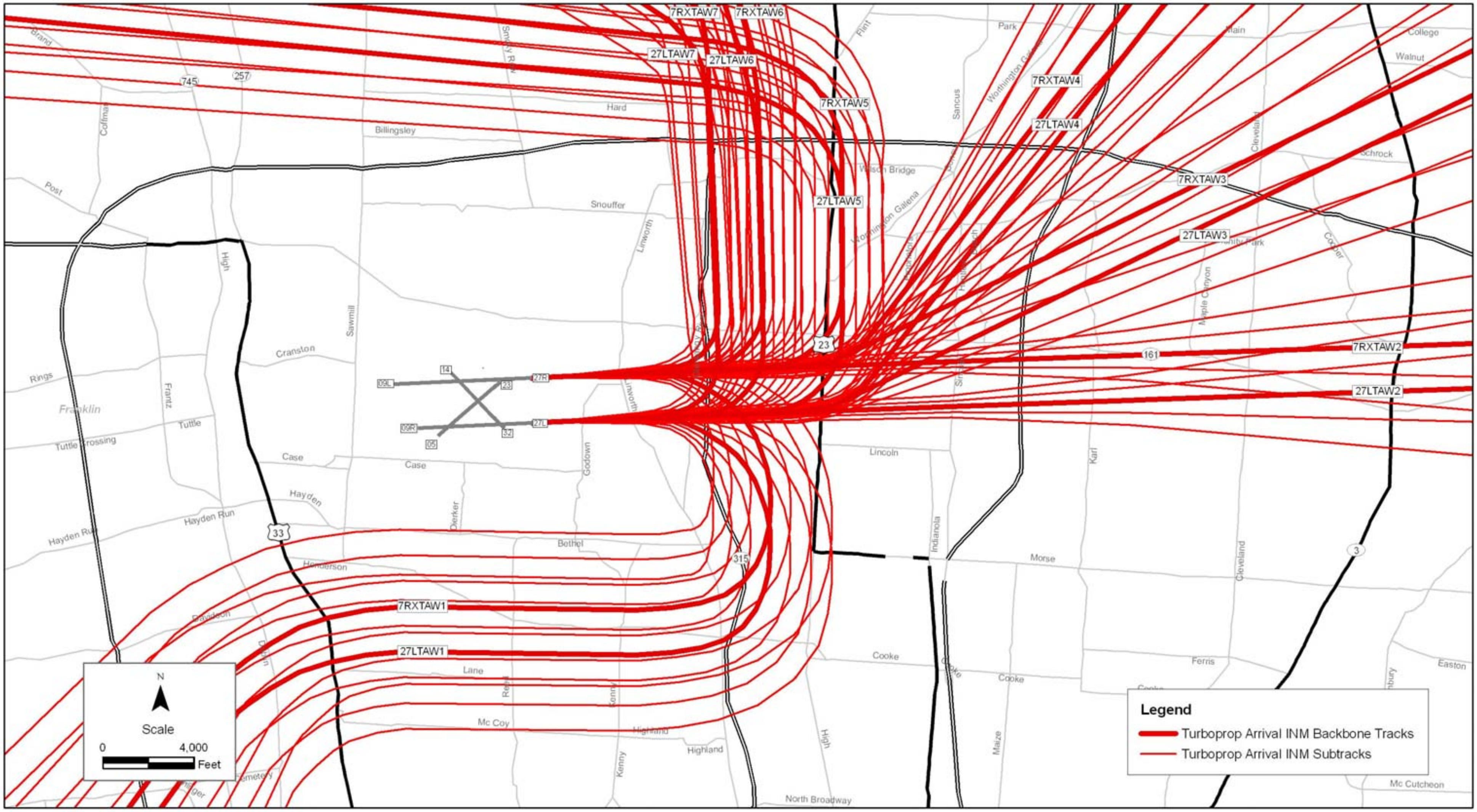


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Turboprop Arrivals - East Flow

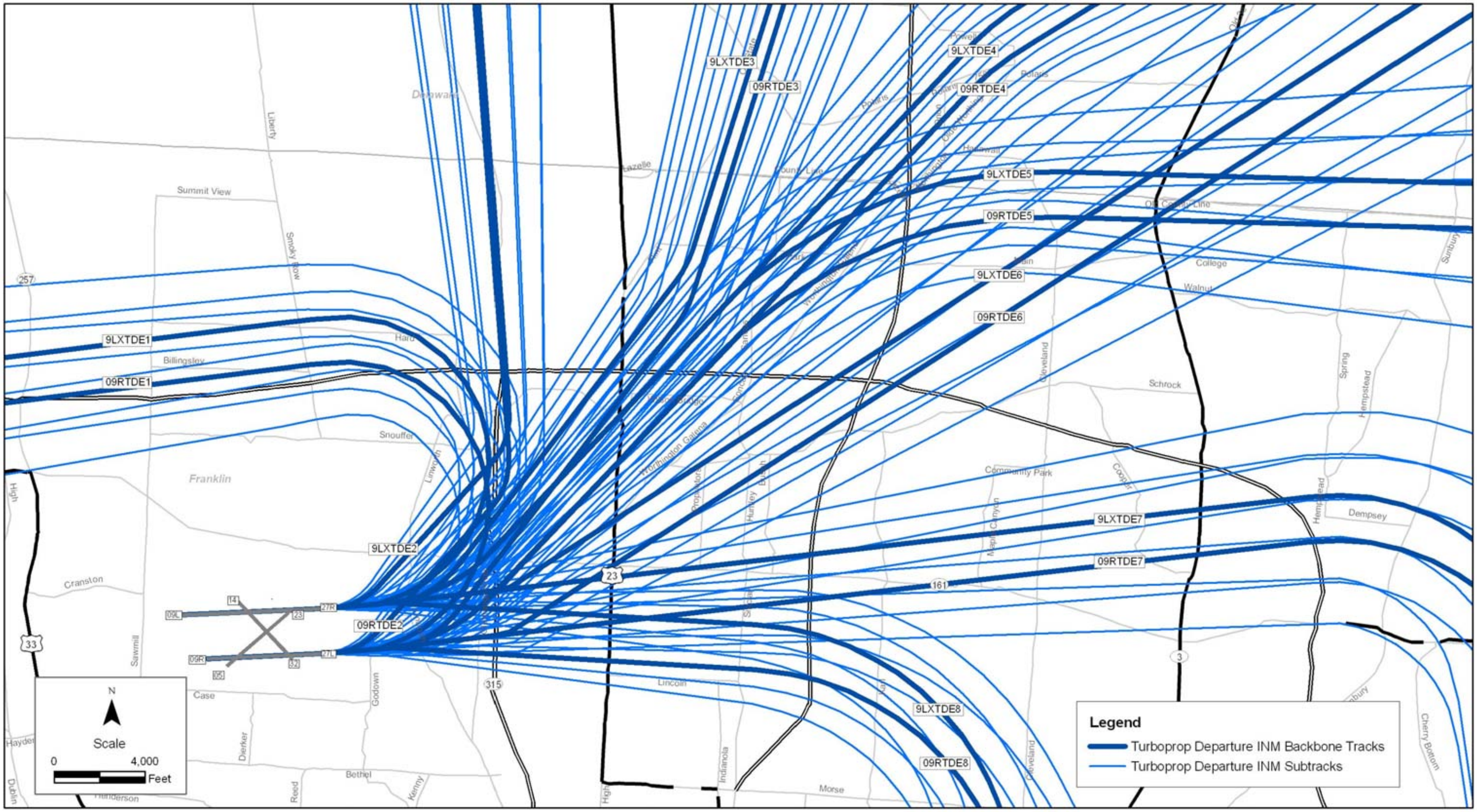


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Turboprop Arrivals - West Flow

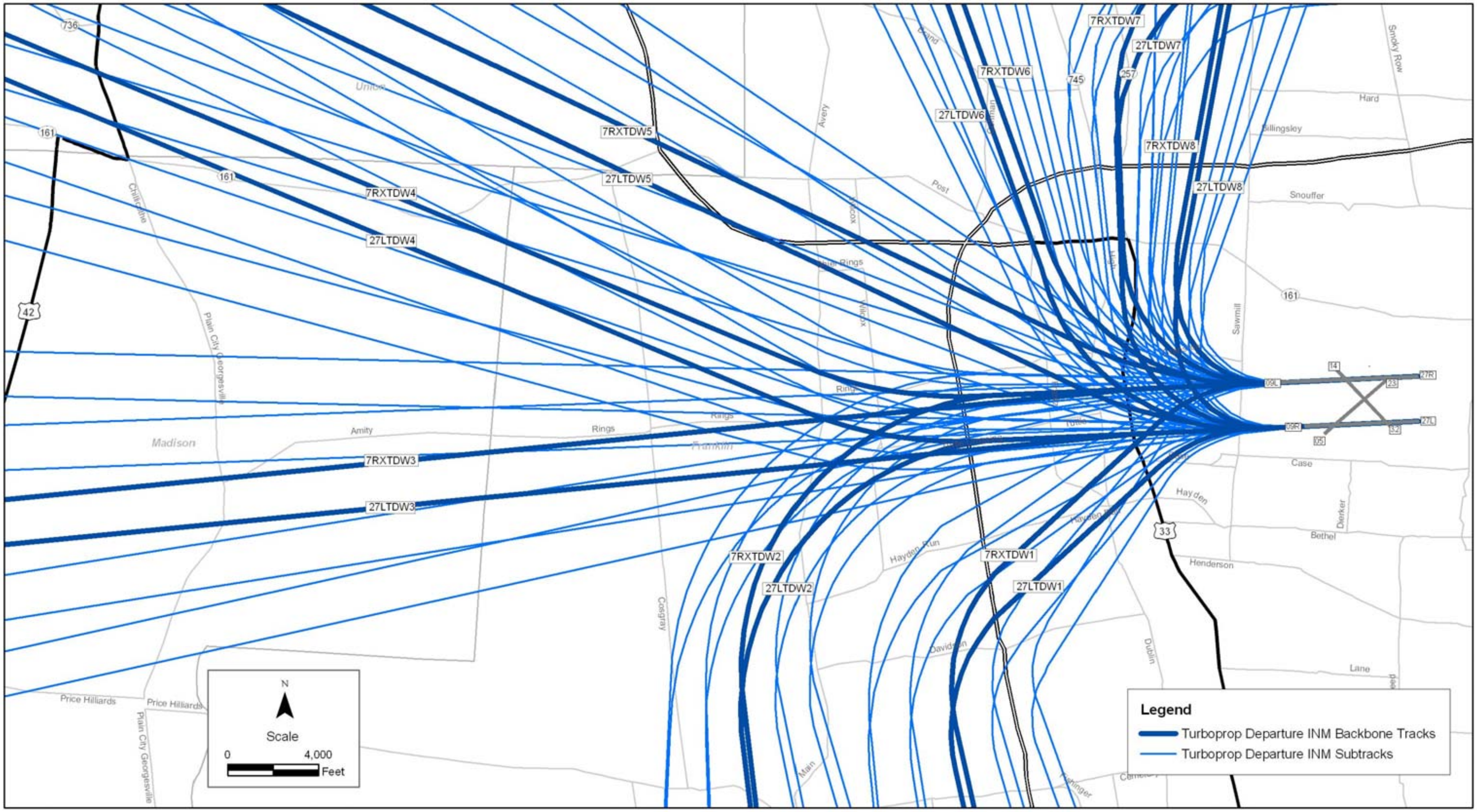


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Turboprop Departures - East Flow



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Future 2012/2027 Turboprop Departures - West Flow

The Ohio State University Airport

Part 150 Technical Subcommittee
Meeting #1
AGENDA
9:30 a.m. – 12:30 p.m.
January 17, 2008
Airport Administration Building
2160 West Case Rd., Columbus, 43235

> Meeting Goals: Review FAR Part 150 noise modeling requirements, provide background on the Integrated Noise Model (INM), describe aircraft noise modeling concepts and review information to be used in the development of the existing and future OSU Airport Day-Night Average Sound Level (DNL) Contours.

9:30 Convene the Meeting – *Marie Keister, Engage Public Affairs, LLC*

- Welcome and introductions
- Meeting purpose, agenda review and introductions

9:45 Introduction to Aircraft Noise Modeling - *Steve Alverson and Ron Seymour, ESA Airports*

- Noise Modeling in a FAR Part 150 Study
- Background on the INM
- Aircraft Noise Modeling Concepts

10:15 Review OSU Airport Noise Model Inputs – *Steve Alverson and Ron Seymour, ESA Airports*

- General INM Inputs
- 2007 INM Inputs
- 2012 INM Inputs
- 2027 INM Inputs

12:15 Comments on Activity Forecasts – *Don Andrews, RS&H*

12:30 Adjourn

CHAPTER 2
AVIATION ACTIVITY FORECAST

PART 150 STUDY
THE OHIO STATE UNIVERSITY AIRPORT

Prepared For
THE OHIO STATE UNIVERSITY
Columbus, Ohio

January 15, 2008

DRAFT

IMPROVING YOUR WORLD

Table of Contents

List of Tables

List Of Figures

CHAPTER 2
AVIATION ACTIVITY FORECAST

Aviation activity forecasts at The Ohio State University Airport (Airport) are presented in this chapter for the period ending in 2027. The forecasts developed in this chapter provide needed input for the FAR Part 150 noise and land use compatibility study (Part 150 Study) and are used to assess the continued validity of improvements developed in the Draft 2004 Airport Master Plan.

Forecasting future activity involves both analytical techniques and subjective considerations. Regardless of the methodology used, assumptions must be made about how internal and external forces might change in the future. Factors that can influence aviation activity levels include regulatory policy on the local and national level, technological innovations, aviation industry trends, and local fluctuations in population and employment. The objective of forecasting is to develop a realistic measure of the potential for these changes so their effect can be estimated. The methods used to develop this forecast are commonly used and accepted. The activity forecast, and the noise exposure maps prepared with the activity forecast, will be reviewed and approved by the FAA.

The Airport activity forecast methodologies and findings are presented in the following sections of this chapter:

- Historical Activity Review
- Factors Affecting Future Aviation Activity
- Forecast Sources
- Based Aircraft Forecast
- Annual Aircraft Operations Forecast
- Operations by Aircraft Type
- Instrument Approaches

A short summary section is provided at the end of this chapter that recaps the selected forecast elements.

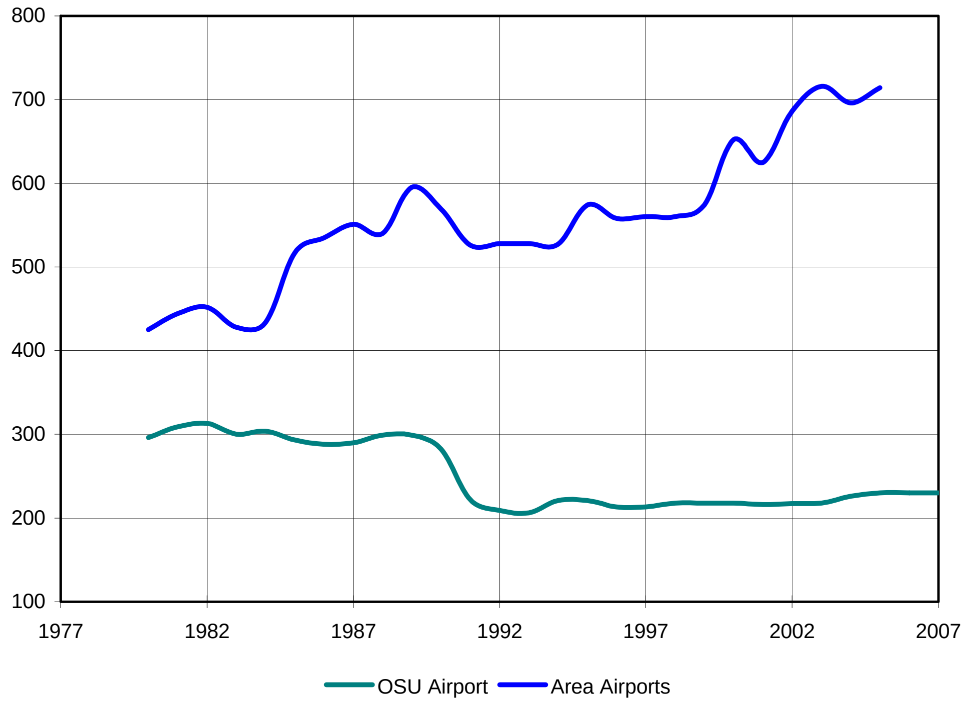
2.1 HISTORICAL ACTIVITY REVIEW

This section presents a brief review of long-term historical aviation activity at The Ohio State University Airport in key activity measures of based aircraft and aircraft operations.

2.1.1 Based Aircraft

Based aircraft at an airport represent the total number of active aircraft permanently located or projected to be located at an airport during a specific period. Based aircraft are commonly a basic metric used to correlate future activity levels at an airport. Table 2-1 presents the historical based aircraft at the Ohio State University Airport. The historical based aircraft data sources are the FAA's Terminal Area Forecast (TAF) and Air Traffic Activity Data System (ATADS), and Airport 5010 Master Record Forms.

Table 2-1
HISTORICAL BASED AIRCRAFT



Year		OSU Airport	OSU and Area Airports	Percent OSU Airport
1982		313	452	69.2%
1987		290	551	52.6%
1992		209	528	39.6%
1997		213	560	38.0%
1998		218	560	38.9%
1999		218	574	38.0%
2000		218	652	33.4%
2001		216	625	34.6%
2002		217	686	31.6%
2003		218	716	30.4%
2004		226	696	32.5%
2005		230	714	32.2%
2006	(est.)	230	N.A.	N.A.
2007	(est.)	230	N.A.	N.A.

Sources: OSU Airport Master Record, 1980-1989. FAA TAF historical data available to FY 2005; data limited by availability of comparable data for all airports. OSU Airport FY 2006 and 2007 is forecast estimate based on hangar development constraint.

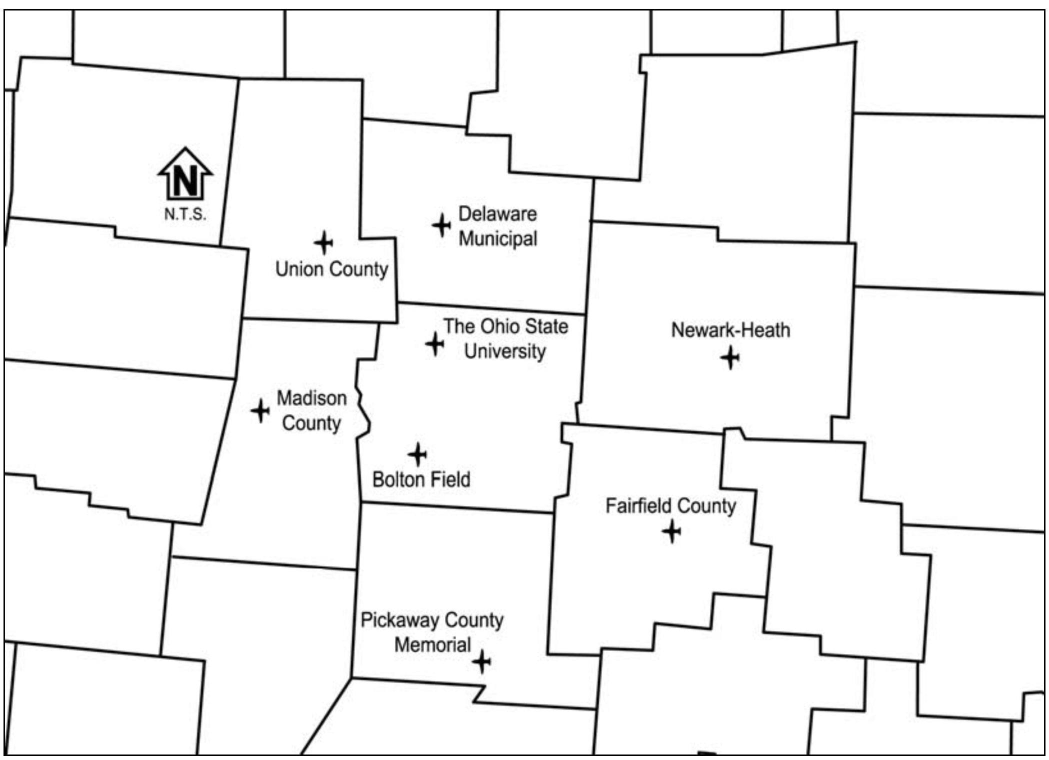
Note: Area Airports Total includes TAF records for the following airports: Ohio State University Airport, Union County, Delaware Municipal (airport data began in TAF in FY 1980), Newark-Heath (airport data began in TAF in FY 2000), Fairfield County, Bolton Field, Pickaway County, and Madison County

As can be seen on Table 2-1, the quantity of based aircraft has remained relatively constant through 1989. After 1989, the Ohio Army National Guard unit relocated to Rickenbacker Airport resulting in a reduction of 60 based aircraft.

The consistency in the number of based aircraft does not reflect demand, but results from the fact that no additional hangars have been built to accommodate demand. The Airport maintains a waiting list for hangar space. Since 2001 the wait list has increased by 15 to 27 aircraft per year. There are currently 147 aircraft on that waiting list.

Table 2-1 also shows the historical total quantity of based aircraft at eight airports in the region, and shows the Airport's share of the total. Figure 2-1 graphically depicts the locations of the eight regional airports. The table demonstrates a key factor considered in this forecast, which is the impact of the current hangar development constraint. The number of based aircraft in the Columbus area has been growing while the quantity at the Airport remains constant, and the Airport's share of the area total based aircraft has been declining. Delaware County and Madison County Airports, for example, have added hangars in recent years reflecting this regional demand.

Figure 2-1
REPRESENTATIVE REGIONAL AIRPORTS

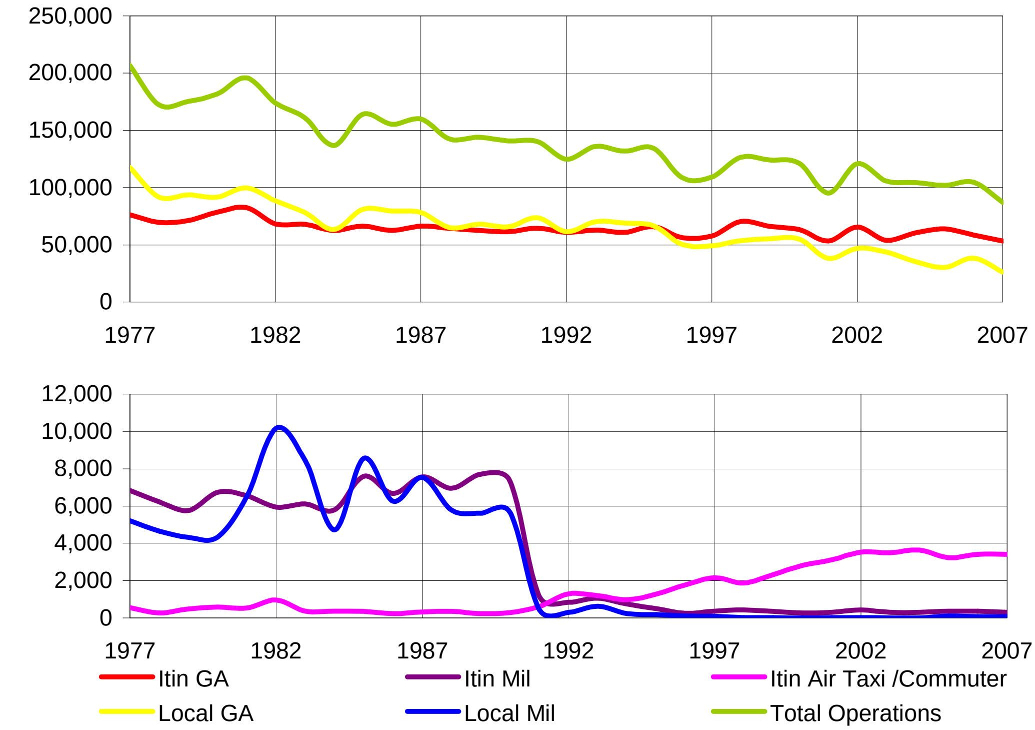


Sources: FAA Form 5010, RS&H

2.1.2 Annual Aircraft Operations

An aircraft operation is defined as either a takeoff or a landing. Table 2-2 presents a long-term history of the annual aircraft operations recorded at the Airport in four categories: air carrier, air taxi and commuter, general aviation, and military. These categories are further divided into itinerant or

Table 2-2
HISTORICAL OPERATIONS



TAF/Tower Data

	Itinerant [1]				Local [2]				
Year	**Air Carrier**	**Air Taxi / Commuter**	**GA**	**Military**	**GA**	**Military**	**Total**	**STARS**	**Total**
1977	0	554	76,278	6,834	117,712	5,206	206,586		206,586
1982	0	962	68,258	5,948	88,518	10,165	173,851		173,851
1987	0	309	66,294	7,568	78,210	7,529	159,910		159,910
1992	0	1,283	60,859	851	61,529	301	124,823		124,823
1997	0	2,159	57,664	372	49,002	88	109,295		109,295
1998	0	1,872	70,322	423	53,752	22	126,391		126,391
1999	0	2,317	65,992	354	55,251	14	123,928		123,928
2000	0	2,816	63,393	268	54,929	0	121,406		121,406
2001	0	3,116	53,390	297	38,268	22	95,093		95,093
2002	0	3,518	65,477	428	46,822	10	116,255		116,255
2003	0	3,500	53,842	292	43,635	0	101,269		101,269
2004	0	3,647	60,446	301	35,411	4	99,809	4,545	104,354
2005	0	3,229	63,821	360	30,315	106	97,831	4,009	101,840
2006	0	3,416	58,456	363	38,306	67	100,608	3,960	104,568
2007	0	3,404	53,426	294	26,268	64	83,456	3,729	87,185

Source: FAA Terminal Area Forecast (FY76 - FY05), Air Traffic Activity Data System (FY06 - FY07), Airport Tower Records for Air Carrier Operations (FY77-FY07)

Notes: (1) and (2) See appendix for definitions local operations. The table graphically depicts the total operations, and the local and itinerant general aviation operations on one graph, and the air taxi/commuter and military categories on a separate graph. This is done as the latter group has significantly fewer operations and a separate graph allows presentation at a larger, more legible scale.

An air carrier operation represents a takeoff or a landing of a commercial aircraft with seating capacity of more than 60 seats. While the Airport had air carrier operations in the 1970's provided by Wright Airlines, all scheduled air carrier service is currently provided at Port Columbus International Airport. Air carrier operations at the Airport were at their highest annual historical level in the mid-1970s, with approximately 300 annual operations. There are no air carrier operations at the Airport.

Air taxi and commuter operations represent scheduled commercial flights or non-scheduled for-hire flights, such as charter, for aircraft with 60 or fewer seats. Air Taxi also includes a portion of the emergency medical response helicopter operations at the Airport. Air taxi and commuter operations have grown since 1990, increasing from approximately 275 to a peak of 3,647 operations in 2004. These operations are primarily for-hire, nonscheduled air taxi activity. There is no scheduled commuter activity at the Airport.

Military aircraft operations peaked in 1982 with over 16,000 annual operations. After 1990 and due to the relocation of the Army Guard unit operations to Rickenbacker Airport, there was a steep decline in military operations. Since 1996 there have consistently been 250 to 500 annual operations. In 2006 there were 430 military operations.

General aviation operations represent all aircraft takeoffs and landings not classified as air carrier, air taxi/commuter, or military. General aviation operations are further divided into itinerant and local categories. By FAA definition, aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the Airport are considered local operations. These operations are typically training or pleasure flights. FAA reports all aircraft operations other than local operations as itinerant. Essentially, these represent takeoffs and landings of aircraft going from one airport to another. These operations represent a portion of the pleasure and training activity but also include the corporate and other service providers.

General aviation operations were at their highest annual level in 1977 with nearly 194,000 operations. Overall, total annual general aviation operations have generally declined. Separating general aviation into its sub-components shows that itinerant operations over the last 30 years have fluctuated in the range from 53,000 to 76,000 annual operations, with a total of 58,456 operations in 2006. Over the same period, local general aviation operations have been declining, with nearly 90,000 annual operations in the early 1980s, fluctuating but declining to levels between 30,000 and 47,000 annual operations over the last 5 years. The general observation is that itinerant general aviation activity, which represents more of the corporate and air taxi user group, has remained fairly stable. Conversely, local general aviation operations, representing more training and pleasure flying, have declined. The Ohio State University flight training program reflects this decline with a 51% drop in flight hours in FY 2005-2006 versus FY 1991-1992. The decline in pleasure flights is presumably due to increases in fuel costs.

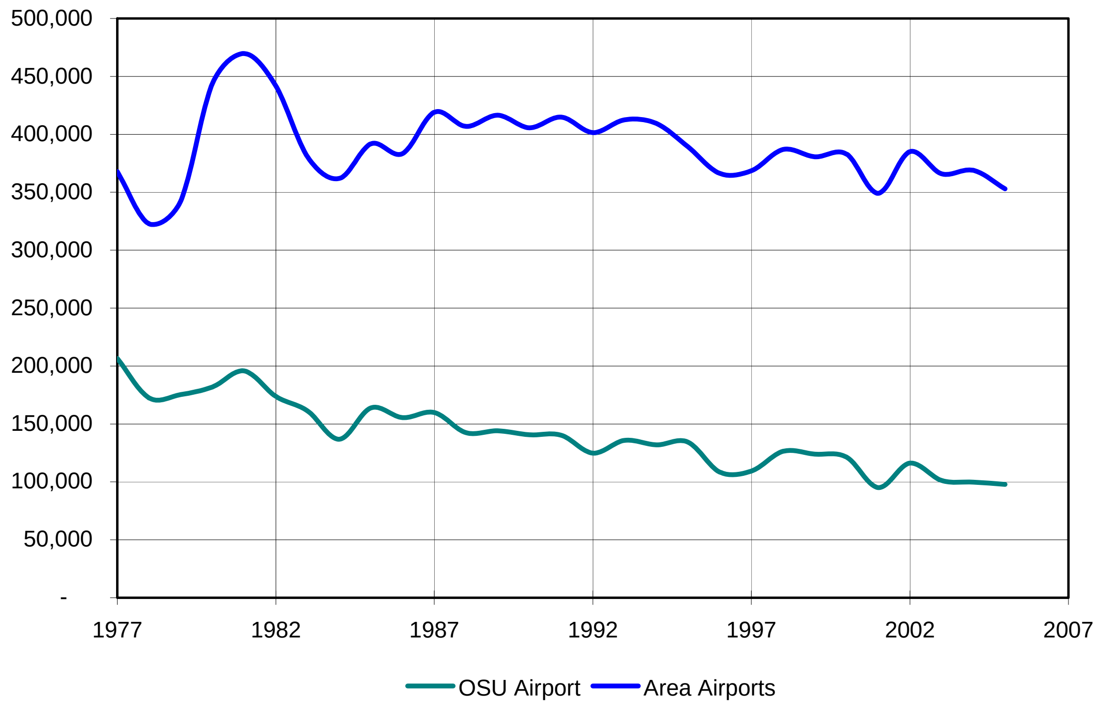
There are multiple sources of operations data for the Airport. The primary source is the activity records from the Airport Traffic Control Tower (ATCT). The tower records are provided directly to the FAA and are included in the Air Traffic Activity Data System (ATADS) reports. These reports are used by the Airport and in the FAA TAF.

At the Ohio State University Airport the activity reports from the ATCT represent activity for only a portion of the day. The ATCT operates and records activity statistics from 7 am to 11 pm. For the period when the ATCT is closed, two additional data sources provide activity statistics. Port Columbus International Airport operates the Standard Terminal Automated Replacement System (STARS) that, amongst other functions, tracks all activity in the Columbus area, including aircraft into and out of the Ohio State University Airport. The STARS data from Port Columbus has been available since fiscal year 2004. The historical operations shown in Table 2-2 represent the ATCT report data separate from the STARS data. The STARS data is separate as it does not provide the same aircraft type reporting categories as the ATCT records data. These categories are key in subsequent forecasts, so it is important to keep the two data sources separated.

The second data source is Flight Aware, a public commercial company providing flight tracking and activity statistics. The information provided by Flight Aware includes data on all aircraft operating at the Airport on an instrument flight plan

Table 2-3 presents the total annual operations at the Ohio State University Airport, the total annual operations at eight airports in the region (including the Ohio State University Airport), and shows the Airport's share of the total operations from the eight airports. Since the relocation of the Ohio Army National Guard from the Airport in 1989, the Airport's share of total operations from the eight regional airports has remained relatively constant, despite the Airport's decreasing share of regional based aircraft associated with the current hangar development constraints.

Table 2-3
HISTORICAL OPERATIONS COMPARISON



Year	OSU Airport	OSU and Area Airports	Percent OSU Airport
1977	206,586	367,886	56.2%
1982	173,851	441,723	39.4%
1987	159,910	419,086	38.2%
1992	124,823	401,556	31.1%
1996	108,504	366,399	29.6%
1997	109,295	368,507	29.7%
1998	126,391	386,984	32.7%
1999	123,928	380,726	32.6%
2000	121,406	382,983	31.7%
2001	95,093	349,157	27.2%
2002	116,255	385,051	30.2%
2003	101,269	365,919	27.7%
2004	99,809	369,005	27.0%
2005	97,831	352,864	27.7%

Sources: FAA TAF, Historical Records FY77 to FY05

Notes: Area Airports Total includes TAF records and forecasts for the following airports: Ohio State University, Union County, Delaware Municipal (Airport data began in TAF in FY1980), Newark-Heath (Airport data began in TAF in FY 2000), Fairfield County, Bolton Field, Pickaway County, and Madison County

Operations Data limited through FY05 by availability of comparable data for all airports

2.2 FACTORS AFFECTING FUTURE AVIATION ACTIVITY

A number of influencing factors are considered in the development of the aviation activity forecast. The factors affecting aviation activity can be divided into two sub-categories: factors affecting airport demand and factors affecting airport capacity.

2.2.1 Factors Affecting Airport Demand

As noted in the previous section, there is strong existing demand for use of the facilities at Ohio State University Airport. The Airport currently has a waiting list of 147 aircraft owners seeking hangar space. The waiting list has grown by 15 to 27 aircraft owners per year since 2001. Factors affecting airport demand include the effects of one-time events such as 9/11, general health of the economy and the travel industry, and emerging trends in aviation. Some of these factors do not have a quantifiable impact on aviation forecast methodologies. It is important, however, to understand and consider these factors and apply professional judgment and experience in determining which factors may influence the selection of a recommended forecast.

2.2.1.1 Local Demographic Factors

Consideration of a community's economic character is particularly important to the determination of business travel and general aviation activity. Prior to developing the aviation activity forecasts for the Airport, current and projected economic trends and population projections associated with the Airport's primary air service area were examined. Figure 2-2 shows the Airport's primary service area, including the seven counties surrounding the Airport (Franklin, Delaware, Licking, Fairfield, Pickaway, Madison and Union). Table 2-4 shows historical and projected population and employment information for the region surrounding the Airport, the State of Ohio, and the Nation.

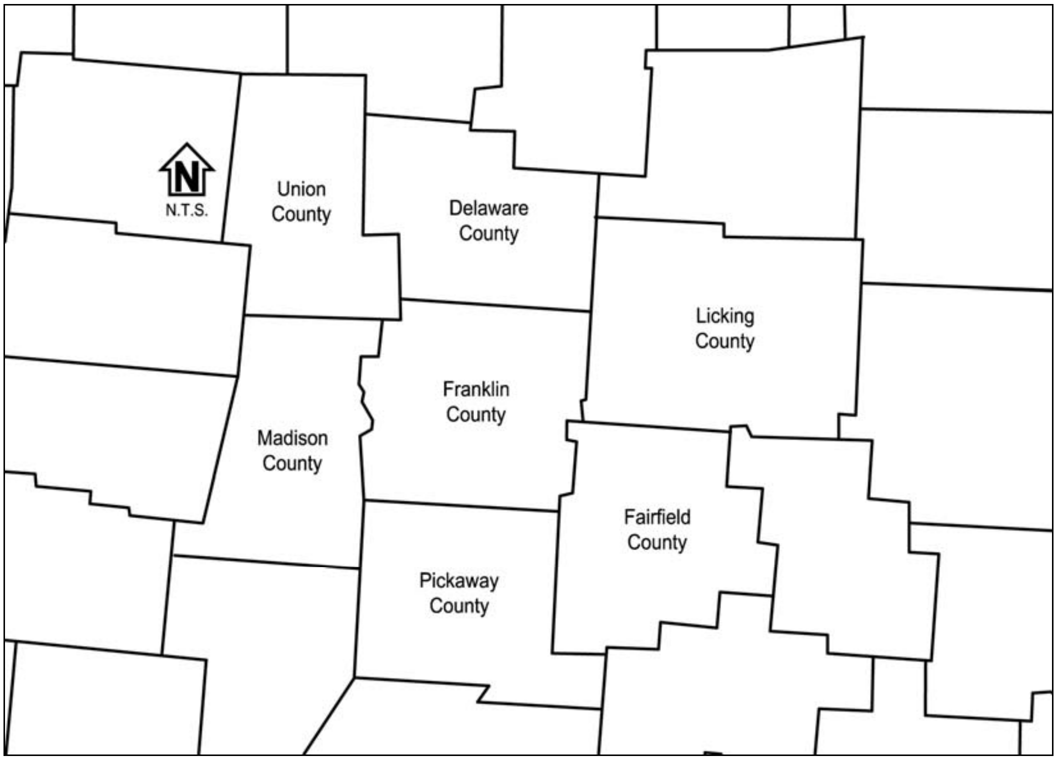
General observations regarding the demographic information depicted in Table 2-2 are as follows:

- The historical population and employment growth rates for the Columbus metropolitan region have been greater than those for the State and Nation.
- Projected population growth rates in the Columbus metropolitan region are greater than the rates projected for the State and Nation.
- Projected employment growth rates in the Columbus metropolitan region are greater than the rates projected for the State and Nation.

The local socioeconomic picture derived from examination of the historical trends and forecasts presented in Table 2-4 presents positive outlooks for the Airport service area. Population and the economy will continue to grow at a moderate rate, supporting growth in activity at the Airport.

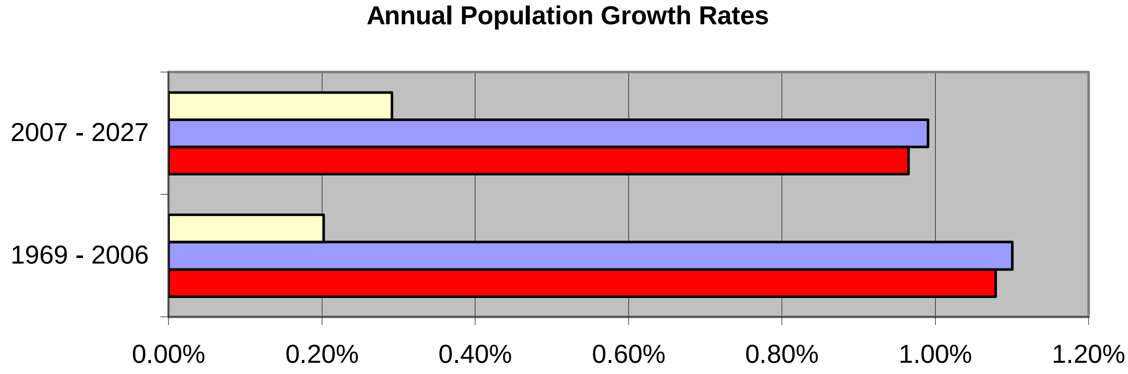
It is also important to note that the fastest growing areas in the region are northwest Franklin County, the location of the Airport, and parts of Union and Delaware Counties, both near the Airport. This growth supports projections for increased airport activities. Figure 2-3 depicts the business or residential locations of individuals currently either having aircraft based at the Airport or on the waiting list for hangar space.

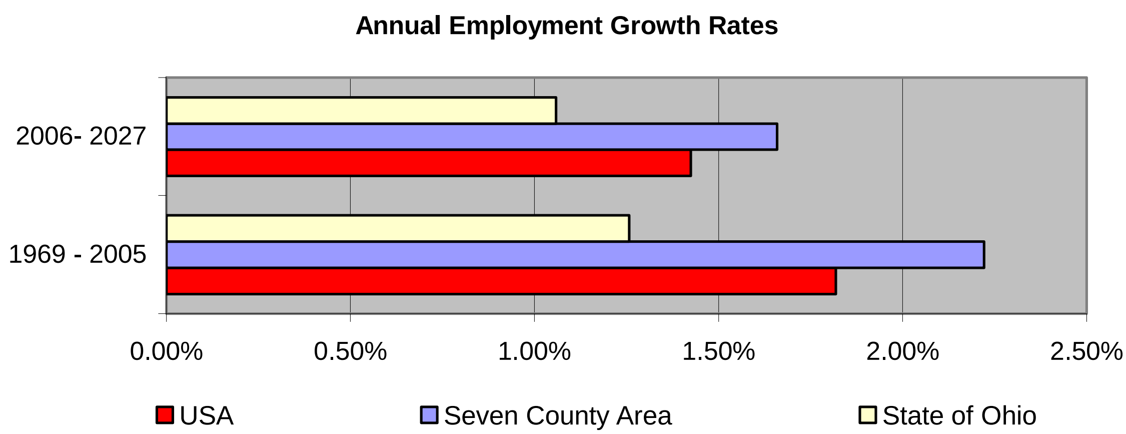
Figure 2-2
AIRPORT PRIMARY SERVICE AREA



Source: RS&H

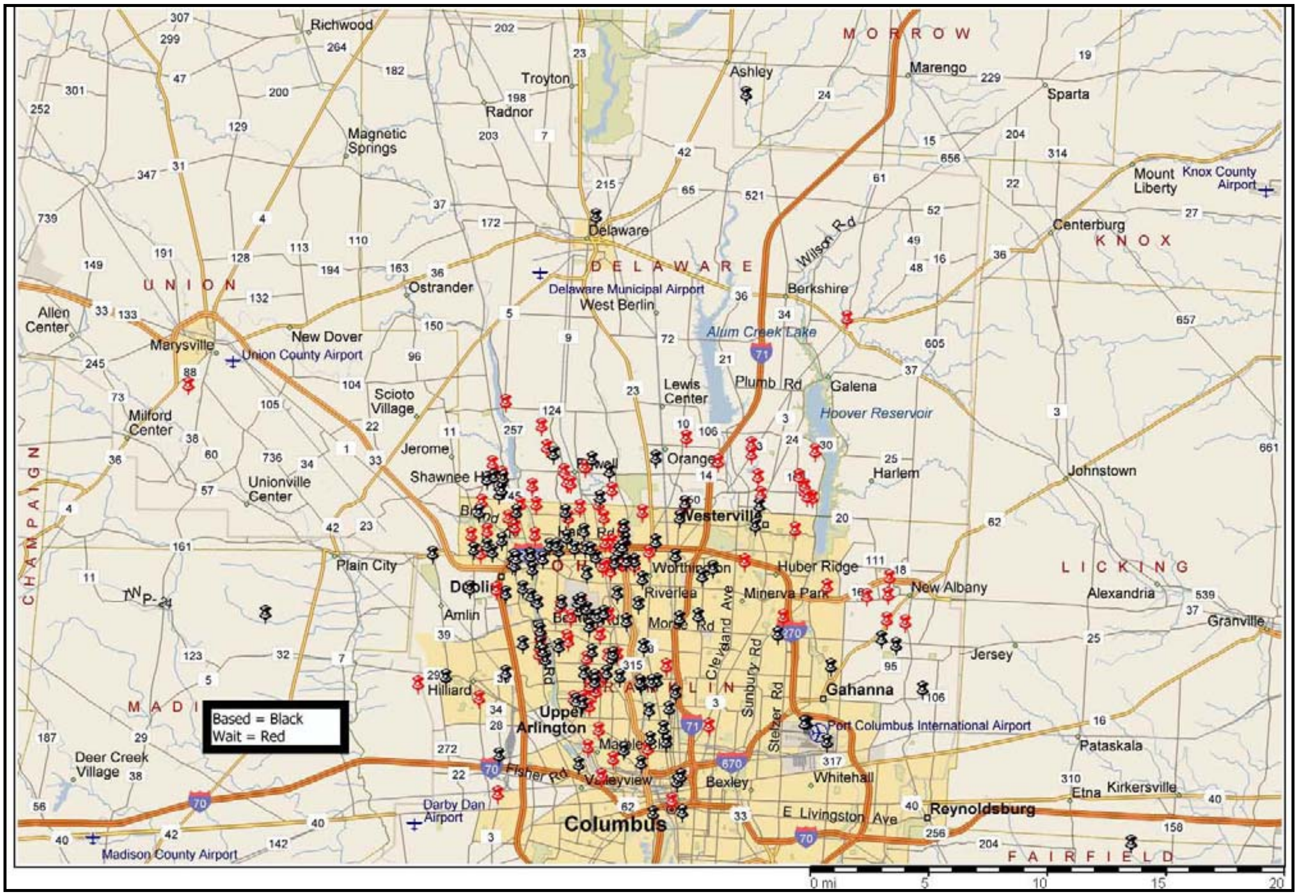
Table 2-4
HISTORICAL AND FORECAST DEMOGRAPHIC INFORMATION





Note: Population historical data is 1969-2006, Employment historical data is 1969-2005.
Source: Woods & Poole

Figure 2-3
BASED AIRCRAFT OWNERS AND HANGAR WAITING LIST LOCATION MAP



Source: Ohio State University Airport

2.2.1.2 Impact of September 11, 2001

The tragic events of September 11th had a profound impact on all airports, some more than others. At airports such as the Ohio State University Airport general aviation was initially affected by the complete nationwide stoppage of activity. Subsequently, access restrictions to specific airports limited activity, particularly in urban areas. Most access restrictions have since been lifted.

Security restrictions on commercial service have had a positive effect on general aviation activity, particularly on business travel. Heightened security has increased the total commercial passenger travel time making the use of general aviation, in many cases, more efficient and cost effective. The segments of general aviation that typically represent business aviation reflect this growing activity throughout the forecast period.

2.2.1.3 Economy

The health of the local and national economy has a direct correlation to activity at the Airport. A healthy economy supports and promotes activity by all user groups at the Airport. Accordingly, a correlation exists between general aviation activity and the strength or weakness of the economy. For example, a strong economy supports business which correlates to growth in corporate aviation activity. A strong economy also supports growth in the airline industry which correlates to increased demand for pilots and flight training activity.

2.2.1.4 <u>Weather</u>

The weather can directly affect the activity at the Airport. Poor weather conditions generally reduce activity, and typically have a greater impact on the small, general aviation aircraft operator. For activity forecasting, the assumption is made that the weather conditions and impacts will remain essentially the same as those associated with historical activity which is used as the basis for the forecasting effort.

2.2.1.5 <u>Airline Recovery</u>

Since 9/11, many of the nation's airlines suffered great financial loss, went into bankruptcy, or ceased operations. The airline industry as a whole is currently in a recovery. The health of airlines has a direct impact on aircraft activity at the Ohio State University Airport. Airlines are an important segment of the industry that employs graduates of the University flight-training program. A healthy airline industry will support training activity at the Airport. However, the typically cyclical nature of airline financial health and employment is currently having a negative impact on activity at the Airport. There is a great demand for airline pilots resulting in a decreased supply of flight instructors. As a result, the University has had to turn away prospective students until the demand can be met.

The availability of commercial airline service and the cost of the service have a direct correlation to general aviation activity, particularly business aviation. The number of cities served from Columbus via commercial carriers, the frequency of service, and cost of the service will directly affect the use of business aircraft. Non-commercial corporate aviation has the advantages of efficiency and access to remote service areas. These qualities ensure that business aircraft activity will remain a robust sector at the Airport.

2.2.1.6 <u>Very Light Jets</u>

In 2006 the first models of a new class of business jet aircraft, collectively called Very Light Jets (VLJ), entered the active fleet. These jets have speed, range, and operating altitude comparable to typical corporate jets, but at acquisition and operating costs similar to propeller aircraft. These aircraft are anticipated to be used in the conventional business transport role. These aircraft will also be used for a growing air taxi market, providing on-demand point-to-point transport.

FAA national forecasts indicate that as many as 7,500 of these aircraft will be delivered through 2025. However, their introduction will be gradual, and these aircraft are similar to existing types and do not require changes to existing regulatory policies or Airport operating procedures.

VLJs will likely operate at the Ohio State University Airport. These aircraft, which do not require any additional facilities than what exist already at the Airport, are significantly quieter than other jet and some propeller aircraft.

2.2.1.7 <u>Fuel Cost</u>

Aviation fuel costs have escalated to record levels with no indications of significant reductions. The increase in cost has a direct correlation with a stagnation or decline in the small aircraft segment of general aviation activity. This is reflected in FAA forecasts with little growth in this small aircraft segment of general aviation activity over the next twenty years. Corporate business aviation has less sensitivity to the fuel costs and the corporate business segment of general aviation will continue to grow.

2.2.1.8 Sport Aircraft

In recent years, the FAA created a new class of aircraft, Sport Aircraft, and a related level of pilot certification. This new class includes light, small general aviation aircraft, and has made flying and aircraft accessible to more of the public. Sport aircraft are less sophisticated and require a skill level that is appropriate for limited operations in controlled airspace. Therefore this forecast assumes that the Sport Aircraft segment of aviation will only operate at the smaller non-towered airports that have less high performance aircraft activity.

2.2.2 Factors Affecting Airport Capacity

The draft 2004 Airport Master Plan includes the development of new airport facilities to meet projected future activity. This proposed development includes new hangars and a runway extension. Figure 2-4 depicts the areas of potential hangar development and the proposed runway extension.

Figure 2-4
FUTURE AIRPORT DEVELOPMENT

This forecast of aviation activity includes these specific facility improvements as they have a direct impact on the activity forecast. In addition, the complete analysis of future noise impacts requires inclusion of planned Airport development.

2.2.2.1 Hangar Development

In order to accommodate an existing waiting list for 147 additional based aircraft, the Airport has a phased hangar development plan. Initially, hangar space for up to 50 aircraft would be built by 2012. Additional hangar space for another 80 aircraft is assumed on the north side of the Airport as needed throughout the remainder of the forecast period.

2.2.2.2 North Runway Improvement

The draft 2004 Master Plan identified a need to provide a 6,000-foot long runway at the Airport to more safely and adequately serve aircraft types already using the Airport. The draft master plan identified several alternatives and recommended the preferred alternative of extending the North Runway, (Runway 9L-27R), from 2,993 feet to 6,000 feet. The extension would be completed with a 1,807-foot extension to the west end of the North Runway, and a 1,200-foot extension to the east end of the North Runway. This forecast addresses the proposed runway development in two ways. First, this section reviews the existing aircraft fleet mix and aircraft activity to verify the need for the runway extension. Second, this forecast assesses the affect of the longer runway on future airport activity.

In order to verify the need for the extension of the North Runway, data regarding specific aircraft types using the Airport was collected. This information was obtained from Flight Aware, a public commercial company providing flight tracking and activity statistics. The information provided by Flight Aware includes data on all aircraft operating at the Airport on an instrument flight plan. For this analysis, it is assumed that the runway length requirement will be based on the activity of jet aircraft using the Airport. It is also assumed for this analysis that all jet aircraft operate on instrument flight plans. This is important in that Flight Aware tracks all aircraft operating on instrument flight plans and provides a complete data source of the jet types and number of operations.

Table 2-5 presents a summary of corporate jets operating at the Airport in 2006 on an instrument flight plan. The table also presents the landing and takeoff runway length requirements for each aircraft type at design maximum payload and full fuel, and further divides these requirements under both dry runway and contaminated runway conditions (i.e., heavy standing water, snow, ice). A contaminated runway typically increases the runway length requirement. The table also presents the number of annual aircraft operations by each type at the Ohio State University Airport.

The aircraft in Table 2-5 represent only a portion of the total annual operations at the Airport. Nonetheless, this table shows an aggregate of 731 annual operations, by aircraft needing at least 6,000 feet of runway to operate at design capacity and range. Runway length requirements are based on the individual aircraft performance specifications and the Airport specific operating characteristics such as elevation and average temperature. This total exceeds the 500 annual operations by the design aircraft needed to satisfy FAA improvement justification requirements. The table also shows 1,311 operations by aircraft needing runway length between 5,000 feet and 6,000 feet. These quantities represent dry runway conditions. Under wet or contaminated conditions, the runway length requirement increases and number of justifying operations of aircraft needing at least 6,000 feet in length increases to 1,996 operations.

Table 2-5
CORPORATE JET RUNWAY LENGTH REQUIREMENTS

	Dry Runway				Contaminated Runway				
Aircraft Type	**Take Off Dist. (Ft.)**	**Landing Dist. (Ft.)**	**Operations Requiring >5,000 Ft.**	**Operations Requiring >6,000 Ft.**	**Take Off Dist. (Ft.)**	**Landing Dist. (Ft.)**	**Operations Requiring >5,000 Ft.**	**Operations Requiring >6,000 Ft.**	**Total Annual Operations**
Dassault Falcon 900	5,844	7,307	33	17	7,597	8,403	33	33	33
Embraer EMB 145	8,367	5,777	18	9	10,877	6,644	18	18	18
Gulfstream II	6,539	3,516	16	16	8,501	4,043	16	16	32
Gulfstream IV	6,783	4,028	25	25	8,818	4,632	25	25	50
Gulfstream V	7,331	3,736	7	7	9,530	4,296	7	7	14
Bombardier CL-600 Challenger	7,087	3,522	80	80	9,213	4,050	80	80	160
Cessna 750 Citation X	6,405	4,296	58	58	8,327	4,940	58	58	116
Astra 1125	6,600	4,406	26	26	8,580	5,067	51	26	51
Cessna 500 Citation	3,711	2,709	0	0	4,824	3,115	0	0	687
Cessna 560 Citation Encore	4,479	3,632	0	0	5,823	4,177	61	0	122
Cessna 560 Citation V Ultra	4,016	2,987	0	0	5,221	3,435	166	0	332
Cessna 650 Citation III/VI	6,417	3,675	25	25	8,342	4,226	25	0	50
Dassault Falcon 20	6,600	4,047	28	28	8,580	4,654	28	0	55
Galaxy 1126	6,844	4,406	16	16	8,897	5,067	31	16	31
Learjet 25	4,159	NA	0	0	5,407	NA	53	0	105
Learjet 35/36	6,234	3,675	417	417	8,104	4,226	417	417	834
Mitsubishi MU-300 Diamond	5,381	4,040	1,286	0	6,995	4,646	1,286	1,286	2,572
Raytheon 390 Premier	4,762	4,162	0	0	6,191	4,786	7	7	13
Raytheon/Hawker 125-1000 Horizo	6,539	2,992	8	8	8,501	3,441	8	8	16
Sabreliner 65	6,783	4,217	1	1	8,818	4,850	1	1	1
		Total:	2,042	731		**Total:**	2,369	1,996	5,292

Sources: FAA *Design Standards for Business Jet Aircraft* ; Aircraft Manufacturer Specifications; The Ohio State University Airport 2006 Flight Aware data

It should also be noted that the aircraft in this analysis are currently operating at the Airport with the existing available runway length. The analysis indicates these aircraft are periodically taking an operational penalty in payload or flight range (through reduced fuel) due to the runway length limitations.

2.3 FORECAST SOURCES

Numerous data sources are used in the development of this aviation activity forecast. This section presents these sources.

2.3.1 Terminal Area Forecast

The FAA's Terminal Area Forecast (TAF) is the official forecast of aviation activity at FAA facilities. These forecasts are prepared to meet the budget and planning needs of the FAA and provide information for use by state and local authorities, the aviation industry, and the public. The TAF includes forecasts for:

- FAA towered airports
- Federally contracted towered airports
- Nonfederal towered airports
- Non-towered airports

Detailed forecasts are prepared for major users of the National Aviation System including air carrier, air taxi and commuter, general aviation, and military. The TAF includes forecasts for active airports in the National Plan of Integrated Airport System (NPIAS).

2.3.2 FAA Aerospace Forecast

The FAA Aerospace Forecast is the fiscal year forecast of aviation activity at FAA facilities. This is a companion document to the TAF. This aerospace forecast includes airports with FAA and contract traffic control towers, air route traffic control centers, and flight service stations. Detailed forecasts are developed for the major users of the National Aviation System:

- Air carriers
- Air taxi/commuters
- General aviation
- Military

These forecasts are prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by State and local authorities, the aviation industry, and the general public.

2.3.3 Airport Master Plan

The most recent update to the Airport Master Plan was prepared in 2002, and a revised draft was proposed in 2004. The master plan, its forecast of aviation activity, and the resulting development plan serve as data sources for this forecast. One purpose for this forecast is to validate the 2004 draft master plan forecasts and verify specific elements of the development plan.

2.3.4 Interviews

As needed, interviews were conducted to obtain supplemental information needed for the forecast. Interviews were conducted with representatives of the Air Traffic Control Towers from The Ohio State University Airport and Port Columbus International Airport, and with Airport users.

2.4 BASED AIRCRAFT FORECAST

Based aircraft at an airport represent the total number of active aircraft permanently located or projected to be located at an airport during a specific period. Based aircraft categories include single-engine, multi-engine, jet, and helicopter.

Table 2-6 presents the based aircraft forecast for the Airport. The table identifies three forecast scenarios. The first scenario is the forecast presented by the FAA TAF. This forecast shows a growth throughout the forecast period, increasing by 77 based aircraft for a total of 307 by 2027. The TAF does not reflect the effects of the current constraint on hangar development, which limits growth in the number of based aircraft at the Airport.

The second scenario incorporates the recommended Airport development plan for new hangars as defined in the draft 2004 master plan. The Airport has a waiting list for hangars for 147 aircraft. Since 2001 the number of aircraft on the list has had annual increases ranging from 15 to 27 aircraft. The hangar development plan includes initial construction of 50 Hangars on the south side of the Airport by 2012, and the forecast assumes 100 percent occupancy of these hangars. The balance of the waiting list is nearly 100 aircraft. These hangars would be occupied during the remainder of the forecast period. While the balance of the waiting list is nearly 100 aircraft, experience suggests not all of the individuals and aircraft remaining on the waiting list would actually base an aircraft at the Airport. The forecast assumes that of the remaining wait list, 80 percent, or approximately 80 aircraft, will base at the Airport. With this scenario, there would be 360 based aircraft at the end of the forecast period.

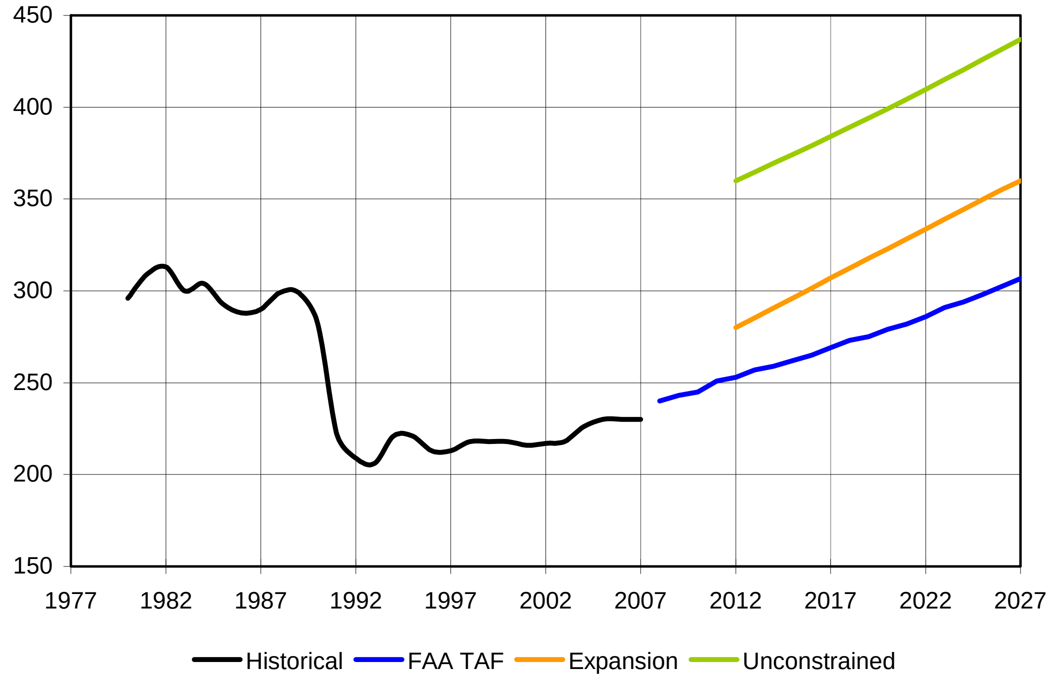
The third scenario is an unconstrained forecast based on the immediate removal of the hangar development constraint, resulting in full occupancy of 50 new hangar spaces, plus development for an assumed 80 percent of the balance of the waiting list, or approximately 80 aircraft. In all 130 additional aircraft would be based at the Airport in 2012. The quantity of based aircraft would then grow at the 1.3% average annual growth rate of the FAA TAF. Under this scenario, at the end of the forecast period there would be 437 based aircraft.

The second “hangar expansion” scenario is recommended for planning and Part 150 purposes. This scenario is the most likely growth scenario best illustrates potential increases in based aircraft which should be accounted for in the Part 150 Study. The analysis is based on the phased hangar expansion that provides facilities for the hangar waiting list. With this forecast, the number of based aircraft would grow to 360 at the end of the forecast period. This forecast best reflects the result of removal of the current development constraints at the Airport, supported by the existing waiting list for additional based aircraft.

Table 2-7 shows the recommended forecast of based aircraft at the Airport. This table also shows the combined FAA TAF-based forecasts for based aircraft at the eight Columbus area airports first discussed in Section 2.1, and shows the Airport’s share of the total. This graphic demonstrates that with removal of the hangar development constraints and the associated addition of based aircraft, the Airport’s share of total based aircraft in the region would increase. However the forecast share would remain within the historical range of share demonstrating a reasonableness of the recommended forecast.

Table 2-8 compares the recommended forecast of based aircraft with those from the TAF and the draft 2004 master plan. The recommended forecast, as anticipated, is greater than the TAF. This is due to the inclusion of the additional based aircraft associated with the future hangar development. The recommended forecast closely tracks the draft 2004 master plan forecast.

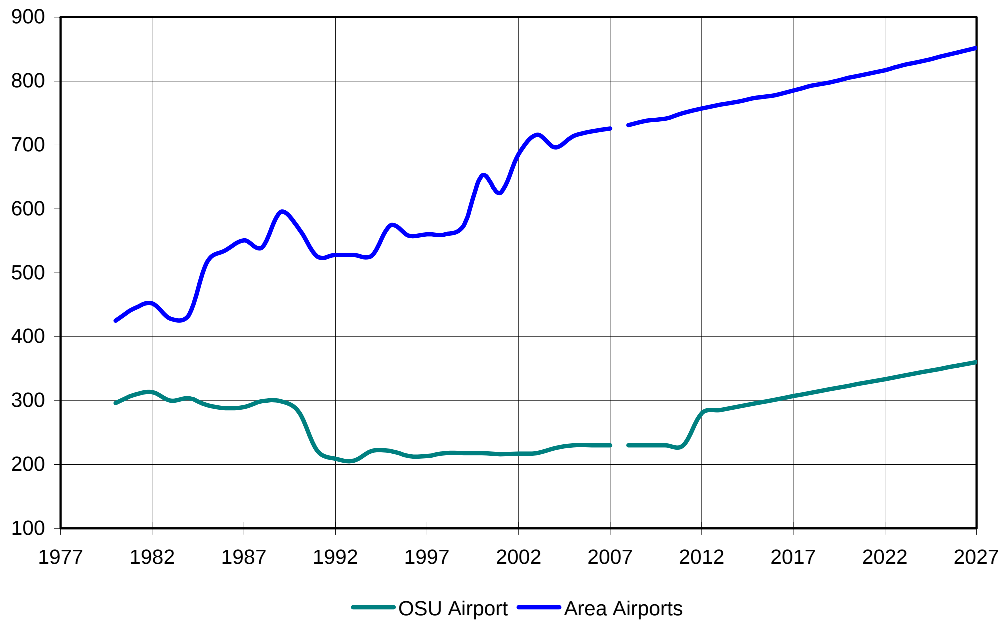
Table 2-6
BASED AIRCRAFT FORECAST



Year		Historical	FAA TAF	Hangar Expansion	Unconstrained
1982		313			
1987		290			
1992		209			
1996		213			
1997		213			
1998		218			
1999		218			
2000		218			
2001		216			
2002		217			
2003		218			
2004		226			
2005		230			
2006	(est)	230			
2007	(est)	230			
2012			253	280	360
2017			269	307	384
2027			307	360	437

Sources: FAA TAF; OSU Airport Hangar Waiting Lists; Airport 5010 Master record; RS&H
Notes: FY 2006 is estimate (est) from TAF; FY 2007 is forecast estimate based on hangar development constraint.

Table 2-7
BASED AIRCRAFT SHARE COMPARISON

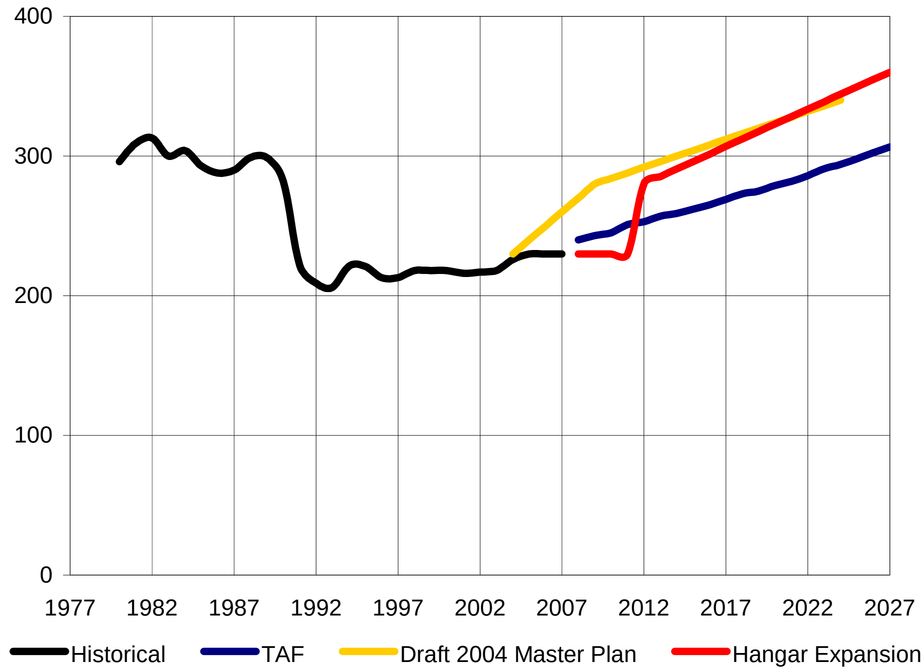


Year		OSU Airport	OSU and Area Airports	Percent OSU Airport
1982		313	452	69.2%
1987		290	551	52.6%
1992		209	528	39.6%
1996		213	558	38.2%
1997		213	560	38.0%
1998		218	560	38.9%
1999		218	574	38.0%
2000		218	652	33.4%
2001		216	625	34.6%
2002		217	686	31.6%
2003		218	716	30.4%
2004		226	696	32.5%
2005		230	714	32.2%
2006	(est)	230	721	31.9%
2007	(est)	230	726	31.7%
2012		280	757	37.0%
2017		307	785	39.1%
2027		360	852	42.3%

Sources: OSU Airport Master Record, 1980-1989. FAA TAF historical data available to FY 2005; data limited by availability of comparable data for all airports. OSU Airport FY 2006 and 2007 is forecast estimate based on hangar development constraint. For Area Airports, FAA TAF Forecast data used for FY 2006 through 2027

Note: Area Airports Total includes TAF records and forecasts for the following airports: Ohio State University Airport, Union County, Delaware Municipal (airport data began in TAF in FY 1980), Newark-Heath (airport data began in TAF in FY 2000), Fairfield County, Bolton Field,Pickaway County, and Madison County

Table 2-8
BASED AIRCRAFT FORECAST COMPARISON



Year	Historical	TAF	Draft 2004 Master Plan	Hangar Expansion
1982	313			
1987	290			
1992	209			
1996	213			
1997	213			
1998	218			
1999	218			
2000	218			
2001	216			
2002	217			
2003	218			
2004	226			
2005	230			
2006 (est)	230			
2007 (est)	230			
2012		253	296	280
2017		269	316	307
2027		307		360

Sources: FAA TAF (2027 is extrapolated from TAF forecast), draft 2004 Airport Master Plan; Airport Master Record 1980-1989, RS&H

Continued constraints on hangar development are reflected in the recent years and near-term future. However, the planned hangar development program brings the recommended forecast in line with the draft 2004 master plan in the latter years of the forecast period.

2.5 ANNUAL AIRCRAFT OPERATIONS FORECAST

The forecast of aircraft operations is presented in this section. By definition, an operation is either one landing or one take off. For this effort the operations forecasts are prepared separately for each ATCT category. Preparing individual forecasts for each ATCT category allows application of the method that best represents each category.

The following sections describe each ATCT category. The sections also present the forecast methodology used for each ATCT category. In general, an operations-per-based aircraft ratio is the predominant technique employed in the preparation of these forecasts. Historical local trends in the ratios were examined and future ratios were selected based on those trends in combination with the application of experience and professional judgment.

- Air Carrier - The air carrier category includes commercial aircraft with seating capacity of more than 60 seats. While the Airport has had air carrier operations in the past, all scheduled air carrier service for the region is currently provided at Port Columbus International Airport. There are no air carrier operations at the Airport. Consequently, there are no forecast operations in this category.

- Air Taxi and Commuter - Operations in this category represent scheduled commercial flights or nonscheduled for-hire flights, such as charter, for aircraft with 60 or fewer seats. These operations are primarily for-hire, nonscheduled air taxi activity. There is no scheduled commuter activity at the Airport. The forecast for this category of aircraft uses a ratio of operations per based aircraft, and assumes growth in the for-hire market segment, projecting a trend of continued growth but at a slowing rate. The ratio grows from 14.8 in 2007 to 29.8 in 2017, and then remains constant beyond 2017.

  The air taxi category also includes growth associated with the extension of the North Runway. The aircraft that would benefit from the extension of the North Runway are jets. An extensive analysis was conducted to determine if the extension would generate additional activity at the Airport. For this analysis, interviews were conducted with NetJets, a frequent user of the airport. Based on NetJets' review of activity at the Airport over the previous seven years through October 2007, 20% of their aircraft operating at the Airport would have benefited from the extension of the North Runway. Example benefits include avoiding reduced payload or aircraft range limitations necessitated by the existing runway length. NetJets also indicated that the number of operations by the specific aircraft that would benefit from an extension would increase by approximately 15% with the extension of the North Runway. The NetJets fleet mix includes virtually all sizes of corporate jets. This forecast assumes the methodology based on NetJets requirements and increase in operations associated with an extended runway is applicable to determine total growth at the Airport associated with the extension to the North Runway. Applying these percentages to the ATCT estimates of existing jet operations at the Airport yields approximately 1,480 existing jet operations that would benefit from the extension of the North Runway, and the Airport would experience approximately 220 additional annual jet operations. These totals are used to establish an operations-per-based aircraft ratio for forecasting. The 220 additional operations and the current 230 based aircraft results in an operations-per-based-aircraft ratio of approximately 1.0. This ratio is assumed constant for this group of aircraft through the remainder of forecast period.

- General Aviation – The forecast of general aviation activity uses the operations per based aircraft method. Over the past 25 years, itinerant general aviation operations at the Airport have ranged in operations per based aircraft ratios from ranged from a low of 205 in 1984 to a high of 322 in 1998. In 2006 the ratio was 232.3 operations per based aircraft. This forecast assumes a constant ratio of 232.3 throughout the forecast period.

  For local operations over the past 25 years, the ratio of operations per based aircraft has ranged from a low of 114 in 2007 to a high of 332 in 1991. The current low is indicative of the trend in decreasing general aviation local operations despite the number of based aircraft remaining nearly constant. However, the 114 ratio is well outside of the historical range of ratios and is not considered representative of the likely future condition. The recommended forecast is based on the average of the ratios for the 2003 through 2007 period (153.9). This is the assumed ratio throughout the forecast period.

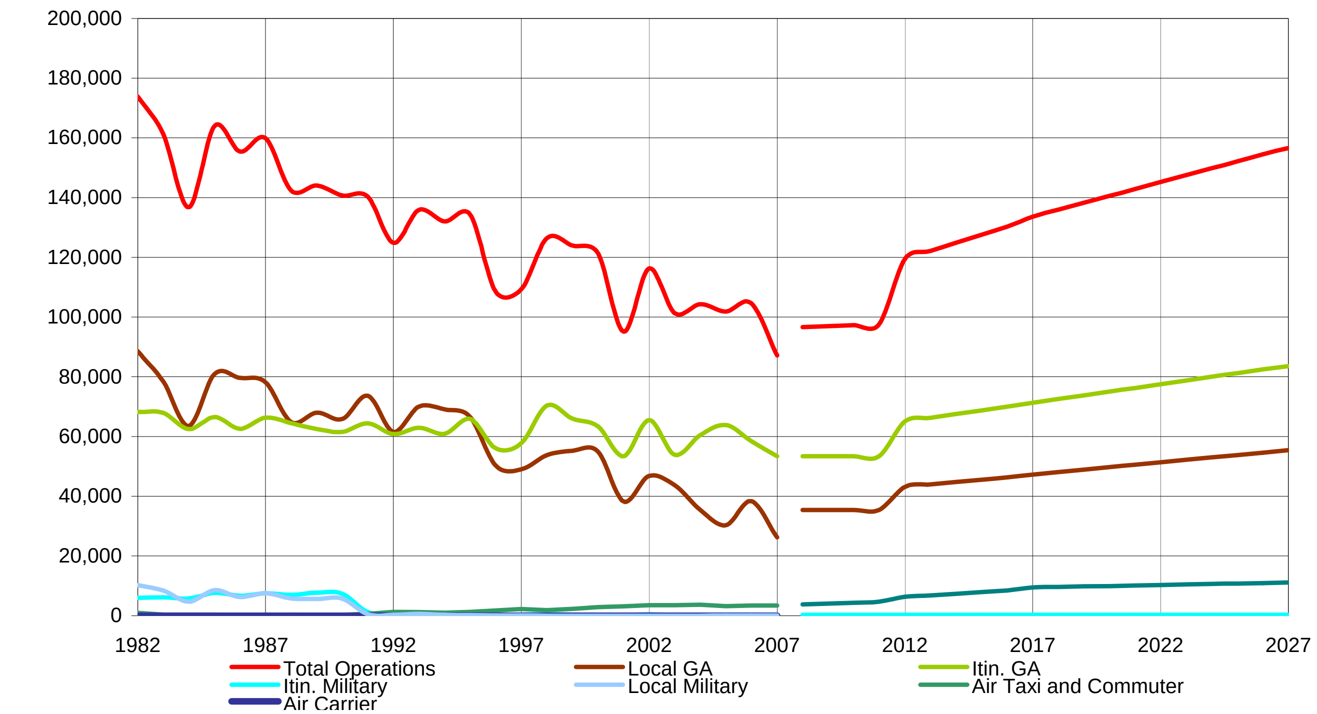
  It should be noted the existing hangar waiting list includes operators of corporate jets. Currently these users base their aircraft at other airports. When operating, they fly into the Ohio State University Airport, pick-up their passengers, and leave for their destination airport. On the return trip they land at the Airport, disembark passengers, and then depart for the airport at which the aircraft is based. Under this scenario, one trip results in four operations at the Airport. The construction of new hangars and the opportunity to base these aircraft at the Airport leads to a reduction in the number of operations for this sample trip to two. This forecast does not quantify this scenario but considers it in the assessment of the benefits of hangar development.

- Military aircraft – Military operations are forecast to remain at current levels throughout the forecast period. Following the relocation of the Army Guard base from the Airport in 1990, the annual quantity of military operations declined quickly to current levels that have remained fairly constant. Accordingly, no ratio is assumed for military operations. Instead, the current number of operations is held constant.

- STARS - The STARS data is used to account for activity when the ATCT is closed, 11:00 p.m. to 7 a.m. local time. STARS has been operational for nearly four years and during that time the activity recorded by STARS represented between 6.4 and 7.1 percent of total civil itinerant operations at the Airport. The selected forecast uses the aggregate activity reported by STARS for the four-year period as a percent of the total operations over the four-year period, which is 6.5 percent. This percent is assumed constant throughout the forecast period.

Table 2-9 presents the resultant forecast of aviation activity. Total annual operations are forecast to grow from 87,185 in 2007 to 156,630 in 2027. The fastest growing ATCT categories are air taxi and commuter and itinerant general aviation.

Table 2-9
AIRCRAFT OPERATIONS FORECASTS



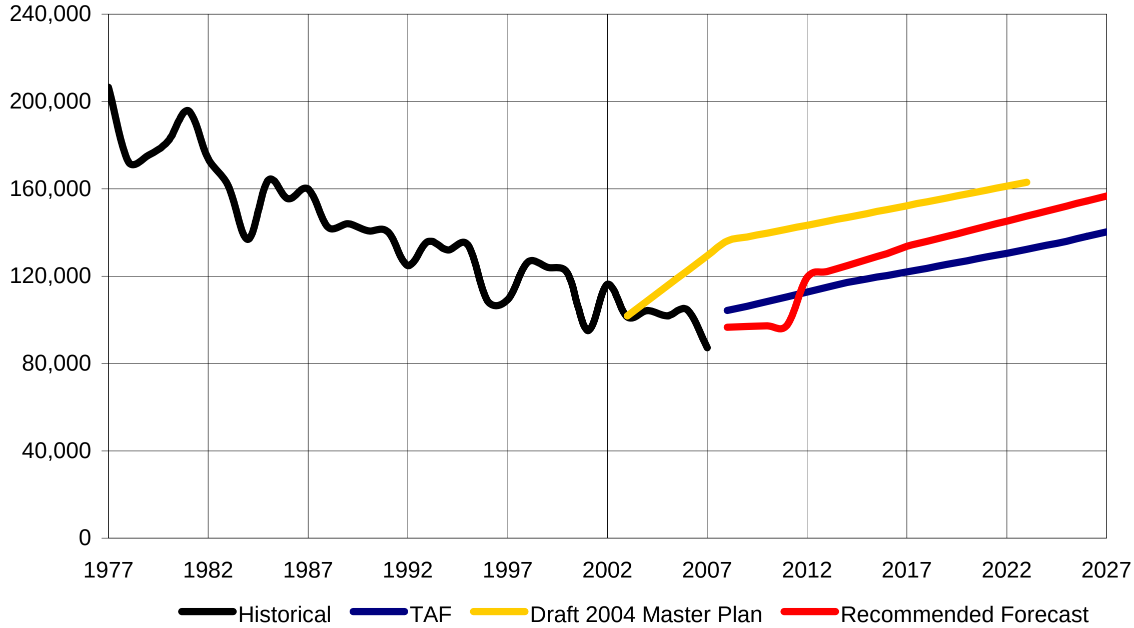
		Air Traffic Control Tower Operations																			
		Itinerant Operations											Local Operations								
			Air Taxi / Commuter						General Aviation									STARS			
				Base Growth		Runway Growth							General Aviation						% of Civil Itin. Ops		
	Based	Air	Historical	Ops/Based Aircraft		Ops/Based Aircraft			Historical	Ops/Based Aircraft			Historical	Ops/Based Aircraft							Grand
Year	Aircraft	Carrier	Ops.	Ratio	Ops.	Ratio	Ops.	Total	Ops.	Ratio	Ops.	Military	Ops.	Ratio	Ops.	Military	Total	Ops.	Percent	Ops.	Total
1982	313	0	962	3.1					68,258	218.1		5,948	88,518	282.8		10,165	173,851	-			173,851
1987	290	0	309	1.1					66,294	228.6		7,568	78,210	269.7		7,529	159,910	-			159,910
1992	209	0	1,283	6.1					60,859	291.2		851	61,529	294.4		301	124,823	-			124,823
1997	213	0	2,159	10.1					57,664	270.7		372	49,002	230.1		88	109,285	-			109,285
1998	218	0	1,872	8.6					70,322	322.6		423	53,752	246.6		22	126,391	-			126,391
1999	218	0	2,317	10.6					65,992	302.7		354	55,251	253.4		14	123,928	-			123,928
2000	218	0	2,816	12.9					63,393	290.8		268	54,929	252.0		0	121,406	-			121,406
2001	216	0	3,116	14.4					53,390	247.2		297	38,268	177.2		22	95,093	-			95,093
2002	217	0	3,518	16.2					65,477	301.7		428	46,822	215.8		10	116,255	-			116,255
2003	218	0	3,500	16.1					53,842	247.0		292	43,635	200.2		0	101,269	-	0.0%		101,269
2004	226	0	3,647	16.1					60,446	267.5		301	35,411	156.7		4	99,809	4,545	7.1%		104,354
2005	230	0	3,229	14.0					63,821	277.5		360	30,315	131.8		106	97,831	4,009	6.0%		101,840
2006	230	0	3,416	14.9					58,456	254.2		363	38,306	166.5		67	100,608	3,960	6.4%		104,568
2007	230	0	3,404	14.8					53,426	232.3		294	26,268	114.2		64	83,456	3,729	6.6%		87,185
2012	280	0		21.6	6,050	1.0	280	6,330		232.3	65,040	290		153.9	43,090	60	114,810		6.5%	4,640	119,450
2017	307	0		29.8	9,150	1.0	307	9,460		232.3	71,320	290		153.9	47,250	60	128,380		6.5%	5,250	133,630
2027	360	0		29.8	10,730	1.0	360	11,090		232.3	83,630	290		153.9	55,400	60	150,470		6.5%	6,160	156,630

Sources: FAA TAF, Flight Aware, OSU Airport ATCT, Standard Terminal Automated Replacement System (STARS), Port Columbus Intl Airport ATCT, Airport User Interviews, RS&H

Table 2-10 compares the recommended forecast of aviation activity, with those from the TAF and the draft 2004 master plan. It should be noted that the draft 2004 master plan describes a maximum 162,997 annual operations that is associated with a "full build" scenario for proposed Airport facilities. The draft 2004 master plan does not specifically identify a year associated with its "full-build" scenario. This forecast assumes 2023 as the year representing "full-build" in the draft 2004 revised master plan.

The recommended forecast, as anticipated, is greater than the TAF. The total number of operations at the end of the forecast period is very close to the draft 2004 master plan forecast, adjusted for the 3 years separating the two efforts. Much of the future activity growth is tied to hangar development and associated based aircraft. Continued constraints on hangar development are reflected in the recent years and near-term future. Consequently, growth would be correlated in large part to constraint removal in the last year of the five-year Part 150 forecast period.

Table 2-10
OPERATIONS FORECASTS COMPARISON



	Historical			Forecast		
Year	TAF	STARS	TOTAL	TAF	Draft 2004 Master Plan	Recommended Forecast
1982	173,851	-	173,851			
1987	159,910	-	159,910			
1992	124,823	-	124,823			
1997	109,295	-	109,295			
1998	126,391	-	126,391			
1999	123,928	-	123,928			
2000	121,406	-	121,406			
2001	95,093	-	95,093			
2002	116,255	-	116,255			
2003	101,269	-	101,269			
2004	99,809	4,545	104,354			
2005	97,831	4,009	101,840			
2006	100,608	3,960	104,568			
2007	83,456	3,729	87,185			
2012				112,639	143,322	119,450
2017				121,959	152,265	133,630
2027				140,308		156,630

Sources: FAA TAF, 2004 Master Plan, Port Columbus Standard Terminal Automated Replacement System (STARS), RS&H

Note: TAF 2007 is based on ATADS reported data.

2.6 OPERATIONS BY AIRCRAFT TYPE

Annual aircraft operations forecasts developed in the previous sections were further refined into estimates of operations by aircraft type (fleet mix) and by period of INM-day or INM-night. This information forms a basic input to the noise modeling effort and is presented on Table 2-11.

The eleven summary aircraft categories presented on this table are made up of aircraft that actually operate at the Airport, and are summarized for report purposes only. The detailed analysis underlying the summary table and the subsequent noise modeling considers the actual aircraft at the Airport. Aircraft in each of the categories are presented in Table 2-12.

In order to establish these estimates for 2007, 2012 and 2027, a number of data sources were examined and methodologies employed. The following sections describe the overall approach in developing the estimates. For ease of discussion, fleet mix and INM-day/night split are presented in separate sections. However, the analyses to establish both estimates are interrelated and rely on the same data sources, interviews, and general techniques.

2.6.1 Fleet Mix

While the number of annual operations by general user group at the Airport is well established, the types of aircraft performing the operations, or fleet mix, must be estimated using several techniques because no single source of complete information exists.

The process begins with establishing a fleet mix for 2007 and adapting that estimate for anticipated changes for 2012 and 2027. For the 2007 fleet mix estimate, records of actual operations from the Flight Aware database were examined in detail and subdivided into appropriate operational categories. This database accounts for the vast majority of larger (and noisier) aircraft operating at the Airport, but does not contain extensive records on smaller aircraft. Therefore, the list of based aircraft, the types of aircraft on the hangar waiting list, and interviews with tenants and air traffic control tower personnel were considered to complete the fleet mix estimates for 2007. The fleet mix estimates were then applied to the detailed air traffic control tower and STARS annual operations counts to establish the number of estimated operations by individual aircraft in 2007.

There are several changes anticipated in the estimated fleet mix at the Airport for 2012. The introduction of Very Light Jets (VLJs) is expected to change the fleet mix at the Airport by slightly reducing the proportion of multi-engine turboprop activity and capturing growth that would have otherwise occurred in the small jet category because the VLJ is targeted at this segment of general aviation. The runway extension will slightly increase the number of operations by medium and large jet aircraft (approximately 220 per year). The addition of additional storage hangars will add operations in proportion to the types of aircraft on the hangar waiting list. This list is dominated by small single engine aircraft but includes limited numbers of multi engine and jet aircraft. Finally, civilian helicopters, in keeping with the FAA’s predicted national trends and user interviews will continue to grow as a segment of general aviation activity.

The estimates of the fleet mix at the Airport for 2027 must be viewed as very long range estimates and act as a general indicator of the 20-year future. The two major factors likely to influence the 2027 fleet mix at the Airport are continued growth in VLJs and civilian helicopters and the replacement of aging jet aircraft.

Table 2-11
TOTAL DAY/NIGHT OPERATIONS BY AIRCRAFT FLEET MIX CATEGORY

2007

	Itinerant		Local		Total	
Aircraft Category	**Day**	**Night**	**Day**	**Night**	**Operations**	**Percent**
Large Jet	110	4	-	-	114	0.1%
Medium Jet	790	52	-	-	842	1.0%
Small Jet	5,154	358	-	-	5,512	6.3%
VLJ	-	-	-	-	-	0.0%
Multi-engine Turboprop	7,232	958	-	-	8,190	9.4%
Multi-engine	2,237	394	253	3	2,887	3.3%
Single Engine Turboprop	2,423	427	-	-	2,850	3.3%
Single Engine Fixed Pitch	15,287	805	13,663	644	30,399	34.9%
Single Engine Variable Pitch	13,348	703	11,179	526	25,756	29.5%
Helicopter	9,760	514	-	-	10,274	11.8%
Military Aircraft	294	3	64	-	361	0.4%
TOTAL	56,635	4,218	25,159	1,173	87,185	100.0%
INM-Day					81,794	93.8%
INM-Night					5,391	6.2%
TOTAL					87,185	100.0%

2012

	Itinerant		Local		Total	
Aircraft Category	**Day**	**Night**	**Day**	**Night**	**Operations**	**Percent**
Large Jet	167	6	-	-	173	0.1%
Medium Jet	1,173	77	-	-	1,250	1.0%
Small Jet	6,892	479	-	-	7,371	6.2%
VLJ	1,604	111	-	-	1,715	1.4%
Multi-engine Turboprop	9,052	1,199	-	-	10,251	8.6%
Multi-engine	2,554	451	415	4	3,424	2.9%
Single Engine Turboprop	3,029	535	-	-	3,564	3.0%
Single Engine Fixed Pitch	17,486	920	22,414	1,056	41,876	35.1%
Single Engine Variable Pitch	15,266	803	18,337	864	35,270	29.5%
Helicopter	13,493	710	-	-	14,203	11.9%
Military Aircraft	290	3	60	-	353	0.3%
TOTAL	71,006	5,294	41,226	1,924	119,450	100.0%
INM-Day					112,232	94.0%
INM-Night					7,218	6.0%
TOTAL					119,450	100.0%

2027

	Itinerant		Local		Total	
Aircraft Category	**Day**	**Night**	**Day**	**Night**	**Operations**	**Percent**
Large Jet	240	8	-	-	248	0.2%
Medium Jet	1,671	110	-	-	1,781	1.1%
Small Jet	9,807	682	-	-	10,489	6.7%
VLJ	5,699	396	-	-	6,095	3.9%
Multi-engine Turboprop	12,097	1,603	-	-	13,700	8.7%
Multi-engine	2,858	504	534	5	3,901	2.5%
Single Engine Turboprop	4,043	714	-	-	4,757	3.0%
Single Engine Fixed Pitch	19,555	1,029	28,816	1,358	50,758	32.4%
Single Engine Variable Pitch	17,072	899	23,576	1,111	42,658	27.2%
Helicopter	20,794	1,094	-	-	21,888	14.0%
Military Aircraft	292	3	60	-	355	0.2%
TOTAL	94,128	7,042	52,986	2,474	156,630	100.0%
INM-Day					147,114	93.9%
INM-Night					9,516	6.1%
TOTAL					156,630	100.0%

Sources: OSU ATCT, Port Columbus Standard Terminal Automated Replacement System (STARS), RS&H

Table 2-12
AIRCRAFT FLEET MIX CATEGORIES

Fleet Mix Category	Aircraft Types
Large Jets (Maximum Takeoff Weight than 60,000 pounds)	GLF2 - G-1159, G-1159B Gulfstream 2/2B/2SP GLF3 - G-1159A Gulfstream 3/SRA-1, SMA-3 GLF4 - G-1159C Gulfstream 4/4SP/SRA-4 GLF5 - G-1159D Gulfstream 5 CRJ7 - Canadair Regional Jet CRJ-700
Medium Jets (Maximum Takeoff Weight 35,000 and 60,000 pounds)	C750 - Cessna 750 Citation 10 CL30 - Canadair BD-100 Challenger 300 CL60 - CL-600/Canadair Challenger 699/601/604 E135 - Embraer EMB-135, ERJ-135/140 F2TH - Dassault Falcon 2000 F900 - Dassault Falcon 900, Mystere 900 FA50 - Dassault Falcon 50, Mystere 50
Small Jets (Maximum Takeoff Weight 10,000 and 35,000 pounds)	ASTR - IAI 1125 Astra (C-38) BE40 - Beechcraft Beechjet 400 C25A - Cessna 525A Citation CJ2 C25B - Cessna 525A Citation CJ2 C500 - Cessna 500 Citation, Citation 1 C501 - Cessna 501 Citation 1SP C525 - Cessna 525 Citationjet Citation CJ1 C550 - Cessna 550, S550, 552 Citation 2/S2/Bravo C560 - Cessna 560 Citation 5/5 Ultra/5Ultra Encore C566 - Cessna C560 Citation V C56X - Cessna 560XL Citation Excel C650 - Cessna 650 Citation 3/6/7 C680 - Cessna 680 Citation Sovereign FA10 - Dassault Falcon 10/100, Mystere 10/100 FA20 - Dassault Falcon 20/100, Mystere 20/200, Guardian G150 - Gulfstream 150 G200 - Gulfstream 200 GALX - 1126 Gulfstream 200 H25A - BAe HS 125 Series 400A H25B - BAE 125 Series 800A H25C - BAe-125-1000 J328 - Fairchild Dornier 328JET, Envoy 3 LJ24 - Learjet 24 LJ25 - Learjet 25 LJ31 - Learjet 31 LJ35 - Learjet 35 LJ40 - Learjet 40 LJ45 - Learjet 45 LJ55 - Learjet 55 LJ60 - Learjet 60 MU30 - Mitsubishi MU-300 Diamond PRM1 - Raytheon Aircraft Company 390 SBR1 - NA Sabreliner-265-65 WW24 - IAI 1124 Westwind
Very Light Jets (Maximum Takeoff Weight less than or equal to 10,000 pounds)	VLJ
Multi-Engine Turboprop	AC80 - 680T, 680V Turbo Commander AC90 - Gulf Aero 690 Jetprop Commander 840/900 AC95 - Gulf Aero 695 Jetprop Commander 680/1000 B120 - Embraer EMB-120ER B190 - Beech 1900 (C-12J) B300 - Raytheon B300 King Air BE10 - Beech 100 King Air BE20 - Beech 200 Super King Air BE30 - Beech 300 Super King Air BE9L - Beech King Air C90 BE9T - Beech F90 King Air BLK - Merlin 4, Expediter C425 - Cessna 425 Corsair/Conquest I C441 - Cessna 441 Conquest, Conquest 2 E120 - EMB-120 Brasilia JS32 - BAe-3200 Jetstream Super 31 MU2 - Mitsubishi MU-2B-17 P180 - P-180 Avanti PAY1 - PA-31T1-500 Cheyenne 1 PAY2 - PA-31T-620.T2-620 Cheyenne, Cheyenne 2 PAY4 - PA-42-1000 Cheyenne 400 SF34 - JETSTREAM Jetstream Super 31 SW3 - SA-226TB, SA-227TT Merlin 3, Fairchild 300 SW4 - SA-226AC, SA-227AC/AT Metro, Merlin 4, Expediter
Multi-Engine Piston	P68 - Partenavia SPA P.68C PA30 - PA-30/39 DA42 - Diamond DA-42 Twin Star PA31 - PA-31/31P AEST - Ted Smith Aerostar BE55 - Beech 55 Barron BE58 - Beech 58 Baron BE60 - Beech 60 Duke BE65 - Beech 65 Queen Air BE76 - Beech 76 Duchess BE95 - Beech 95 Travel Air C310 - Cessna 310, T310 C336 - Cessna 336 C337 - Cessna 337 Super Skymaster C340 - Cessna 340 C402 - 401, 402, Utililiner, Businessliner C414 - Cessna 414 Chancellor C421 - 421, Golden Eagle, Executive Commuter PA23 - Piper PA-23-150/160 Apache PA27 - PA-23-235/250 Aztec, Turbo Aztec PA34 - PA-34 Seneca PA44 - PA-44, Seminole, Turbo Seminole
Single-Engine Turboprop	B36T - Beech Bonanza 36 turbine F406 - Reims Aviation S.A. F406/CARAVAN II C208 - Cessna 208 Caravan I COL4 - Lancair Columbia 400 P46T - PA-46-500TP Malibu Meridian PC12 - Pilatus PC-12, Eagle TBM7 - Aerospatiale/Socata TBM TB-700
Single-Engine Piston Variable Pitch Propeller	AC11 - Commander 114 BE33 - Beechcraft 33 Debonair/Bonanza BE35 - Beechcraft Model 35 Bonanza LA4 - Lake LA-4-200 M20F - Mooney M20F M20P - Mooney M20T - Mooney MO20 - Mooney M20J P28 - Piper PA-28-201T P28A - Piper PA-28-180 P28B - Piper PA-28-201T/235/236 P28R - Piper PA-28R-1802/3/200/201 P28T - PA-28RT Arrow 4, Turbo Arrow 11 P32 - Piper PA-32-300 P32R - Piper PA-32R-300 P32T - Piper PA-32RT PA24 - Piper PA-24 Comanche PA28 - Piper PA-28R-201T PA30 - PA-30/39 PA32 - Piper PA-32-300 PA46 - PA-46 310P/350P Malibu, Malibu Mirage T34P - Beech T34A/B, E-17 Mentor (45) BE36 - Beech 36 Bonanza C10T - Cessna P210N C177 - Cessna 177 Cardinal C180 - Cessna 180, Skywagon C182 - Cessna 182 Skylane C206 - Cessna 206 C210 - Cessna 210 Centurion/II C77R - Cessna 177, Cardinal RG C82R - Cessna R182, TR182 (Turbo) Skylane RG COL3 - Lancair Columbia 300 COUR - Helio Courier DA40 - Diamond Aircraft Ind. Inc. DA 40 DA42 - Diamond Aircraft Ind. Inc. DA 42 HXC - Lancair Legacy 2000 HXC - Lancair Legacy 2000 LC41 - Lancair Company LC41-550FG M20C - Mooney M20C NAVI - Rockwell Navion NA 145/154 P210 - Cessna P210N Pressurized Centurion P210 - Cessna P210N Pressurized Centurion SR20 - Cirrus Design Corp SR20 SR22 - Cirrus Design Corp SR22 TRIN - Aerospatiale Trinidad TB-20/21 TRIN - Aerospatiale Trinidad TB-20/22 XL2 - Liberty XL-2
Single-Engine Piston Fixed Pitch Propeller	AA5 - American AA-5 Traveler AA5B - American AA5 Traveler BE23 - Beechcraft Model 23 Musketeer BE24 - Beechcraft Model 24 Sierra BL17 - Bellanca 17 Viking,Super Viking,Turbo Viking PA18 - Piper PA-18 Super Cub PA28 - PA-28-140 PA28 - PA-28-181 C150 - Cessna 150 C152 - Cessna 152 C172 - Cessna 172 C72R - Cessna 172RG GLAS - Glasair SII HXB - Cozy Mark IV LGEZ - Long EZ P28A - Piper Warrior PA28 - PA-28-161 RV7 - RV7A RV8 - Vans RV-8 WACO YKS-7
Helicopter	Eurocopter AS350 Astar Sikorsky S-76A Eurocopter EC-135 Aerospatiale AS 365 N2 Dauphin MBB-Kawasaki BK-117 Helicopter Bell 206 Jet Ranger
Military Helicopter	UH-60 Blackhawk UH-1 Huey

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007, Ohio State University Airport Based Aircraft and Hangar Waiting Lists, October 2007.

The 2027 fleet mix estimate assumes that VLJ activity will continue to expand by capturing growth that might have otherwise occurred in the small jet category. Civilian helicopters are expected to continue to follow the FAA's predicted national trends, thus capturing an expanded future share of the Airport's fleet mix.

The replacement of aging jet aircraft is limited in the 2027 fleet mix estimates to primarily those aircraft that have been out of production for several decades. There is not a definitive time frame for retirement of these aircraft. However, there has recently been significant discussion in Congress regarding potential legislation to require the phase out of these aircraft. The replacement aircraft for these select retirement aircraft types are similar sized jet aircraft that are currently in production. Other than the VLJ, no new future jet aircraft types are anticipated.

2.6.2 INM-Day/Night Split

As with fleet mix, the INM-day/night split must be estimated using several techniques because no single source of complete information exists. Records of actual operations by time of day from the Flight Aware database were examined in detail and subdivided into appropriate operational categories. This data is more representative of the FAA's Itinerant operational category and does not generally address the FAA's Local category (principally touch and go operations). Therefore interviews with tenants and air traffic control tower personal were undertaken to supplement the Flight Aware data. In addition, STARS annual operations counts during INM-night periods were used as an additional input to assure that INM-night operations are adequately accounted for.

The overall INM-day/night split at the Airport for 2007 is estimated at 93.8%/6.2%, consistent with tower estimates of approximately 94%/6%. The 2012 and 2027 INM-day/night splits retain the same approximate 94%/6% split.

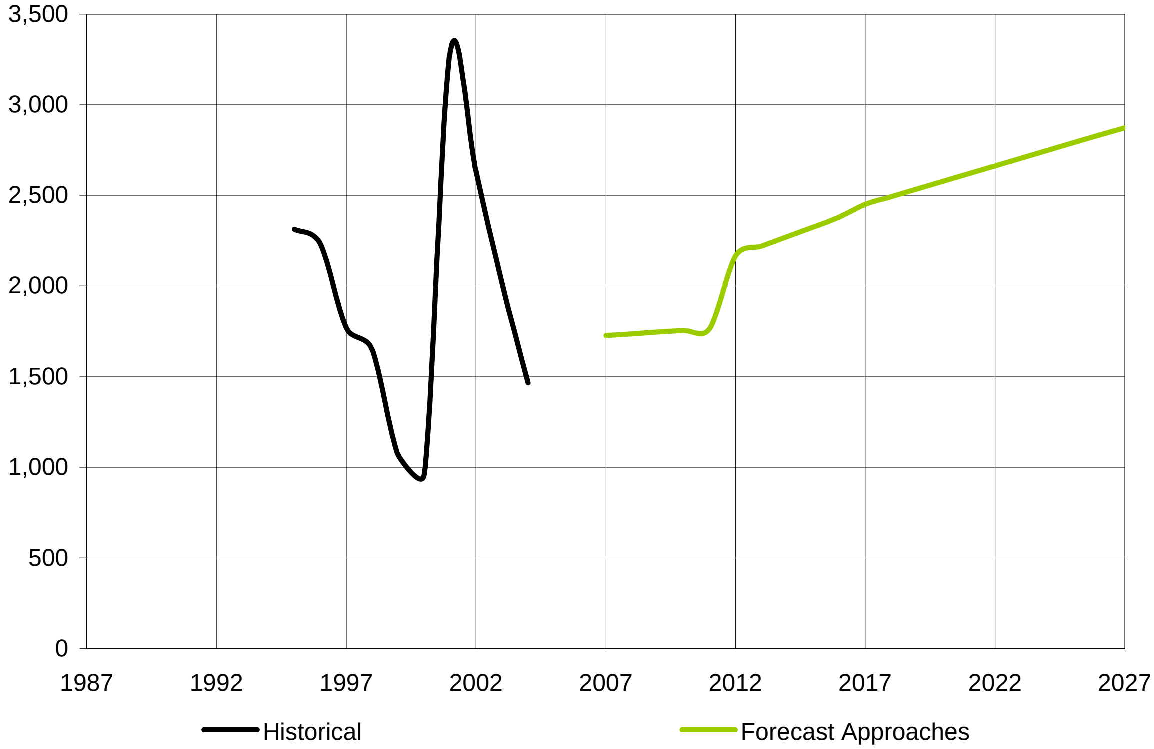
2.7 INSTRUMENT APPROACH FORECAST

An instrument approach, as defined by the FAA for towered airports, is an approach to an airport by an aircraft with an instrument flight plan where visibility is less than three miles or the ceiling is at or below the minimum initial approach altitude. Instrument approaches are used by the FAA to determine an airport's eligibility for enhanced instrument approach capability and additional navigational aides. They are only recorded when an approach is conducted in instrument conditions.

The forecast of instrument approaches was derived by establishing historical instrument approaches as a percentage of total itinerant approaches. Itinerant approaches are used as the base as, in general, local operations do not conduct instrument approaches. There will be a limited number of local instrument approaches associated with training activity at the Airport, but they are assumed to be sufficiently low in quantity to be inconsequential. The historical and the forecast instrument approaches are shown in Table 2-13.

Instrument approaches as a percentage of total itinerant approaches have varied greatly, ranging from 2.9% up to 11.6%. For the historical period from 1995 to 2004, instrument approaches were an average of 6.0% of total itinerant approaches. For this forecast, it is assumed that instrument approaches will be 6.0% of total itinerant approaches. With application of this percentage, total instrument approaches will increase to 2,870 annual instrument approaches at the end of the forecast period.

Table 2-13
TOTAL INSTRUMENT APPROACHES



Year	Instrument Approaches	Itinerant Approaches	% Instrument Approaches
1995	2,314	33,842	6.8%
1996	2,236	29,059	7.7%
1997	1,770	30,098	5.9%
1998	1,647	36,309	4.5%
1999	1,071	34,332	3.1%
2000	961	33,239	2.9%
2001	3,291	28,402	11.6%
2002	2,636	34,712	7.6%
2003	2,021	28,817	7.0%
2004	1,465	32,197	4.6%
2012	2,170	35,830	6.0%
2017	2,450	40,531	6.0%
2027	2,870	47,503	6.0%

Source: FAA Air Traffic Activity Data System, Flight Aware, OSU Airport ATCT, RS&H.
Note: Itinerant approaches are itinerant operations divided by two.

2.8 SUMMARY

Table 2-14 presents the recommended forecast to be used in the remainder of the study. Total annual operations are forecast to grow to 156,630 at the end of the forecast period, reflecting an average annual growth rate of 3.0 percent. The largest growth comes in the air taxi/commuter section that reflects a strong growth in business aviation and charter activity.

The rate of growth in the number of instrument approaches is slightly higher than the rate in growth of total operations. Considering that itinerant aircraft operations have historically grown faster than local aircraft operations, this higher growth rate is reasonable. Itinerant operations tend to be more business and air taxi operations on instrument flight plans, while local operations tend to be more visual operations.

Based aircraft will grow to 360 reflecting unconstrained hangar development to accommodate demand.

Table 2-14
FORECAST SUMMARY

Description	2007		2012	2017	2027	Average Annual Growth (2007 - 2027)
ANNUAL AIRCRAFT OPERATIONS						
Itinerant						
Air Carrier	0		0	0	0	0.0%
Air Taxi/Commuter	3,488		6,529	9,736	11,422	6.1%
General Aviation	57,068		69,478	76,290	89,453	2.3%
Military	297		293	294	295	0.0%
Subtotal	60,853		76,300	86,320	101,170	
Local						
General Aviation	26,268		43,090	47,250	55,400	3.8%
Military	64		60	60	60	0.0%
Subtotal	26,332		43,150	47,310	55,460	
Total	87,185		119,450	133,630	156,630	3.0%
ANNUAL INSTRUMENT APPROACHES						
Runway and Hangar Based	1,727	(est)	2,170	2,450	2,870	2.6%
BASED AIRCRAFT	230		280	307	360	2.3%

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aware, OSU ATCT, Port Columbus Standard Terminal Automated Replacement System (STARS), RS&H

2007 Annual Operations
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

	Air Carrier	***Air Taxi***	***Itinerant General Aviation***	***Local General Aviation***	***Itinerant Military***	***Local Military***	***Total***
Yearly Totals	0	3,488	57,068	26,268	297	64	87,185
Average 24-Hour Day	0.00	9.56	156.35	71.97	0.81	0.18	238.86

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007, OSU ATCT, Port Columbus StandardTerminal Automated Replacement System (STARS), RS&H

2012 Annual Operations
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

	Air Carrier	***Air Taxi***	***Itinerant General Aviation***	***Local General Aviation***	***Itinerant Military***	***Local Military***	***Total***
Yearly Totals	0	6,529	69,478	43,090	293	60	119,450
Average 24-Hour Day	0.00	17.89	190.35	118.05	0.80	0.16	327.26

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007, OSU ATCT, Port Columbus StandardTerminal Automated Replacement System (STARS), RS&H

2027 Annual Operations
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

	Air Carrier	*Air Taxi*	*Itinerant General Aviation*	*Local General Aviation*	*Itinerant Military*	*Local Military*	*Total*
Yearly Totals	0	11,422	89,453	55,400	295	60	156,630
Average 24-Hour Day	0.00	31.29	245.08	151.78	0.81	0.16	429.12

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007, OSU ATCT, Port Columbus StandardTerminal Automated Replacement System (STARS), RS&H

2007 Annual-Average Day Fleet Mix (Itinerant Operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

			Arrivals			*Departures*			*Total*
Category	*Aircraft*	*INM Aircraft*	*Day*	*Night*	*Total*	*Day*	*Night*	*Total*	*Operations*
Jet	Gulfstream II	GII	0.023	0.000	0.023	0.022	0.001	0.023	0.046
	Gulfstream III	GIIB	0.027	0.001	0.028	0.027	0.001	0.028	0.056
	Guldfstream IV	GIV	0.079	0.002	0.081	0.078	0.003	0.081	0.162
	Gulsfstream V	GV	0.022	0.000	0.023	0.022	0.001	0.023	0.045
	CRJ-700	GV	0.002	0.000	0.002	0.002	0.000	0.002	0.003
	Cessna 750	CNA750	0.183	0.010	0.193	0.180	0.014	0.193	0.386
	Canadair BD-100	CL600*	0.523	0.028	0.551	0.512	0.039	0.551	1.102
	Challenger 600	CL600	0.190	0.010	0.200	0.186	0.014	0.200	0.399
	ERJ 135/140	EMB145	0.028	0.001	0.030	0.028	0.002	0.030	0.060
	Falcon 2000	CL600	0.063	0.003	0.067	0.062	0.005	0.067	0.133
	Falcon 900	LEAR35*	0.052	0.003	0.055	0.051	0.004	0.055	0.110
	Falcon 50	LEAR35*	0.055	0.003	0.058	0.054	0.004	0.058	0.117
	Astra 1125	IA1125	0.055	0.004	0.059	0.057	0.003	0.059	0.119
	Beechjet 400	MU3001	1.473	0.111	1.584	1.505	0.079	1.584	3.168
	Citation 525/500	CNA500	0.962	0.072	1.034	0.982	0.052	1.034	2.068
	Citation 550/560	MU3001	2.523	0.190	2.713	2.577	0.136	2.713	5.426
	Citation 650	CIT3	0.077	0.006	0.083	0.079	0.004	0.083	0.167
	Citation 680	MU3001*	0.189	0.014	0.203	0.193	0.010	0.203	0.406
	Falcon 10	LEAR35	0.054	0.004	0.058	0.055	0.003	0.058	0.116
	Falcon 20	CL600	0.085	0.006	0.092	0.087	0.005	0.092	0.183
	Gulfstream 150	LEAR35*	0.009	0.001	0.010	0.009	0.000	0.010	0.020
	Gulfstream 200	GII	0.049	0.004	0.053	0.051	0.003	0.053	0.106
	BAe-125 (400 Series)	LEAR35*	0.012	0.001	0.013	0.013	0.001	0.013	0.026
	BAe-125 (800 Series)	LEAR35	0.553	0.042	0.595	0.565	0.030	0.595	1.189
	Bae-125 (1000 Series)	LEAR35*	0.025	0.002	0.026	0.025	0.001	0.026	0.053
	Dornier 328	CNA750*	0.028	0.002	0.030	0.029	0.002	0.030	0.061
	Lear 24/25	LEAR25	0.137	0.010	0.147	0.140	0.007	0.147	0.295
	Lear 31/35/40/45/55/60	LEAR35	0.618	0.047	0.664	0.631	0.033	0.664	1.329
	Mitsubishi Diamond	CNA500	0.104	0.008	0.112	0.106	0.006	0.112	0.224
	Raytheon 390	MU3001*	0.020	0.002	0.021	0.020	0.001	0.021	0.043
	Sabreliner	LEAR35	0.034	0.003	0.037	0.035	0.002	0.037	0.073
	Westwind 1124	IA1125	0.014	0.001	0.015	0.014	0.001	0.015	0.030
	Subtotal		**8.271**	**0.589**	**8.860**	**8.396**	**0.465**	**8.860**	**17.721**
Multi-Engine/Turbopro	Gulf Aero Commander	CNA441	0.706	0.105	0.811	0.730	0.081	0.811	1.622
	EMB-120	EMB120	0.025	0.004	0.028	0.025	0.003	0.028	0.057
	Beech 1900	1900D	0.041	0.006	0.047	0.042	0.005	0.047	0.094
	Raytheon B300	DHC6	1.752	0.262	2.014	1.812	0.201	2.014	4.027
	Beech King Air	CNA441	2.597	0.388	2.985	2.686	0.298	2.985	5.970
	Beech Super King Air	DHC6	3.032	0.453	3.485	3.136	0.348	3.485	6.970
	Swearingen Merlin 4	DHC6	0.012	0.002	0.014	0.013	0.001	0.014	0.028
	Cessna Conquest	CNA441	0.131	0.020	0.151	0.136	0.015	0.151	0.302
	Jetstream Super 31	DHC6	0.025	0.004	0.028	0.025	0.003	0.028	0.057
	Mitsubishi MU2	DHC6	0.037	0.006	0.042	0.038	0.004	0.042	0.085
	P180 Avanti	DHC6*	0.402	0.060	0.462	0.416	0.046	0.462	0.925
	Piper Cheyenne	CNA441	0.968	0.145	1.113	1.002	0.111	1.113	2.226
	Swearingen Merlin 3	CNA441	0.033	0.005	0.038	0.034	0.004	0.038	0.075
	Partinavia P68	BEC58P*	0.024	0.004	0.027	0.025	0.003	0.027	0.055
	Piper Comanche	PA30	0.065	0.010	0.075	0.068	0.008	0.075	0.150
	Diamond Twin Star	BEC58P*	0.002	0.000	0.002	0.002	0.000	0.002	0.005
	Piper Chieftain	PA31	1.659	0.248	1.907	1.717	0.191	1.907	3.815
	Cessna Caravan II	BEC58P*	0.030	0.004	0.034	0.031	0.003	0.034	0.069
	Cessna Caravan I	GASEPF	0.647	0.013	0.660	0.614	0.046	0.660	1.320
	Lancair Columbia 400	GASEPF*	0.198	0.004	0.202	0.188	0.014	0.202	0.404

	Malibu Meridian	GASEPV	0.415	0.008	0.423	0.394	0.030	0.423	0.847
	Pilatus PC12	GASEPV*	0.989	0.020	1.009	0.938	0.071	1.009	2.018
	Aerospatiale Socata	GASEPV	0.845	0.017	0.862	0.801	0.060	0.862	1.724
	Multiple Aircraft (1)	BEC58P	0.940	0.653	1.592	1.003	0.589	1.592	3.185
	Subtotal		**15.574**	**2.441**	**18.014**	**15.877**	**2.137**	**18.014**	**36.028**
Single Engine	Cessna 180/182/206/210	CNA206	4.996	0.319	5.315	5.103	0.213	5.315	10.631
	Cessna 150/152/172/172RG/177	CNA172	13.996	0.893	14.889	14.294	0.596	14.889	29.778
	Piper Warrior	PA28	6.091	0.389	6.479	6.220	0.259	6.479	12.959
	Multiple Aircraft (2)	GASEPV	13.539	0.864	14.404	13.827	0.576	14.404	28.807
	Multiple Aircraft (3)	GASEPF	0.853	0.064	0.918	0.899	0.018	0.918	1.835
	Subtotal		**39.476**	**2.529**	**42.005**	**40.343**	**1.662**	**42.005**	**84.010**
Helicopter	Eurocopter Astar	SA350D	4.913	0.259	5.171	4.913	0.259	5.171	10.342
	Sikorsky S-76A	S76	0.190	0.010	0.200	0.190	0.010	0.200	0.400
	Eurocopter EC-135	EC130	2.670	0.141	2.811	2.670	0.141	2.811	5.621
	Aerospatiale Dauphin	SA365N	1.414	0.074	1.488	1.414	0.074	1.488	2.977
	Kawasaki BK-117	B206L*	3.433	0.181	3.614	3.433	0.181	3.614	7.227
	Bell Jet Ranger	B206L	0.751	0.040	0.790	0.751	0.040	0.790	1.581
	Subtotal		**13.370**	**0.704**	**14.074**	**13.370**	**0.704**	**14.074**	**28.148**
Military	UH-60 Blackhawk	S70	0.305	0.000	0.305	0.305	0.000	0.305	0.610
	UH-1 Huey	B212	0.102	0.000	0.102	0.102	0.000	0.102	0.203
	Subtotal		**0.407**	**0.000**	**0.407**	**0.407**	**0.000**	**0.407**	**0.814**
	TOTAL		**77.097**	**6.263**	**83.360**	**78.393**	**4.967**	**83.360**	**166.720**

Sources: Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H
* Requires FAA approval of aircraft substitution
Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

2012 Annual-Average Day Fleet Mix (Itinerant Operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	Aircraft	INM Aircraft	Arrivals Day	Arrivals Night	Arrivals Total	Departures Day	Departures Night	Departures Total	Total Operations
Jet	Gulfstream II	GII	0.034	0.001	0.035	0.034	0.001	0.035	0.070
	Gulfstream III	GIIB	0.041	0.001	0.042	0.040	0.002	0.042	0.084
	Guldfstream IV	GIV	0.121	0.002	0.123	0.118	0.005	0.123	0.246
	Gulsfstream V	GV	0.034	0.001	0.034	0.033	0.001	0.034	0.069
	CRJ-700	GV	0.002	0.000	0.002	0.002	0.000	0.002	0.005
	Cessna 750	CNA750	0.272	0.014	0.287	0.267	0.020	0.287	0.573
	Canadair BD-100	CL600*	0.777	0.041	0.818	0.760	0.057	0.818	1.635
	Challenger 600	CL600	0.282	0.015	0.296	0.276	0.021	0.296	0.593
	ERJ 135/140	EMB145	0.042	0.002	0.044	0.041	0.003	0.044	0.089
	Falcon 2000	CL600	0.094	0.005	0.099	0.092	0.007	0.099	0.198
	Falcon 900	LEAR35*	0.077	0.004	0.082	0.076	0.006	0.082	0.163
	Falcon 50	LEAR35*	0.082	0.004	0.087	0.080	0.006	0.087	0.173
	Astra 1125	IA1125	0.074	0.006	0.080	0.076	0.004	0.080	0.159
	Beechjet 400	MU3001	1.970	0.148	2.118	2.013	0.106	2.118	4.237
	Citation 525/500	CNA500	1.286	0.097	1.383	1.314	0.069	1.383	2.765
	Citation 550/560	MU3001	3.374	0.254	3.628	3.447	0.181	3.628	7.256
	Citation 650	CIT3	0.104	0.008	0.111	0.106	0.006	0.111	0.223
	Citation 680	MU3001*	0.253	0.019	0.272	0.258	0.014	0.272	0.543
	Falcon 10	LEAR35	0.072	0.005	0.077	0.073	0.004	0.077	0.155
	Falcon 20	CL600	0.114	0.009	0.122	0.116	0.006	0.122	0.245
	Gulfstream 150	LEAR35*	0.012	0.001	0.013	0.013	0.001	0.013	0.027
	Gulfstream 200	GII	0.066	0.005	0.071	0.068	0.004	0.071	0.142
	BAe-125 (400 Series)	LEAR35*	0.016	0.001	0.018	0.017	0.001	0.018	0.035
	BAe-125 (800 Series)	LEAR35	0.739	0.056	0.795	0.755	0.040	0.795	1.590
	Bae-125 (1000 Series)	LEAR35*	0.033	0.002	0.035	0.034	0.002	0.035	0.071
	Dornier 328	CNA750*	0.038	0.003	0.041	0.039	0.002	0.041	0.081
	Lear 24/25	LEAR25	0.183	0.014	0.197	0.187	0.010	0.197	0.394
	Lear 31/35/40/45/55/60	LEAR35	0.826	0.062	0.888	0.844	0.044	0.888	1.777
	Mitsubishi Diamond	CNA500	0.139	0.010	0.150	0.142	0.007	0.150	0.299
	Raytheon 390	MU3001*	0.027	0.002	0.029	0.027	0.001	0.029	0.057
	Sabreliner	LEAR35	0.046	0.003	0.049	0.047	0.002	0.049	0.098
	Westwind 1124	IA1125	0.018	0.001	0.020	0.019	0.001	0.020	0.040
	VLJ	CNA750*	2.185	0.164	2.349	2.232	0.117	2.349	4.699
	Subtotal		**13.434**	**0.962**	**14.396**	**13.644**	**0.752**	**14.396**	**28.792**
Multi-Engine/Turboprop	Gulf Aero Commander	CNA441	0.883	0.132	1.015	0.914	0.102	1.015	2.031
	EMB-120	EMB120	0.031	0.005	0.035	0.032	0.004	0.035	0.071
	Beech 1900	1900D	0.051	0.008	0.059	0.053	0.006	0.059	0.118
	Raytheon B300	DHC6	2.193	0.328	2.520	2.268	0.252	2.520	5.041
	Beech King Air	CNA441	3.250	0.486	3.736	3.362	0.374	3.736	7.472
	Beech Super King Air	DHC6	3.795	0.567	4.362	3.926	0.436	4.362	8.723
	Swearingen Merlin 4	DHC6	0.015	0.002	0.018	0.016	0.002	0.018	0.035
	Cessna Conquest	CNA441	0.164	0.025	0.189	0.170	0.019	0.189	0.378
	Jetstream Super 31	DHC6	0.031	0.005	0.035	0.032	0.004	0.035	0.071
	Mitsubishi MU2	DHC6	0.046	0.007	0.053	0.048	0.005	0.053	0.106
	P180 Avanti	DHC6*	0.503	0.075	0.579	0.521	0.058	0.579	1.157
	Piper Cheyenne	CNA441	1.212	0.181	1.393	1.254	0.139	1.393	2.787
	Swearingen Merlin 3	CNA441	0.041	0.006	0.047	0.043	0.005	0.047	0.094
	Partinavia P68	BEC58P*	0.027	0.004	0.031	0.028	0.003	0.031	0.062
	Piper Comanche	PA30	0.075	0.011	0.086	0.077	0.009	0.086	0.172
	Diamond Twin Star	BEC58P*	0.002	0.000	0.003	0.002	0.000	0.003	0.005
	Piper Chieftain	PA31	1.895	0.283	2.179	1.961	0.218	2.179	4.357
	Cessna Caravan II	BEC58P*	0.038	0.006	0.043	0.039	0.004	0.043	0.086
	Cessna Caravan I	GASEPF	0.808	0.016	0.825	0.767	0.058	0.825	1.650
	Lancair Columbia 400	GASEPF*	0.248	0.005	0.253	0.235	0.018	0.253	0.505
	Malibu Meridian	GASEPV	0.519	0.011	0.529	0.492	0.037	0.529	1.058
	Pilatus PC12	GASEPV*	1.237	0.025	1.262	1.174	0.088	1.262	2.524
	Aerospatiale Socata	GASEPV	1.056	0.022	1.077	1.002	0.075	1.077	2.155
	Multiple Aircraft (1)	BEC58P	1.073	0.745	1.818	1.145	0.673	1.818	3.636
	Subtotal		**19.194**	**2.954**	**22.148**	**19.561**	**2.587**	**22.148**	**44.296**
Single Engine	Cessna 180/182/206/210	CNA206	5.714	0.365	6.079	5.836	0.243	6.079	12.158
	Cessna 150/152/172/172RG/177	CNA172	15.956	1.018	16.975	16.296	0.679	16.975	33.949
	Piper Warrior	PA28	6.966	0.445	7.411	7.115	0.296	7.411	14.822
	Multiple Aircraft (2)	GASEPV	15.609	0.996	16.605	15.941	0.664	16.605	33.210
	Multiple Aircraft (3)	GASEPF	0.976	0.073	1.050	1.029	0.021	1.050	2.099

		Subtotal		**45.222**	**2.898**	**48.119**	**46.215**	**1.904**	**48.119**	**96.238**
Helicopter	Eurocopter Astar		SA350D	6.791	0.357	7.149	6.791	0.357	7.149	14.298
	Sikorsky S-76A		S76	0.262	0.014	0.276	0.262	0.014	0.276	0.552
	Eurocopter EC-135		EC130	8.437	0.444	8.881	8.437	0.444	8.881	17.761
	Aerospatiale Dauphin		SA365N	1.955	0.103	2.058	1.955	0.103	2.058	4.116
	Kawasaki BK-117		B206L*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Bell Jet Ranger		B206L	1.038	0.055	1.093	1.038	0.055	1.093	2.185
		Subtotal		**18.483**	**0.973**	**19.456**	**18.483**	**0.973**	**19.456**	**38.912**
Military	UH-60 Blackhawk		S70	0.301	0.000	0.301	0.301	0.000	0.301	0.602
	UH-1 Huey		B212	0.100	0.000	0.100	0.100	0.000	0.100	0.201
		Subtotal		**0.401**	**0.000**	**0.401**	**0.401**	**0.000**	**0.401**	**0.803**
		TOTAL		**96.734**	**7.786**	**104.521**	**98.305**	**6.216**	**104.521**	**209.041**

Sources: Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

2027 Annual-Average Day Fleet Mix (Itinerant Operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	Aircraft	INM Aircraft	Arrivals Day	Arrivals Night	Arrivals Total	Departures Day	Departures Night	Departures Total	Total Operations
Jet	Gulfstream II	GII	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Gulfstream III	GIIB	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Guldfstream IV	GIV	0.175	0.004	0.179	0.172	0.007	0.179	0.357
	Gulsfstream V	GV	0.154	0.003	0.157	0.151	0.006	0.157	0.315
	CRJ-700	GV	0.004	0.000	0.004	0.003	0.000	0.004	0.007
	Cessna 750	CNA750	0.388	0.020	0.408	0.380	0.029	0.408	0.817
	Canadair BD-100	CL600*	1.107	0.058	1.165	1.084	0.082	1.165	2.330
	Challenger 600	CL600	0.401	0.021	0.422	0.393	0.030	0.422	0.845
	ERJ 135/140	EMB145	0.060	0.003	0.063	0.059	0.004	0.063	0.127
	Falcon 2000	CL600	0.134	0.007	0.141	0.131	0.010	0.141	0.282
	Falcon 900	LEAR35*	0.227	0.012	0.239	0.223	0.017	0.239	0.479
	Falcon 50	LEAR35*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Astra 1125	IA1125	0.105	0.008	0.113	0.108	0.006	0.113	0.226
	Beechjet 400	MU3001	2.804	0.211	3.015	2.864	0.151	3.015	6.029
	Citation 525/500	CNA500	1.830	0.138	1.967	1.869	0.098	1.967	3.935
	Citation 550/560	MU3001	4.801	0.361	5.163	4.905	0.258	5.163	10.325
	Citation 650	CIT3	0.628	0.047	0.676	0.642	0.034	0.676	1.351
	Citation 680	MU3001*	0.624	0.047	0.671	0.637	0.034	0.671	1.342
	Falcon 10	LEAR35	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Falcon 20	CL600	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Gulfstream 150	LEAR35*	0.018	0.001	0.019	0.018	0.001	0.019	0.038
	Gulfstream 200	GII	0.094	0.007	0.101	0.096	0.005	0.101	0.202
	BAe-125 (400 Series)	LEAR35*	0.023	0.002	0.025	0.024	0.001	0.025	0.050
	BAe-125 (800 Series)	LEAR35	1.052	0.079	1.131	1.075	0.057	1.131	2.263
	Bae-125 (1000 Series)	LEAR35*	0.047	0.004	0.050	0.048	0.003	0.050	0.101
	Dornier 328	CNA750*	0.054	0.004	0.058	0.055	0.003	0.058	0.116
	Lear 24/25	LEAR25	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Lear 31/35/40/45/55/60	LEAR35	1.020	0.077	1.097	1.042	0.055	1.097	2.194
	Mitsubishi Diamond	CNA500	0.198	0.015	0.213	0.202	0.011	0.213	0.426
	Raytheon 390	MU3001*	0.038	0.003	0.041	0.039	0.002	0.041	0.082
	Sabreliner	LEAR35	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Westwind 1124	IA1125	0.026	0.002	0.028	0.027	0.001	0.028	0.057
	VLJ	CNA750*	7.765	0.584	8.349	7.932	0.417	8.349	16.699
	Subtotal		**23.778**	**1.719**	**25.497**	**24.177**	**1.320**	**25.497**	**50.995**
Multi-Engine/Turboprc	Gulf Aero Commander	CNA441	1.181	0.176	1.357	1.221	0.136	1.357	2.714
	EMB-120	EMB120	0.041	0.006	0.047	0.043	0.005	0.047	0.095
	Beech 1900	1900D	0.069	0.010	0.079	0.071	0.008	0.079	0.158
	Raytheon B300	DHC6	2.931	0.438	3.369	3.032	0.337	3.369	6.737
	Beech King Air	CNA441	4.344	0.649	4.993	4.494	0.499	4.993	9.986
	Beech Super King Air	DHC6	5.071	0.758	5.829	5.246	0.583	5.829	11.659
	Swearingen Merlin 4	DHC6	0.021	0.003	0.024	0.021	0.002	0.024	0.047
	Cessna Conquest	CNA441	0.220	0.033	0.253	0.227	0.025	0.253	0.505
	Jetstream Super 31	DHC6	0.041	0.006	0.047	0.043	0.005	0.047	0.095
	Mitsubishi MU2	DHC6	0.062	0.009	0.071	0.064	0.007	0.071	0.142
	P180 Avanti	DHC6*	0.673	0.101	0.773	0.696	0.077	0.773	1.547
	Piper Cheyenne	CNA441	1.620	0.242	1.862	1.676	0.186	1.862	3.724
	Swearingen Merlin 3	CNA441	0.055	0.008	0.063	0.057	0.006	0.063	0.126
	Partinavia P68	BEC58P*	0.030	0.005	0.035	0.031	0.003	0.035	0.070
	Piper Comanche	PA30	0.084	0.012	0.096	0.086	0.010	0.096	0.192
	Diamond Twin Star	BEC58P*	0.003	0.000	0.003	0.003	0.000	0.003	0.006
	Piper Chieftain	PA31	2.120	0.317	2.437	2.193	0.244	2.437	4.874
	Cessna Caravan II	BEC58P*	0.050	0.007	0.058	0.052	0.006	0.058	0.115
	Cessna Caravan I	GASEPF	1.079	0.022	1.101	1.024	0.077	1.101	2.202
	Lancair Columbia 400	GASEPF*	0.330	0.007	0.337	0.314	0.024	0.337	0.674
	Malibu Meridian	GASEPV	0.692	0.014	0.706	0.657	0.049	0.706	1.413
	Pilatus PC12	GASEPV*	1.651	0.034	1.684	1.566	0.118	1.684	3.369
	Aerospatiale Socata	GASEPV	1.409	0.029	1.438	1.337	0.101	1.438	2.876
	Multiple Aircraft (1)	BEC58P	1.200	0.834	2.034	1.282	0.753	2.034	4.069
	Subtotal		**24.976**	**3.721**	**28.697**	**25.436**	**3.261**	**28.697**	**57.394**

Single Engine	Cessna 180/182/206/21	CNA206	6.391	0.408	6.798	6.526	0.272	6.798	13.597
	Cessna 150/152/172/17	CNA172	17.844	1.139	18.983	18.224	0.759	18.983	37.966
	Piper Warrior	PA28	7.791	0.497	8.288	7.956	0.332	8.288	16.576
	Multiple Aircraft (2)	GASEPV	17.638	1.126	18.764	18.013	0.751	18.764	37.528
	Multiple Aircraft (3)	GASEPF	1.092	0.082	1.174	1.150	0.023	1.174	2.348
	Subtotal		**50.755**	**3.252**	**54.007**	**51.870**	**2.137**	**54.007**	**108.014**
Helicopter	Eurocopter Astar	SA350D	10.466	0.551	11.017	10.466	0.551	11.017	22.034
	Sikorsky S-76A	S76	0.404	0.021	0.426	0.404	0.021	0.426	0.851
	Eurocopter EC-135	EC130	13.001	0.684	13.686	13.001	0.684	13.686	27.371
	Aerospatiale Dauphin	SA365N	3.013	0.159	3.171	3.013	0.159	3.171	6.342
	Kawasaki BK-117	B206L*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Bell Jet Ranger	B206L	1.600	0.084	1.684	1.600	0.084	1.684	3.368
	Subtotal		**28.484**	**1.499**	**29.984**	**28.484**	**1.499**	**29.984**	**59.967**
Military	UH-60 Blackhawk	S70	0.404	0.000	0.404	0.404	0.000	0.404	0.808
	UH-1 Huey	B212	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Subtotal		**0.404**	**0.000**	**0.404**	**0.404**	**0.000**	**0.404**	**0.808**
	TOTAL		**128.398**	**10.191**	**138.589**	**130.372**	**8.217**	**138.589**	**277.178**

Sources: Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

2007 Annual-Average Day Fleet Mix (Local operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

			Touch and Go		
Category	***Aircraft***	***INM Aircraft***	***Day***	***Night***	***Total***
ME/TP	Partenavia P68	BEC58P*	0.006	0.000	0.006
	Piper Comanche	PA30	0.017	0.000	0.017
	Diamond Twin Star	BEC58P*	0.000	0.000	0.000
	Piper Chieftain	PA31	0.323	0.007	0.330
	Multiple Aircraft (1)	BEC58P	0.346	0.001	0.347
	Subtotal		**0.693**	**0.007**	**0.700**
Single Engine	Cessna 180/182/206/210	CNA206	8.451	0.404	8.855
	Cessna 150/152/172/172RG/177	CNA172	25.175	1.195	26.370
	Piper Warrior	PA28	10.946	0.569	11.515
	Multiple Aircraft (2)	GASEPV	21.855	1.037	22.892
	Multiple Aircraft (3)	GASEPF	1.633	0.000	1.633
	Subtotal		**68.060**	**3.206**	**71.267**
Military	UH-60 Blackhawk	S70	0.132	0.000	0.132
	UH-1 Huey	B212	0.044	0.000	0.044
	Subtotal		**0.175**	**0.000**	**0.175**
	TOTAL		**68.928**	**3.214**	**72.142**

Sources: Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

2012 Annual-Average Day Fleet Mix (Local operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	Aircraft	INM Aircraft	Touch and Go Day	Night	Total
ME/TP	Partenavia P68	BEC58P*	0.010	0.000	0.010
	Piper Comanche	PA30	0.028	0.000	0.028
	Diamond Twin Star	BEC58P*	0.001	0.000	0.001
	Piper Chieftain	PA31	0.530	0.010	0.540
	Multiple Aircraft (1)	BEC58P	0.568	0.001	0.569
	Subtotal		**1.137**	**0.011**	**1.148**
Single Engine	Cessna 180/182/206/210	CNA206	13.862	0.664	14.526
	Cessna 150/152/172/172RG/177	CNA172	41.299	1.960	43.259
	Piper Warrior	PA28	17.957	0.933	18.890
	Multiple Aircraft (2)	GASEPV	35.849	1.703	37.552
	Multiple Aircraft (3)	GASEPF	2.680	0.000	2.680
	Subtotal		**111.647**	**5.260**	**116.907**
Military	UH-60 Blackhawk	S70	0.123	0.000	0.123
	UH-1 Huey	B212	0.041	0.000	0.041
	Subtotal		**0.164**	**0.000**	**0.164**
	TOTAL		**112.948**	**5.271**	**118.219**

Sources: Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

2027 Annual-Average Day Fleet Mix (Local operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	Aircraft	INM Aircraft	Touch and Go Day	Touch and Go Night	Touch and Go Total
ME/TP	Partinavia P68	BEC58P*	0.013	0.000	0.013
	Piper Comanche	PA30	0.036	0.000	0.036
	Diamond Twin Star	BEC58P*	0.001	0.000	0.001
	Piper Chieftain	PA31	0.683	0.012	0.695
	Multiple Aircraft (1)	BEC58P	0.730	0.002	0.732
	Subtotal		**1.463**	**0.014**	**1.477**
Single Engine	Cessna 180/182/206/210	CNA206	17.823	0.854	18.677
	Cessna 150/152/172/172RG/177	CNA172	53.095	2.520	55.616
	Piper Warrior	PA28	23.086	1.200	24.286
	Multiple Aircraft (2)	GASEPV	46.091	2.190	48.281
	Multiple Aircraft (3)	GASEPF	3.445	0.000	3.445
	Subtotal		**143.540**	**6.764**	**150.304**
Military	UH-60 Blackhawk	S70	0.164	0.000	0.164
	UH-1 Huey	B212	0.000	0.000	0.000
	Subtotal		**0.164**	**0.000**	**0.164**
	TOTAL		**145.167**	**6.778**	**151.945**

Sources: Flight Aware Ohio State University Airport Activity July 23, 2006 to July 23, 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

2007 Runway Utilization (Itinerant)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Runway	*Jets*	*Multi-Engine*	*Single-Engine*
9L	0.00%	2.60%	2.34%
27R	0.00%	4.01%	6.95%
9R	31.08%	35.95%	40.37%
27L	68.92%	54.03%	44.98%
5	0.00%	1.60%	3.72%
23	0.00%	0.52%	0.23%
14	0.00%	0.53%	0.60%
32	0.00%	0.77%	0.79%
Total	**100.00%**	**100.00%**	**100.00%**

Source: ATCT; AirScene

2012/2027 Runway Utilization (Itinerant & Local)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Runway	*Jets*	*Multi-Engine*	*Single-Engine*
9L	26.40%	11.55%	4.95%
27R	53.60%	23.45%	10.05%
9R	6.60%	19.80%	26.40%
27L	13.40%	40.20%	53.60%
5	0.00%	1.25%	1.25%
23	0.00%	3.75%	3.75%
14	0.00%	0.00%	0.00%
32	0.00%	0.00%	0.00%
Total	**100.00%**	**100.00%**	**100.00%**

Source: Aircraft Noise Study for Ohio State University Airport; Draft Master Plan

Existing Track Use Percentages - Jet
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RJAE1	6.5
		09RJAE2	5.2
		09RJAE3	6.5
		09RJAE4	2.6
		09RJAE5	15.6
		09RJAE6	9.7
		09RJAE7	27.9
		09RJAE8	6.5
		09RJAE9	4.5
		09RJAE10	5.8
		09RJAE11	3.9
		09RJAE12	5.2
		Total	**100.0**
	27L	27LJAW1	4.4
		27LJAW2	3.9
		27LJAW3	3.4
		27LJAW4	3.9
		27LJAW5	42.7
		27LJAW6	4.4
		27LJAW7	1.5
		27LJAW8	1.5
		27LJAW9	1.5
		27LJAW10	3.9
		27LJAW11	5.8
		27LJAW12	10.7
		27LJAW13	7.8
		27LJAW14	4.9
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RJDE1	7.1
		09RJDE2	21.3
		09RJDE3	3.9
		09RJDE4	21.3
		09RJDE5	8.4
		09RJDE6	14.2
		09RJDE7	3.2
		09RJDE8	7.1
		09RJDE9	3.9
		09RJDE10	9.7
		Total	**100.0**
	27L	27LJDW1	20.2
		27LJDW2	12.4
		27LJDW3	4.7
		27LJDW4	17.1
		27LJDW5	10.1
		27LJDW6	12.4
		27LJDW7	3.9
		27LJDW8	10.9
		27LJDW9	6.2
		27LJDW10	2.3
		Total	**100.0**

Source:AirScene; ESA Airports

Existing Track Use Percentages - Propeller Aircraft
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RTAE1	5.2
		09RTAE2	8.6
		09RTAE3	5.2
		09RTAE4	6.9
		09RTAE5	50.0
		09RTAE6	5.2
		09RTAE7	13.8
		09RTAE8	5.2
		Total	**100.0**
	27L	27LTAW1	17.9
		27LTAW2	40.3
		27LTAW3	4.5
		27LTAW4	7.5
		27LTAW5	6.0
		27LTAW6	6.0
		27LTAW7	17.9
		Total	**100.0**
	5	05PAE1	14.3
		05PAE2	64.3
		05PAE3	21.4
		Total	**100.0**
	14	14PAW1	25.0
		14PAW2	50.0
		14PAW3	25.0
		Total	**100.0**
	23	23PAW1	40.0
		23PAW2	40.0
		23PAW3	20.0
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RTDE1	13.0
		09RTDE2	13.0
		09RTDE3	20.4
		09RTDE4	16.7
		09RTDE5	18.5
		09RTDE6	3.7
		09RTDE7	7.4
		09RTDE8	7.4
		Total	**100.0**
	27L	27LTDW1	12.9
		27LTDW2	17.1
		27LTDW3	24.3
		27LTDW4	5.7
		27LTDW5	7.1
		27LTDW6	10.0
		27LTDW7	14.3
		27LTDW8	8.6
		Total	**100.0**
	5	05PDE1	47.6
		05PDE2	23.8
		05PDE3	9.5
		05PDE4	19.0
		Total	**100.0**
	23	23PDW1	25.0
		23PDW2	33.3
		23PDW3	25.0
		23PDW4	16.7
		Total	**100.0**
	32	32PDW1	50.0
		32PDW2	25.0
		32PDW3	25.0
		Total	**100.0**

Source:AirScene; ESA Airports

Existing Track Use Percentages - Touch And Go
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	***Runway***	***Track***	***Percent Use %***
East Flow	9L	09LTGO1	23.4
		09LTGO2	25.5
		09LTGO3	27.7
	9R	09RTGO1	23.4
		Total	**100.0**
West Flow	27R	27RTGO1	23.4
		27RTGO2	25.5
		27RTGO3	27.7
	27L	27LTGO1	23.4
		Total	**100.0**

Source:AirScene; ESA Airports

Existing Track Use Percentages - Helicopters
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	H1	HD1	60.7
		HD2	15.7
		HD3	23.6
		Total	**100.0**
Departures	H2	HA1	2.5
		HA2	10.7
		HA3	32.8
		HA4	25.4
		HA5	9.0
		HA6	6.6
		HA7	1.6
		HA8	4.1
		HA9	5.7
		HA10	1.6
		Total	**100.0**

Source:AirScene; ESA Airports

Future Track Use Percentages - Jet
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	Runway	Track	Percent Use %
Arrivals	9R	09RJAE1	6.5
		09RJAE2	5.2
		09RJAE3	6.5
		09RJAE4	2.6
		09RJAE5	15.6
		09RJAE6	9.7
		09RJAE7	27.9
		09RJAE8	6.5
		09RJAE9	4.5
		09RJAE10	5.8
		09RJAE11	3.9
		09RJAE12	5.2
		Total	**100.0**
	27L	27LJAW1	4.4
		27LJAW2	3.9
		27LJAW3	3.4
		27LJAW4	3.9
		27LJAW5	42.7
		27LJAW6	4.4
		27LJAW7	1.5
		27LJAW8	1.5
		27LJAW9	1.5
		27LJAW10	3.9
		27LJAW11	5.8
		27LJAW12	10.7
		27LJAW13	7.8
		27LJAW14	4.9
		Total	**100.0**
	9L	9LXJAE1	6.5
		9LXJAE2	5.2
		9LXJAE3	6.5
		9LXJAE4	2.6
		9LXJAE5	15.6
		9LXJAE6	9.7
		9LXJAE7	27.9
		9LXJAE8	6.5
		9LXJAE9	4.5
		9LXJAE10	5.8
		9LXJAE11	3.9
		9LXJAE12	5.2
		Total	**100.0**
	27R	7RXJAW1	4.4
		7RXJAW2	3.9
		7RXJAW3	3.4
		7RXJAW4	3.9
		7RXJAW5	42.7
		7RXJAW6	4.4
		7RXJAW7	1.5
		7RXJAW8	1.5
		7RXJAW9	1.5
		7RXJAW10	3.9
		7RXJAW11	5.8
		7RXJAW12	10.7
		7RXJAW13	7.8
		7RXJAW14	4.9
		Total	**100.0**

Operation Type	Runway	Track	Percent Use %
Departures	9L	9LXJDE1	7.1
		9LXJDE2	21.3
		9LXJDE3	3.9
		9LXJDE4	21.3
		9LXJDE5	8.4
		9LXJDE6	14.2
		9LXJDE7	3.2
		9LXJDE8	7.1
		9LXJDE9	3.9
		9LXJDE10	9.7
		Total	**100.0**
	27R	7RXJDW1	20.2
		7RXJDW2	12.4
		7RXJDW3	4.7
		7RXJDW4	17.1
		7RXJDW5	10.1
		7RXJDW6	12.4
		7RXJDW7	3.9
		7RXJDW8	10.9
		7RXJDW9	6.2
		7RXJDW10	2.3
		Total	**100.0**
	9R	09RJDE1	7.1
		09RJDE2	21.3
		09RJDE3	3.9
		09RJDE4	21.3
		09RJDE5	8.4
		09RJDE6	14.2
		09RJDE7	3.2
		09RJDE8	7.1
		09RJDE9	3.9
		09RJDE10	9.7
		Total	**100.0**
	27L	27LJDW1	20.2
		27LJDW2	12.4
		27LJDW3	4.7
		27LJDW4	17.1
		27LJDW5	10.1
		27LJDW6	12.4
		27LJDW7	3.9
		27LJDW8	10.9
		27LJDW9	6.2
		27LJDW10	2.3
		Total	**100.0**

Source:AirScene; ESA Airports

Future Track Use Percentages - Propeller Aircraft
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RTAE1	5.2
		09RTAE2	8.6
		09RTAE3	5.2
		09RTAE4	6.9
		09RTAE5	50.0
		09RTAE6	5.2
		09RTAE7	13.8
		09RTAE8	5.2
		Total	**100.0**
	27L	27LTAW1	17.9
		27LTAW2	40.3
		27LTAW3	4.5
		27LTAW4	7.5
		27LTAW5	6.0
		27LTAW6	6.0
		27LTAW7	17.9
		Total	**100.0**
	9L	9LXTAE1	5.2
		9LXTAE2	8.6
		9LXTAE3	5.2
		9LXTAE4	6.9
		9LXTAE5	50.0
		9LXTAE6	5.2
		9LXTAE7	13.8
		9LXTAE8	5.2
		Total	**100.0**
	27R	7RXTAW1	17.9
		7RXTAW2	40.3
		7RXTAW3	4.5
		7RXTAW4	7.5
		7RXTAW5	6.0
		7RXTAW6	6.0
		7RXTAW7	17.9
		Total	**100.0**
	5	05PAE1	14.3
		05PAE2	64.3
		05PAE3	21.4
		Total	**100.0**
	23	23PAW1	40.0
		23PAW2	40.0
		23PAW3	20.0
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RTDE1	13.0
		09RTDE2	13.0
		09RTDE3	20.4
		09RTDE4	16.7
		09RTDE5	18.5
		09RTDE6	3.7
		09RTDE7	7.4
		09RTDE8	7.4
		Total	**100.0**
	27L	27LTDW1	12.9
		27LTDW2	17.1
		27LTDW3	24.3
		27LTDW4	5.7
		27LTDW5	7.1
		27LTDW6	10.0
		27LTDW7	14.3
		27LTDW8	8.6
		Total	**100.0**
	9L	9LXTDE1	13.0
		9LXTDE2	13.0
		9LXTDE3	20.4
		9LXTDE4	16.7
		9LXTDE5	18.5
		9LXTDE6	3.7
		9LXTDE7	7.4
		9LXTDE8	7.4
		Total	**100.0**
	27R	7RXTDW1	12.9
		7RXTDW2	17.1
		7RXTDW3	24.3
		7RXTDW4	5.7
		7RXTDW5	7.1
		7RXTDW6	10.0
		7RXTDW7	14.3
		7RXTDW8	8.6
	5	05PDE1	47.6
		05PDE2	23.8
		05PDE3	9.5
		05PDE4	19.0
		Total	**100.0**
	23	23PDW1	25.0
		23PDW2	33.3
		23PDW3	25.0
		23PDW4	16.7
		Total	**100.0**

Source:AirScene; ESA Airports

Future Track Use Percentages - Touch And Go
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

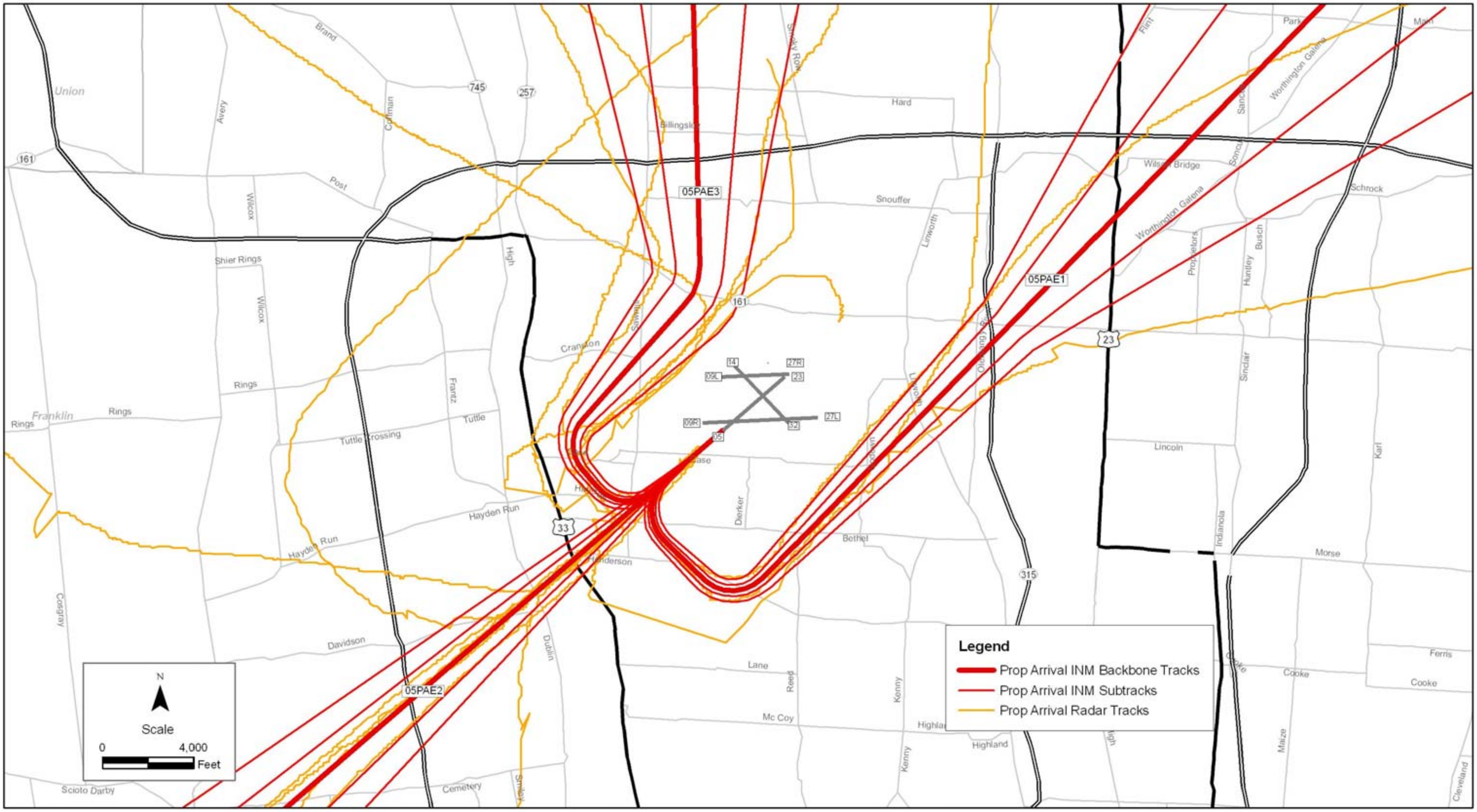
Operation Type	*Runway*	*Track*	*Percent Use %*
East Flow	9R	9RXTGO1	23.4
		9RXTGO2	25.5
		9RXTGO3	27.7
	9L	9LXTGO1	23.4
		Total	**100.0**
West Flow	27L	7LXTGO1	23.4
		7LXTGO2	25.5
		7LXTGO3	27.7
	27R	7RXTGO1	23.4
		Total	**100.0**

Source:AirScene; ESA Airports

Future Track Use Percentages - Helicopters
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

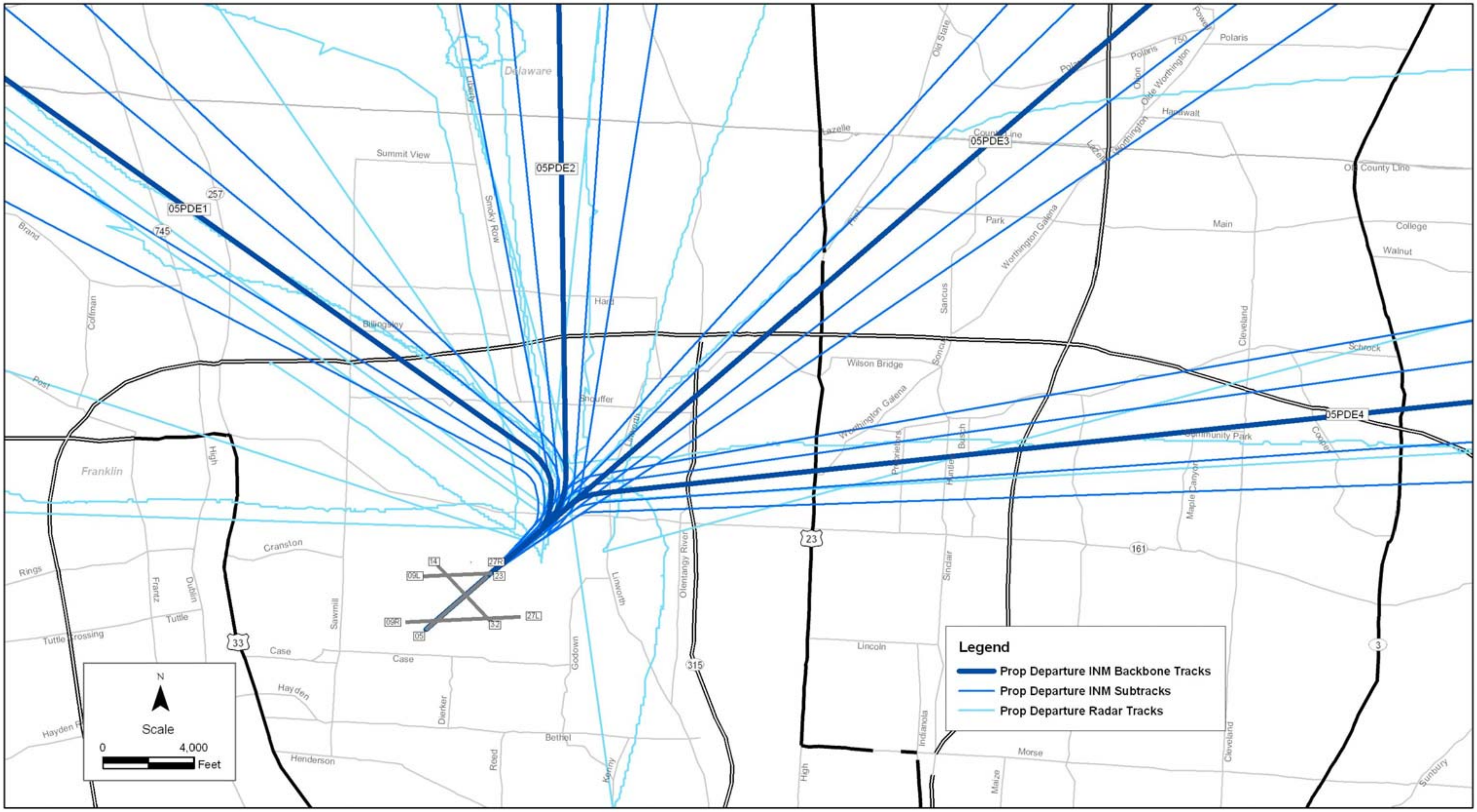
Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	H1	HD1	60.7
		HD2	15.7
		HD3	23.6
		Total	**100.0**
Departures	H2	HA1	2.5
		HA2	10.7
		HA3	32.8
		HA4	25.4
		HA5	9.0
		HA6	6.6
		HA7	1.6
		HA8	4.1
		HA9	5.7
		HA10	1.6
		Total	**100.0**

Source:AirScene; ESA Airports



SOURCE: ESA Airports and Ohio State University Airport

Figure X-X
Prop Arrivals - Runway 05

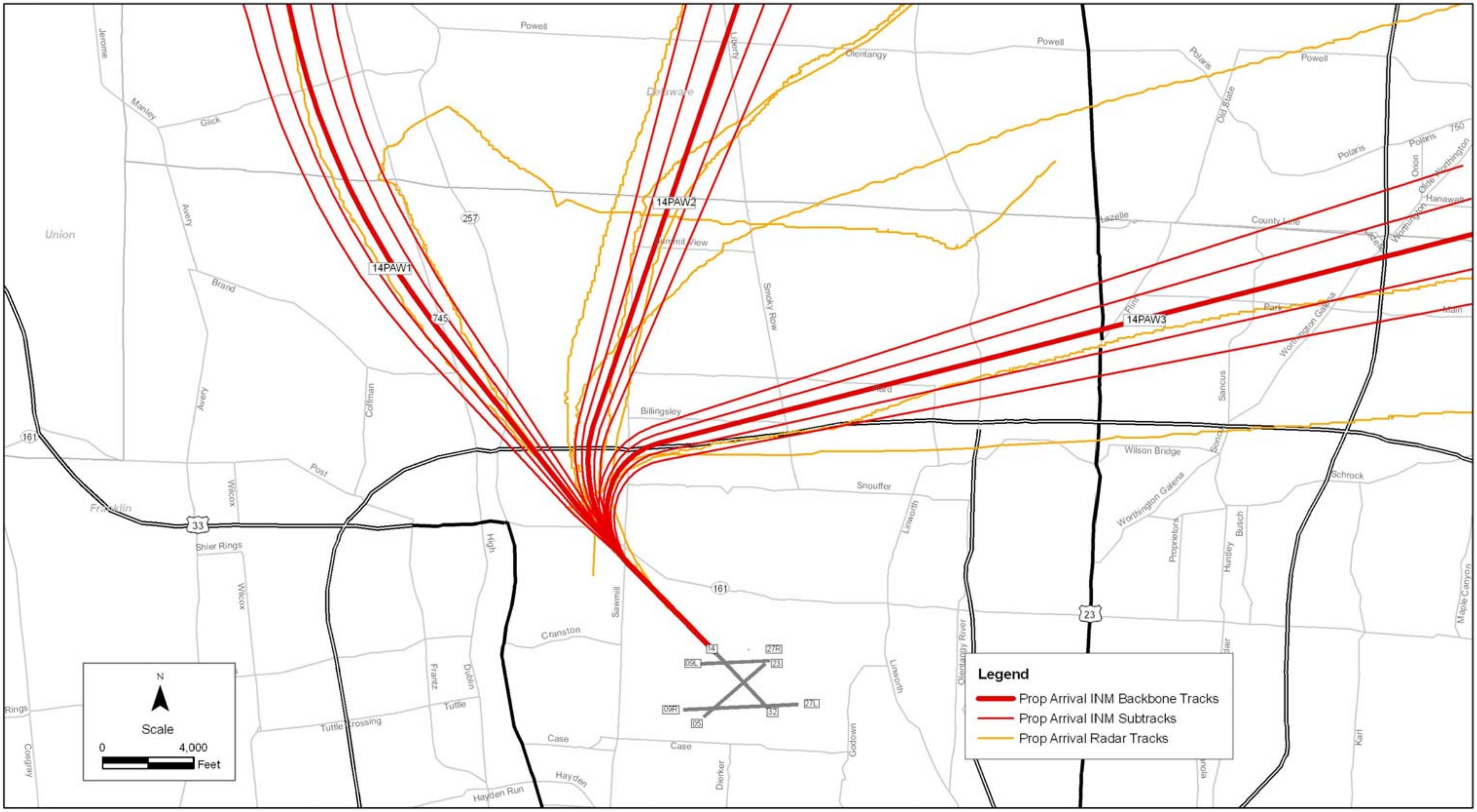


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Prop Departures - Runway 05

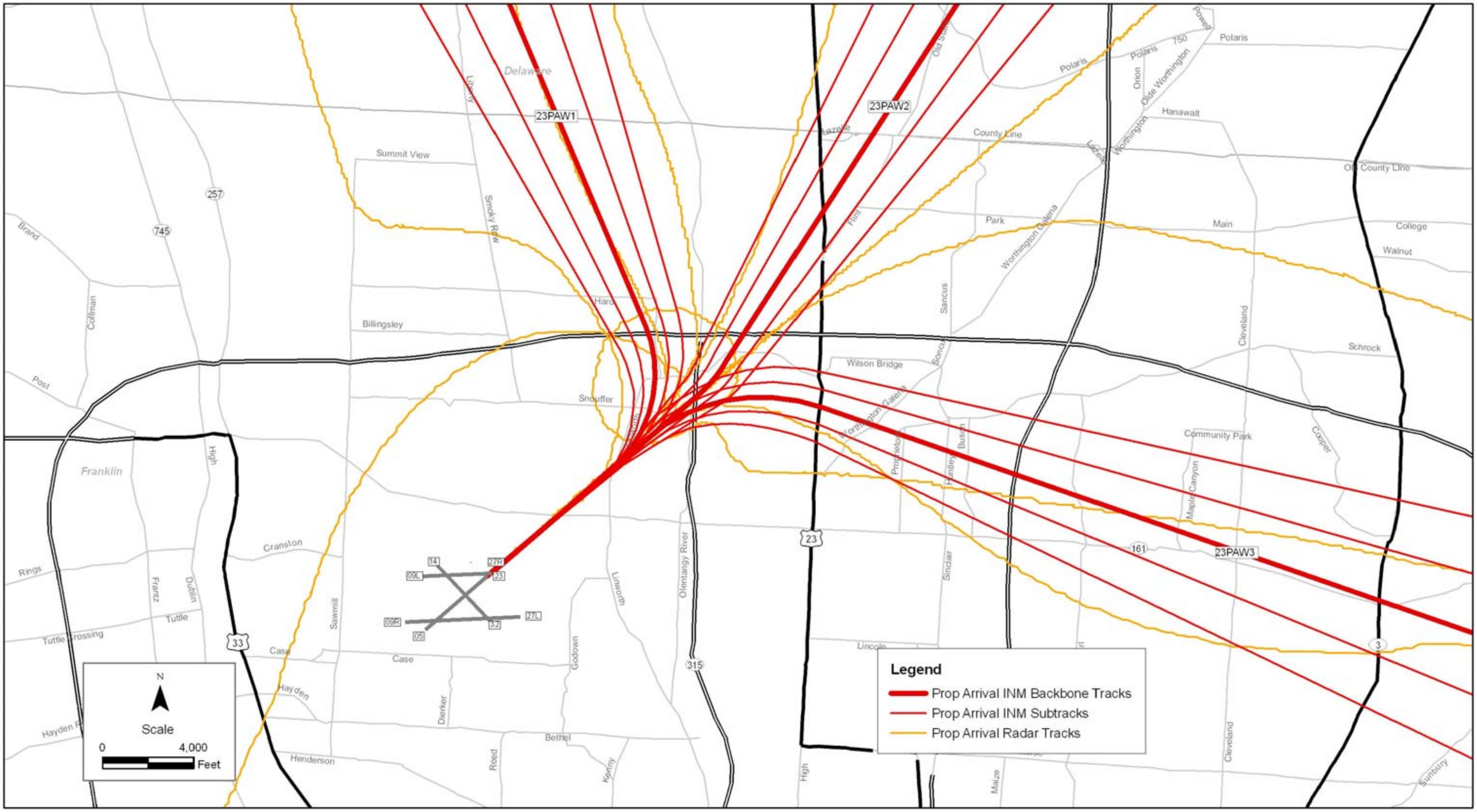


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Prop Arrivals - Runway 14



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Prop Arrivals - Runway 23

SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

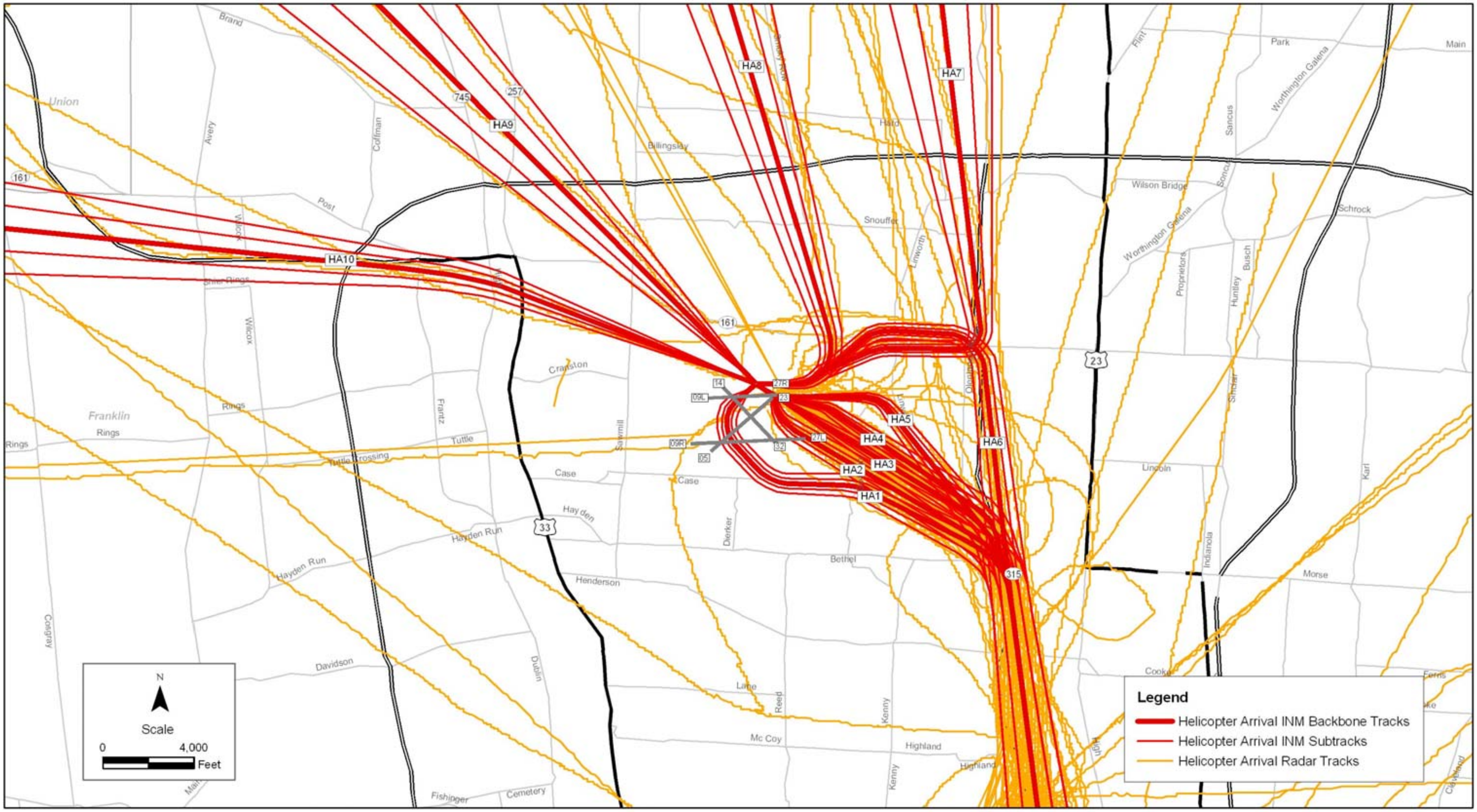
Prop Departures - Runway 23

SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Prop Departures - Runway 32

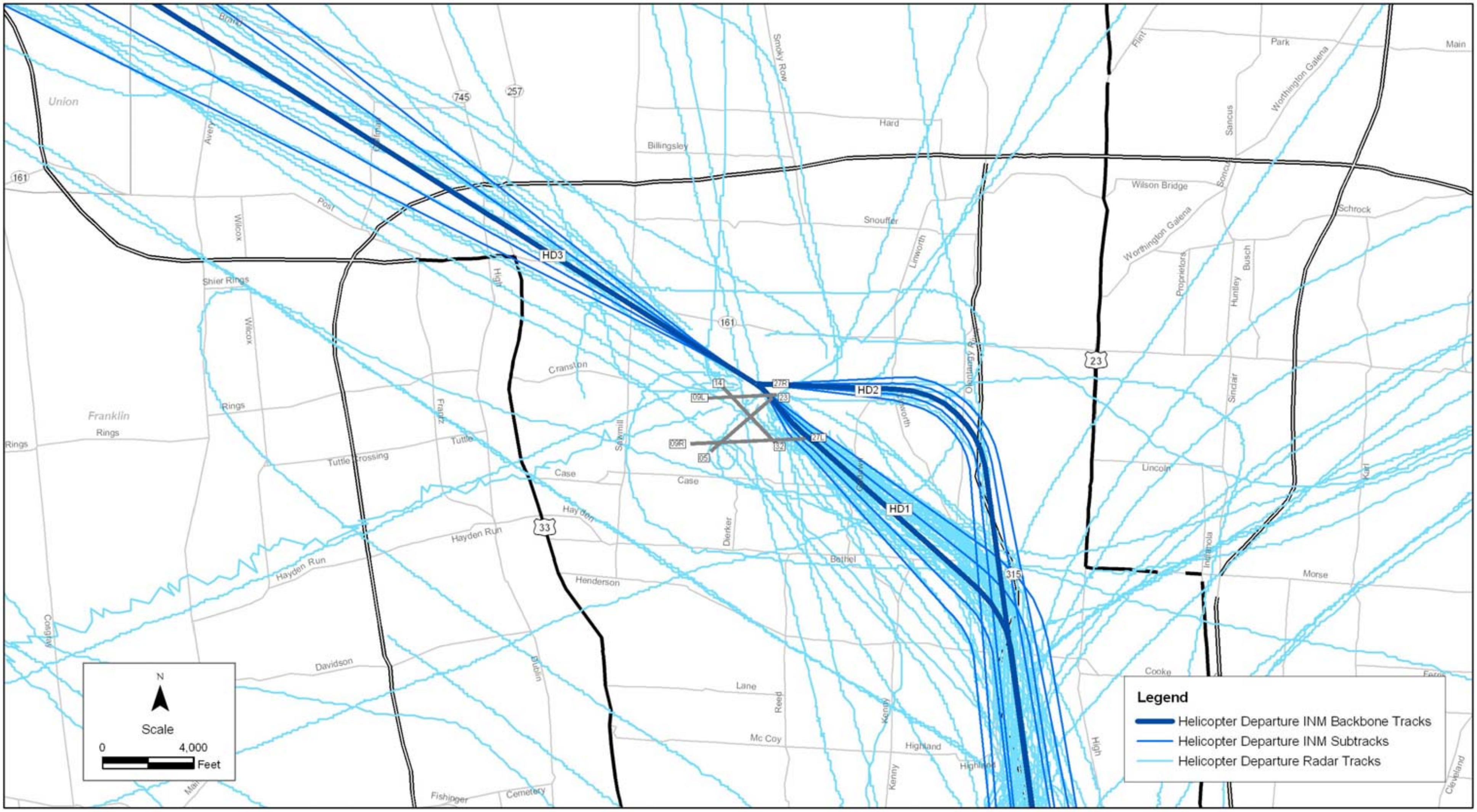


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

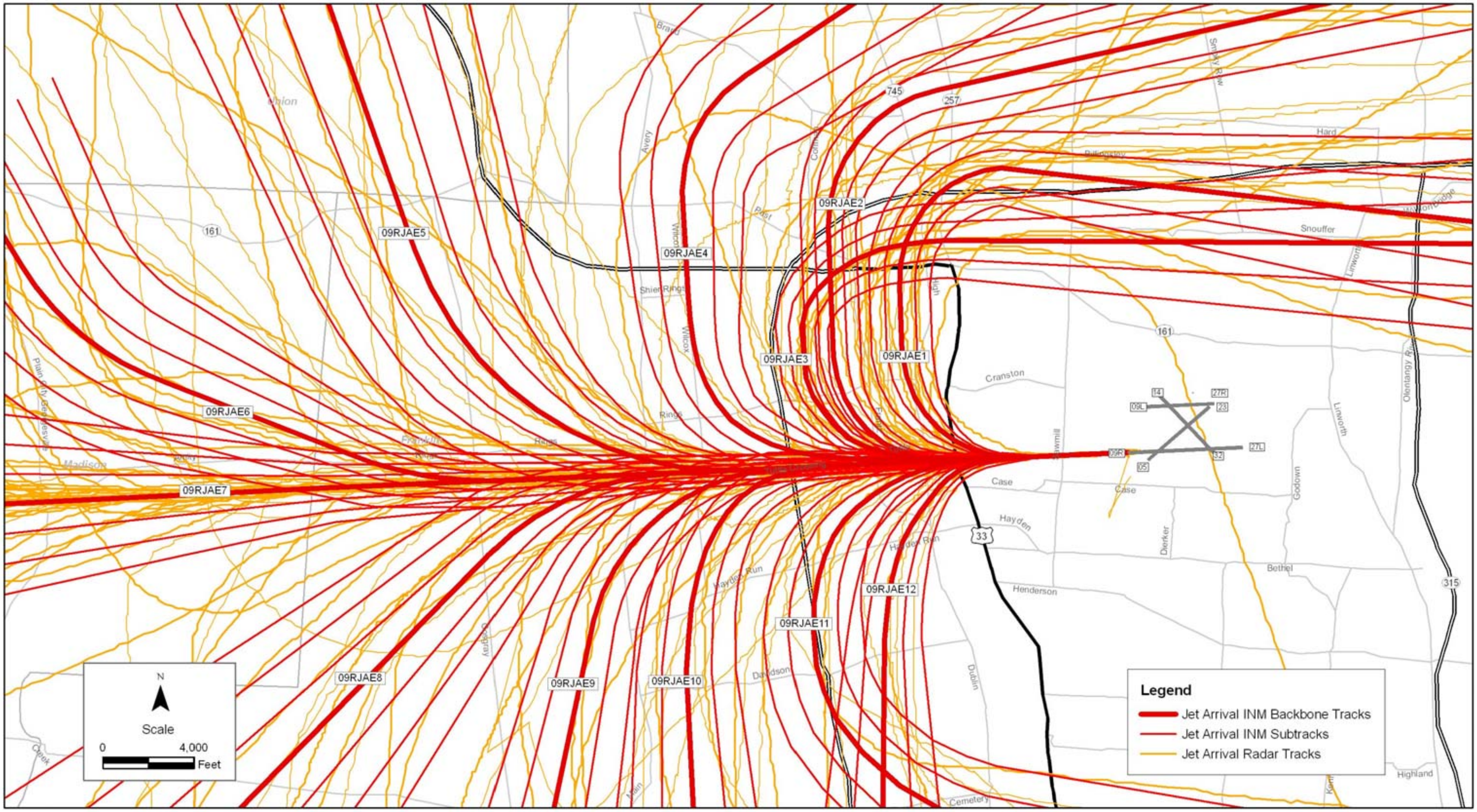
Helicopter Arrivals



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X
Helicopter Departures

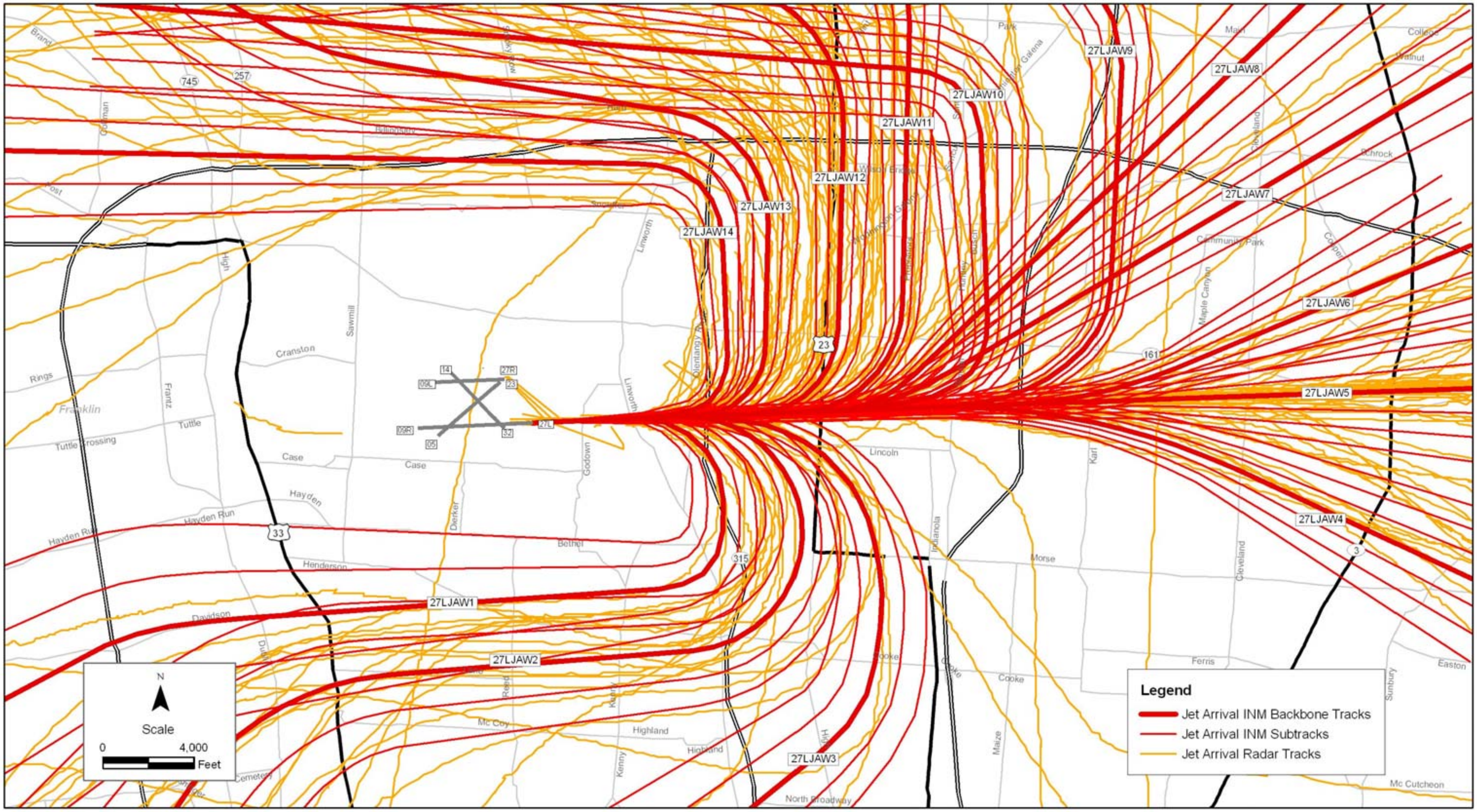


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Jet Arrivals - East Flow

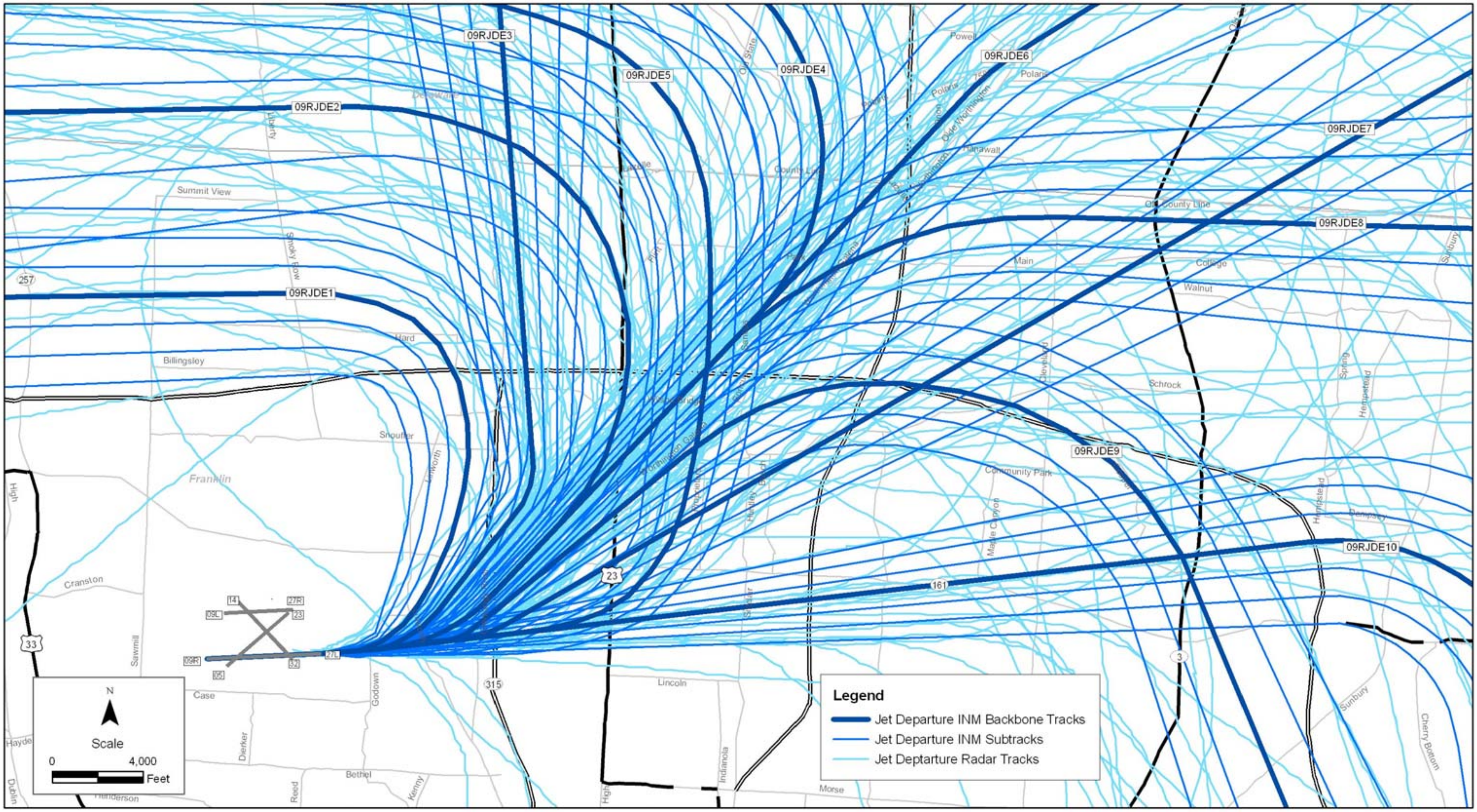


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

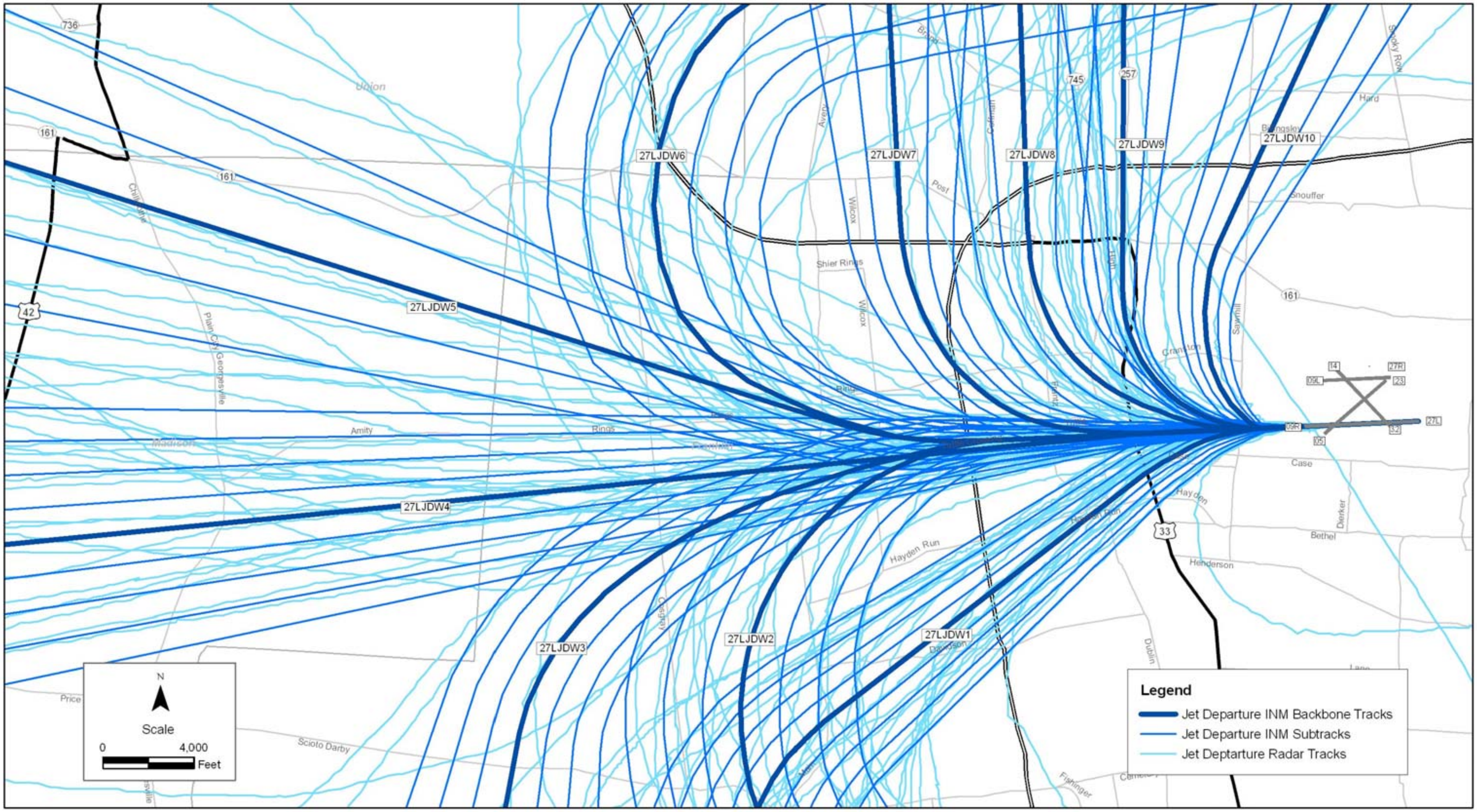
Jet Arrivals - West Flow



SOURCE: ESA Airports and Ohio State University Airport

Figure X-X

Jet Departures - East Flow

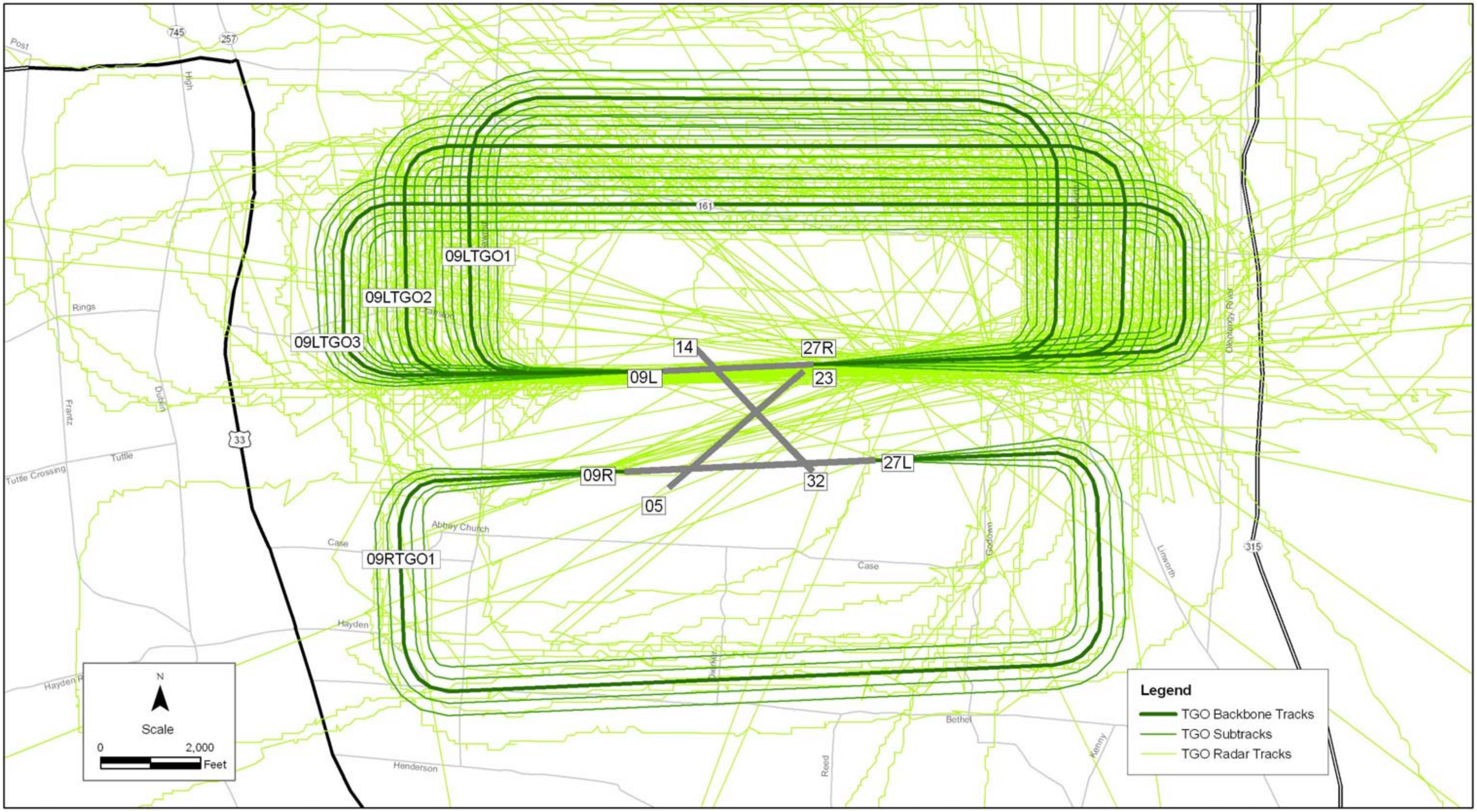


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Jet Departures - West Flow

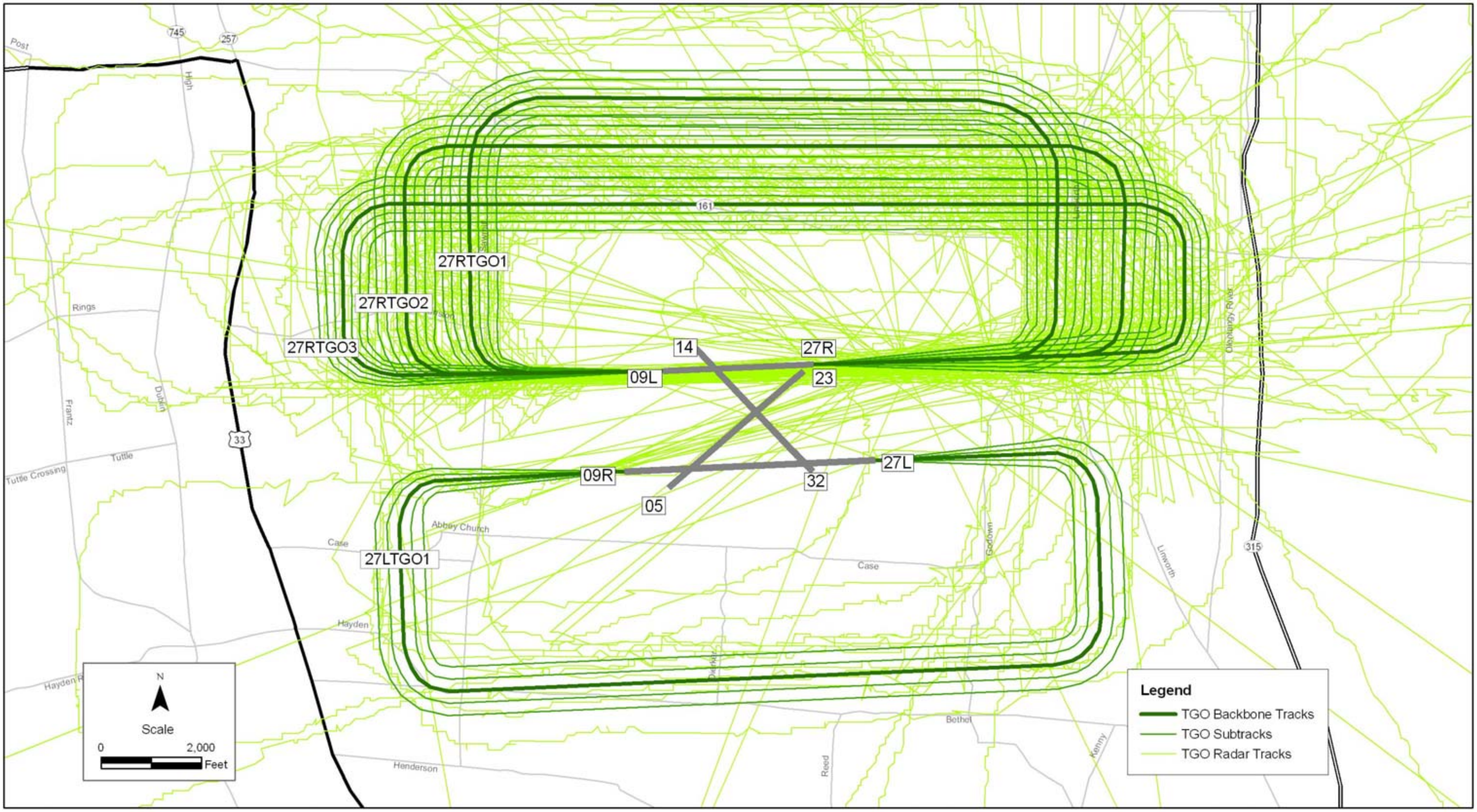


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Touch and Go Tracks - East Flow

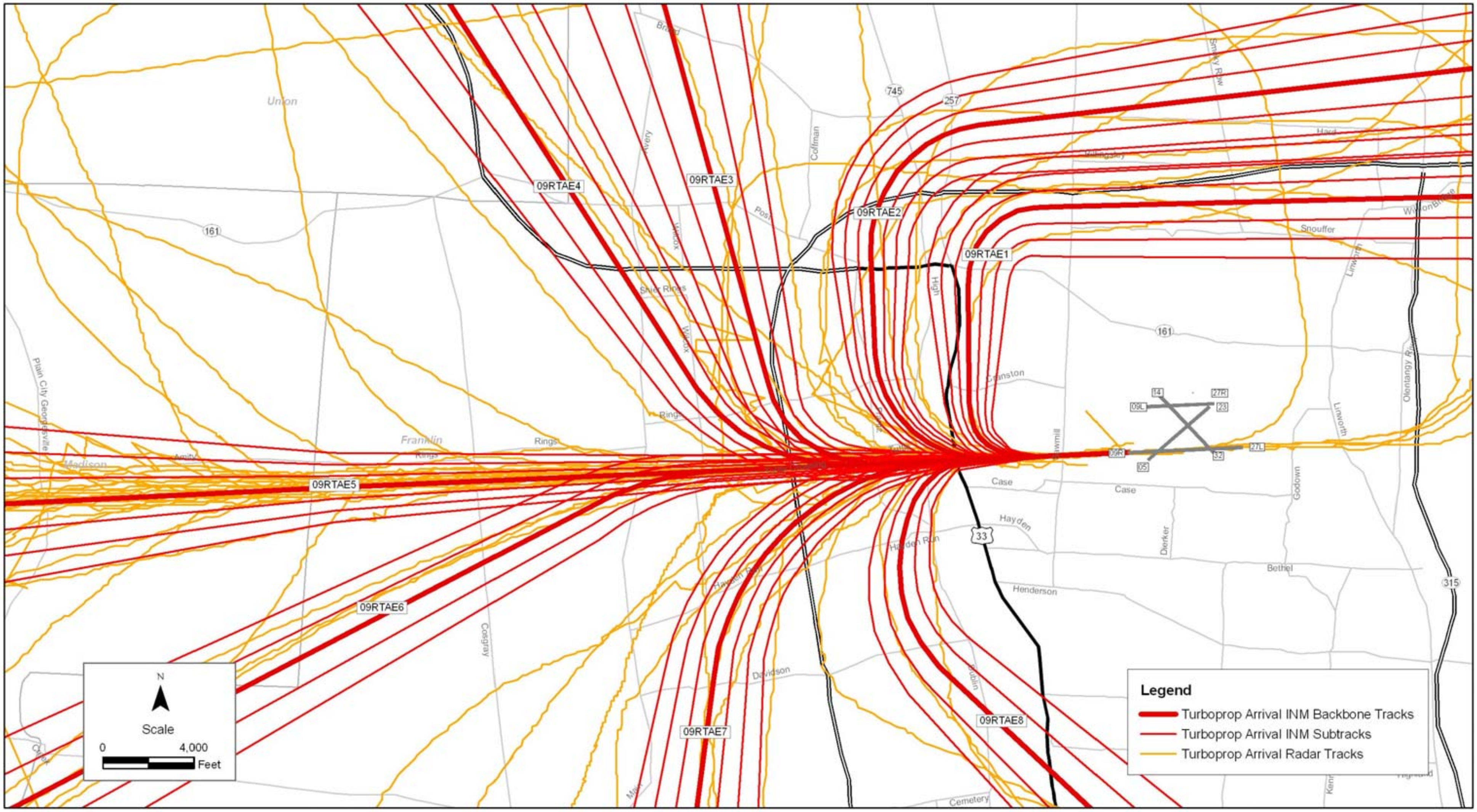


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Touch and Go Tracks - West Flow

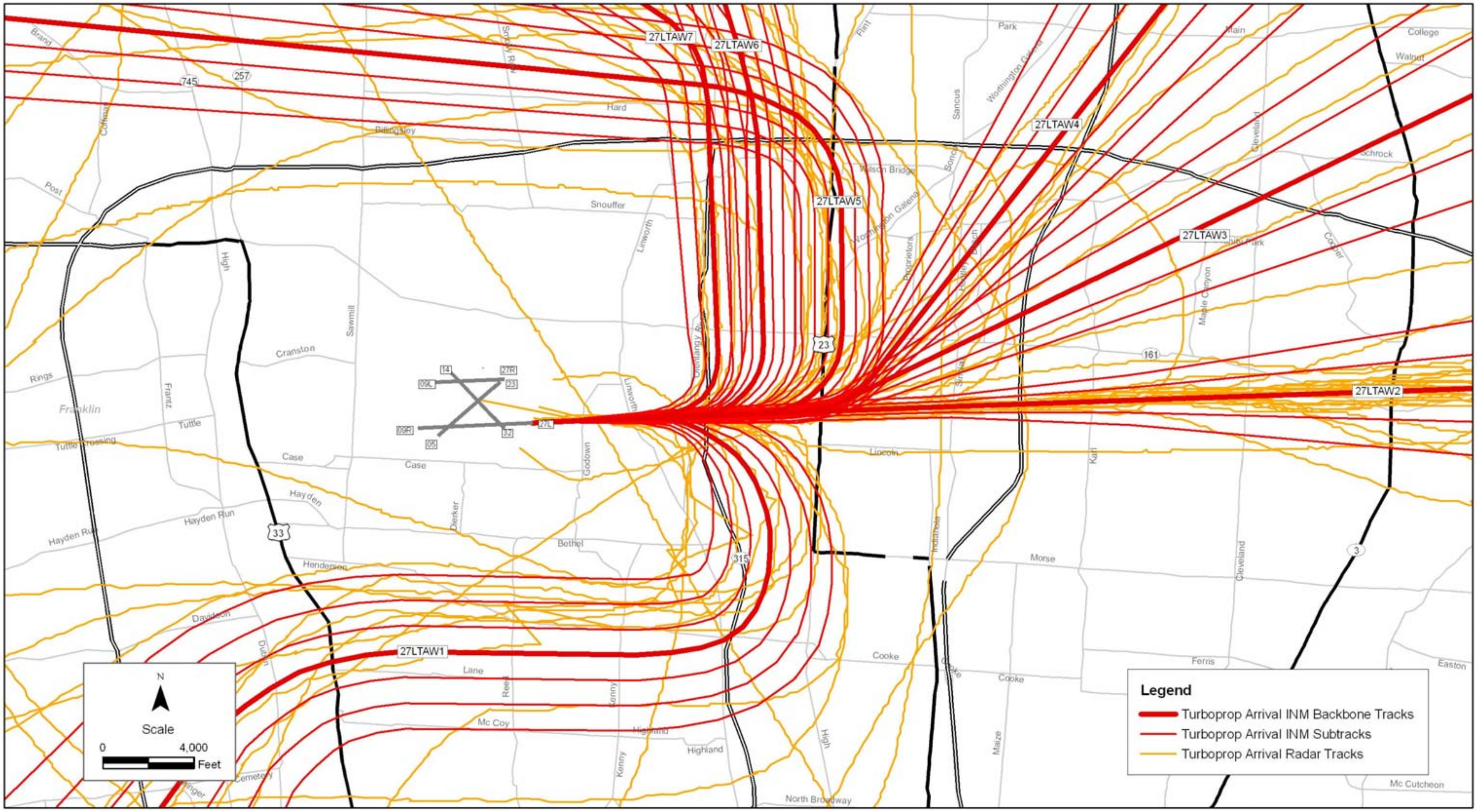


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Turboprop Arrivals - East Flow

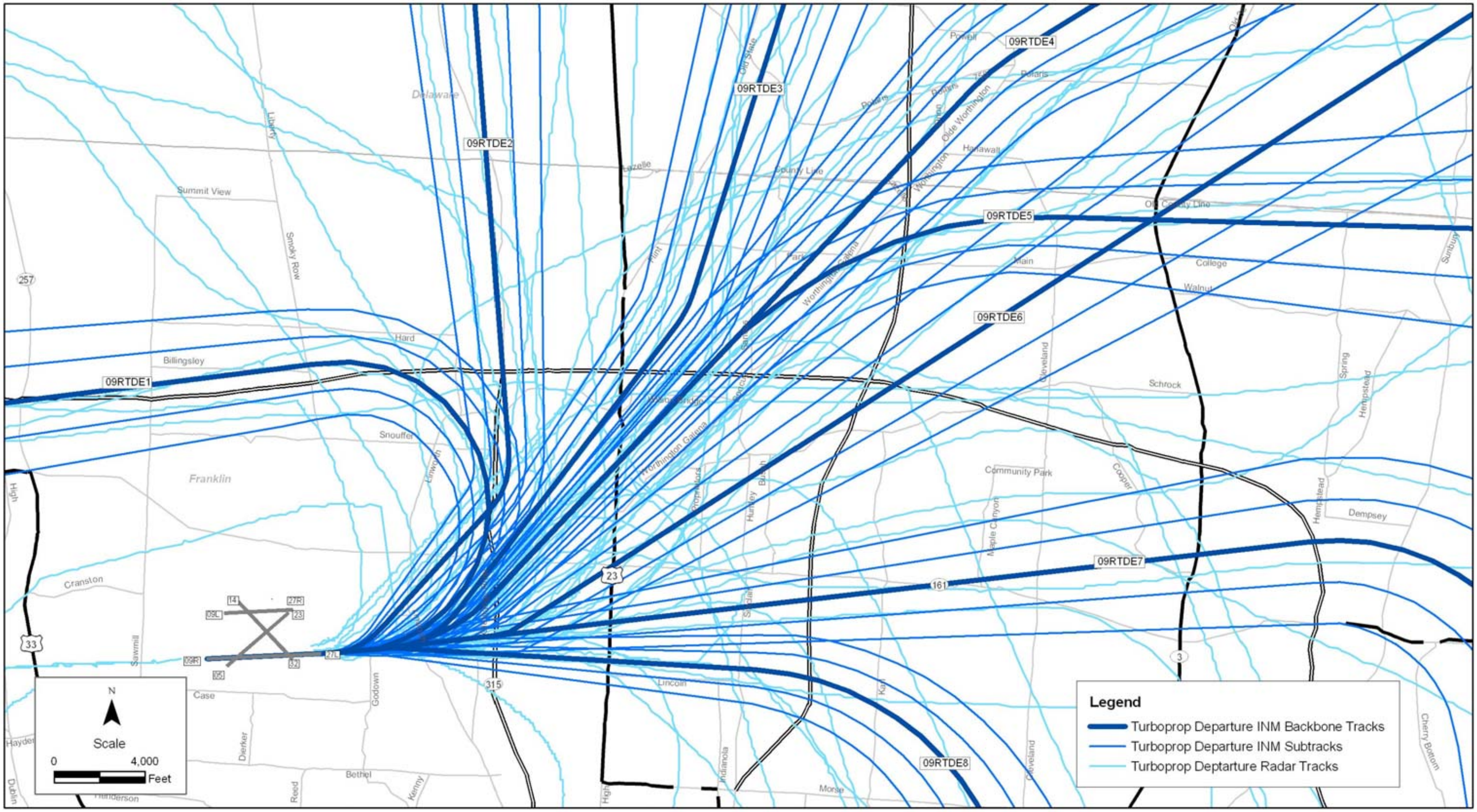


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Turboprop Arrivals - West Flow

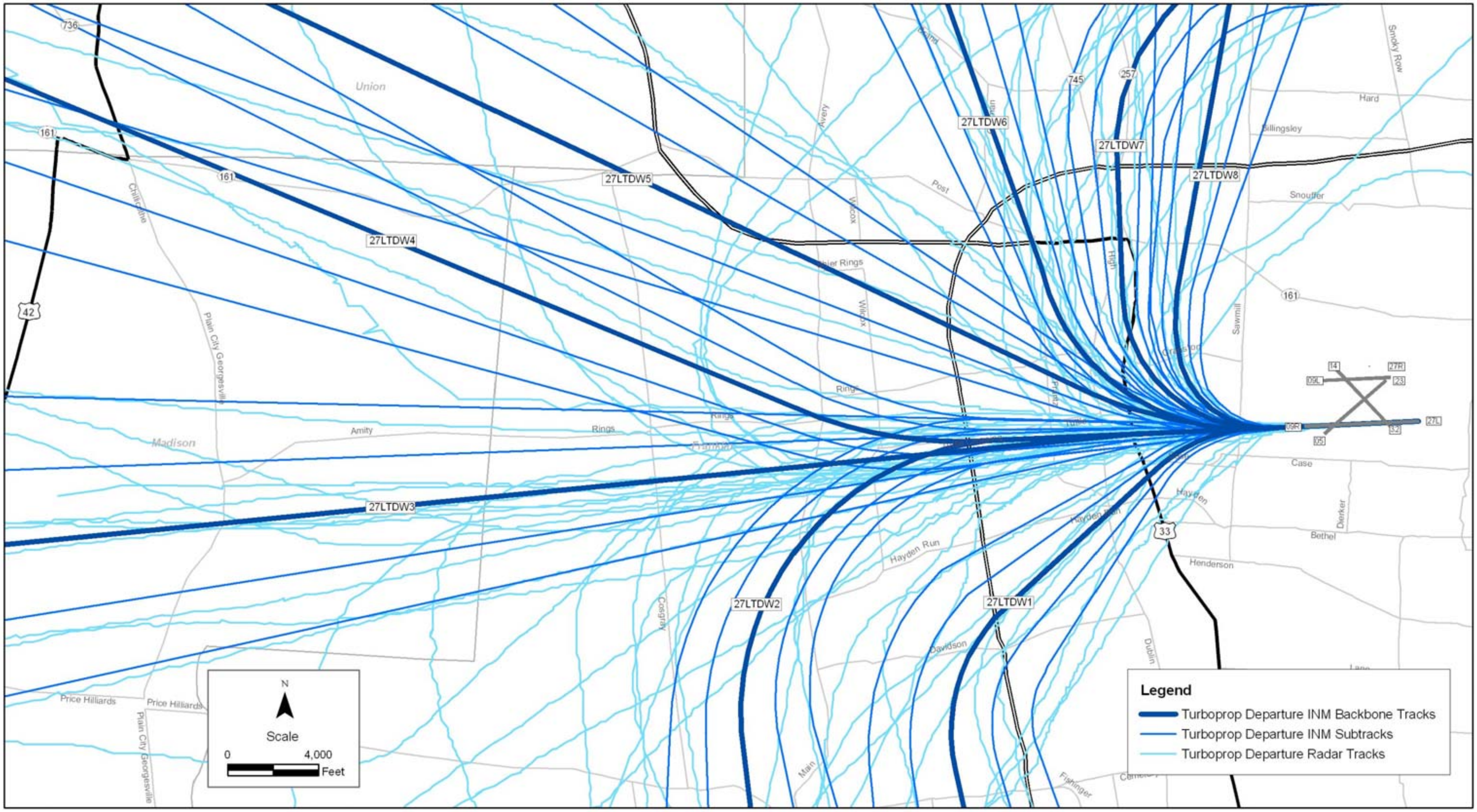


SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Turboprop Departures - East Flow



SOURCE: ESA Airports and Ohio State University Airport

Ohio State University FAR Part 150 Study . 207091

Figure X-X

Turboprop Departures - West Flow

The Ohio State University Airport

PART 150 STUDY

Technical Committee Meeting
Noise Model Inputs

17 January 2008

ESA Airports

Presentation Overview

- Introduction to aircraft noise modeling
- Review OSU Airport noise model inputs
  - Airport parameters
  - 2007 annual operations/fleet mix
  - 2007 runway use
  - 2007 aircraft flight tracks/usage
  - 2012/2027 annual operations/fleet mix
  - 2012/2027 runway use
  - 2012/2027 aircraft flight tracks/usage
- Next steps

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Introduction to Aircraft Noise Modeling

- Noise modeling must comply with FAR Part 150 requirements:
  - Use the current FAA-approved Integrated Noise Model (INM) Version 7.0
  - Use annual-average day aircraft operations
  - Use aircraft types from the INM's database
  - Use FAA-approved aircraft substitutions
  - Use the Day-Night Average Sound Level (DNL) metric to assess impact

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Introduction to Aircraft Noise Modeling

- Noise modeling must comply with FAR Part 150 requirements:
  - May not alter standard INM departure and arrival profiles without FAA's approval
  - May not create aircraft substitutions without FAA approval
  - May not use noise measurements to modify the INM aircraft noise database

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Introduction to Aircraft Noise Modeling

- Background on the INM
  - FAA's preferred aircraft noise model for 30 years
  - Required for FAR Part 150/161 Studies and NEPA documentation (i.e., EAs and EISs)
  - FAA continually updates the INM and regularly releases new versions of the model
  - Updates reflect improve speed of computers, revised or new acoustic computation algorithms, the addition of new aircraft types

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Introduction to Aircraft Noise Modeling

- Background on the INM
  - The INM database contains:
    - 138 civilian aircraft types,
    - 259 additional aircraft types in the civilian substitution list,
    - 19 helicopter types, and
    - 115 military aircraft types
  - Helicopter modeling is now integrated into INM Version 7.0

Introduction to Aircraft Noise Modeling

- Background on the INM
  - Accounts for the effects of terrain (i.e., ground elevation) on aircraft noise propagation
  - Proven to be very accurate when compared to long-term noise measurements (FAA states ± 2 dB DNL)
  - Publicly available and runs on a personal computer

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Introduction to Aircraft Noise Modeling

- Aircraft Noise Modeling Concepts
  - INM calculates the noise exposure for the annual average day by "operating" aircraft on the airport's runways and flight tracks
  - Aircraft noise exposure is calculated over a broad area and then depicted using:
    - contour lines of equal noise levels,
    - grids over a base map, or
    - specific points of interest

Introduction to Aircraft Noise Modeling

- Aircraft Noise Modeling Concepts
  - The loudest aircraft events often govern the noise exposure at an airport
  - Each nighttime (10 pm to 6:59 am) event is equal to 10 daytime (7 am to 9:59 pm) events
  - Assuming all else stays the same (i.e., fleet mix, day/night split, runway use, flight track use):
    - a doubling of operations results in a 3-dB increase in the DNL
    - a halving of operations results in a 3-dB decrease in the DNL

Introduction to Aircraft Noise Modeling

- Aircraft Noise Modeling Concepts
  - Noise levels of 65 dB DNL or greater are considered incompatible with noise sensitive land uses

Introduction to Aircraft Noise Modeling

- Aircraft Noise Modeling Concepts
  - The aircraft types, number of annual-average day operations, and nighttime weighting determine the *amount* of noise exposure
  - The runway locations, runway use, flight track locations, and flight track use determine the *distribution* of the noise exposure

Review OSU Airport Noise Model Inputs

- The INM requires inputs including:
  - Airport parameters
    - Airport elevation above mean sea level
    - Annual-average day temperature
    - Annual-average relative humidity
    - Annual-average barometric pressure
    - Runway locations, lengths and displaced thresholds
  - Annual-average day aircraft operations
    - by aircraft type (fleet mix) and time of day (day vs. night)
  - Runway use
  - Flight tracks
    - Flight track use

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs

- Airport parameters:
  - Airport elevation above mean sea level: 905 feet
  - Annual-average day temperature: 55.8° F
  - Annual-average relative humidity: 70%
  - Annual-average barometric pressure: 29.92 in
  - Runway locations, lengths and displaced thresholds
    Detailed on next page

Source: INM, ESA Airports

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs

- Runway locations, lengths, elevation, and displaced thresholds:
  - 09L: **40.082697 / -83.078902, 2,994', 904.4', None**
  - 27R: **40.083114 / -83.068218, 2,994', 891.2', None**
  - 09R: **40.077149 / -83.081604, 5,004', 901.0', None**
  - 27L: **40.077851 / -83.063748 5,004', 889.4', None**
  - 05: **40.076292 / -83.078441, 3,555', 903.1', None**
  - 23: **40.082727 / -83.068894, 3,555', 892.3', None**
  - 14: **40.084036 / -83.076698, 3,438', 899.8', None**
  - 32: **40.077221 / -83.068201, 3,438', 893.2', None**
  - 09LX (w/ extension): **40.082444 / -83.085348, 6,000', 904.4', None**
  - 27RX (w/ extension): **40.083280 / -83.063936, 6,000', 891.2', None**

Source: INM, 1991 OSU Airport Master Plan, ESA Airports

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs

2007 INM Inputs

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Annual Operations
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

	Air Carrier	***Air Taxi***	***Itinerant General Aviation***	***Local General Aviation***	***Itinerant Military***	***Local Military***	***Total***
Yearly Totals	0	3,488	57,068	26,268	297	64	87,185
Average 24-Hour Day	0.00	9.56	156.35	71.97	0.81	0.18	238.86

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aw are, OSU ATCT, Port Columbus Standard Terminal Automated Replacement System (STARS), RS&H

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Annual-Average Day Fleet Mix - Itinerant Operations (Page 1 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals*			*Departures*			*Total*
			Day	*Night*	*Total*	*Day*	*Night*	*Total*	*Operations*
Jet	Gulfstream II	GII	0.023	0.000	0.023	0.022	0.001	0.023	0.046
	Gulfstream III	GIIB	0.027	0.001	0.028	0.027	0.001	0.028	0.056
	Gulfstream IV	GIV	0.079	0.002	0.081	0.078	0.003	0.081	0.162
	Gulfstream V	GV	0.022	0.000	0.023	0.022	0.001	0.023	0.045
	CRJ-700	GV	0.002	0.000	0.002	0.002	0.000	0.002	0.003
	Cessna 750	CNA750	0.183	0.010	0.193	0.180	0.014	0.193	0.386
	Canadair BD-100	CL600*	0.523	0.028	0.551	0.512	0.039	0.551	1.102
	Challenger 600	CL600	0.190	0.010	0.200	0.186	0.014	0.200	0.399
	ERJ 135/140	EMB145	0.028	0.001	0.030	0.028	0.002	0.030	0.060
	Falcon 2000	CL600	0.063	0.003	0.067	0.062	0.005	0.067	0.133
	Falcon 900	LEAR35*	0.052	0.003	0.055	0.051	0.004	0.055	0.110
	Falcon 50	LEAR35*	0.055	0.003	0.058	0.054	0.004	0.058	0.117
	Astra 1125	IA1125	0.055	0.004	0.059	0.057	0.003	0.059	0.119
	Beechjet 400	MU3001	1.473	0.111	1.584	1.505	0.079	1.584	3.168
	Citation 525/500	CNA500	0.962	0.072	1.034	0.982	0.052	1.034	2.068
	Citation 550/560	MU3001	2.523	0.190	2.713	2.577	0.136	2.713	5.426
	Citation 650	CIT3	0.077	0.006	0.083	0.079	0.004	0.083	0.167
	Citation 680	MU3001*	0.189	0.014	0.203	0.193	0.010	0.203	0.406
	Falcon 10	LEAR35	0.054	0.004	0.058	0.055	0.003	0.058	0.116
	Falcon 20	CL600	0.085	0.006	0.092	0.087	0.005	0.092	0.183
	Gulfstream 150	LEAR35*	0.009	0.001	0.010	0.009	0.000	0.010	0.020
	Gulfstream 200	GII	0.049	0.004	0.053	0.051	0.003	0.053	0.106
	BAe-125 (400 Series)	LEAR35*	0.012	0.001	0.013	0.013	0.001	0.013	0.026
	BAe-125 (800 Series)	LEAR35	0.553	0.042	0.595	0.565	0.030	0.595	1.189
	Bae-125 (1000 Series)	LEAR35*	0.025	0.002	0.026	0.025	0.001	0.026	0.053
	Dornier 328	CNA750*	0.028	0.002	0.030	0.029	0.002	0.030	0.061
	Lear 24/25	LEAR25	0.137	0.010	0.147	0.140	0.007	0.147	0.295
	Lear 31/35/40/45/55/60	LEAR35	0.618	0.047	0.664	0.631	0.033	0.664	1.329
	Mitsubishi Diamond	CNA500	0.104	0.008	0.112	0.106	0.006	0.112	0.224
	Raytheon 390	MU3001*	0.020	0.002	0.021	0.020	0.001	0.021	0.043
	Sabreliner	LEAR35	0.034	0.003	0.037	0.035	0.002	0.037	0.073
	Westwind 1124	IA1125	0.014	0.001	0.015	0.014	0.001	0.015	0.030
	Subtotal		**8.271**	**0.589**	**8.860**	**8.396**	**0.465**	**8.860**	**17.721**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Annual-Average Day Fleet Mix - Itinerant Operations (Page 2 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals* *Day*	*Arrivals* *Night*	*Arrivals* *Total*	*Departures* *Day*	*Departures* *Night*	*Departures* *Total*	*Total Operations*
Multi-Engine/Turboprop	Gulf Aero Commander	CNA441	0.706	0.105	0.811	0.730	0.081	0.811	1.622
	EMB-120	EMB120	0.025	0.004	0.028	0.025	0.003	0.028	0.057
	Beech 1900	1900D	0.041	0.006	0.047	0.042	0.005	0.047	0.094
	Raytheon B300	DHC6	1.752	0.262	2.014	1.812	0.201	2.014	4.027
	Beech King Air	CNA441	2.597	0.388	2.985	2.686	0.298	2.985	5.970
	Beech Super King Air	DHC6	3.032	0.453	3.485	3.136	0.348	3.485	6.970
	Swearingen Merlin 4	DHC6	0.012	0.002	0.014	0.013	0.001	0.014	0.028
	Cessna Conquest	CNA441	0.131	0.020	0.151	0.136	0.015	0.151	0.302
	Jetstream Super 31	DHC6	0.025	0.004	0.028	0.025	0.003	0.028	0.057
	Mitsubishi MU2	DHC6	0.037	0.006	0.042	0.038	0.004	0.042	0.085
	P180 Avanti	DHC6*	0.402	0.060	0.462	0.416	0.046	0.462	0.925
	Piper Cheyenne	CNA441	0.968	0.145	1.113	1.002	0.111	1.113	2.226
	Swearingen Merlin 3	CNA441	0.033	0.005	0.038	0.034	0.004	0.038	0.075
	Partinavia P68	BEC58P*	0.024	0.004	0.027	0.025	0.003	0.027	0.055
	Piper Comanche	PA30	0.065	0.010	0.075	0.068	0.008	0.075	0.150
	Diamond Twin Star	BEC58P*	0.002	0.000	0.002	0.002	0.000	0.002	0.005
	Piper Chieftain	PA31	1.659	0.248	1.907	1.717	0.191	1.907	3.815
	Cessna Caravan II	BEC58P*	0.030	0.004	0.034	0.031	0.003	0.034	0.069
	Cessna Caravan I	GASEPF	0.647	0.013	0.660	0.614	0.046	0.660	1.320
	Lancair Columbia 400	GASEPF*	0.198	0.004	0.202	0.188	0.014	0.202	0.404
	Malibu Meridian	GASEPV	0.415	0.008	0.423	0.394	0.030	0.423	0.847
	Pilatus PC12	GASEPV*	0.989	0.020	1.009	0.938	0.071	1.009	2.018
	Aerospatiale Socata	GASEPV	0.845	0.017	0.862	0.801	0.060	0.862	1.724
	Multiple Aircraft (1)	BEC58P	0.940	0.653	1.592	1.003	0.589	1.592	3.185
	Subtotal		**15.574**	**2.441**	**18.014**	**15.877**	**2.137**	**18.014**	**36.028**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Annual-Average Day Fleet Mix - Itinerant Operations (Page 3 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals* Day	*Arrivals* Night	*Arrivals* Total	*Departures* Day	*Departures* Night	*Departures* Total	*Total Operations*
Single Engine	Cessna 180/182/206/210	CNA206	4.996	0.319	5.315	5.103	0.213	5.315	10.631
	Cessna 150/152/172/172RG/177	CNA172	13.996	0.893	14.889	14.294	0.596	14.889	29.778
	Piper Warrior	PA28	6.091	0.389	6.479	6.220	0.259	6.479	12.959
	Multiple Aircraft (2)	GASEPV	13.539	0.864	14.404	13.827	0.576	14.404	28.807
	Multiple Aircraft (3)	GASEPF	0.853	0.064	0.918	0.899	0.018	0.918	1.835
	Subtotal		**39.476**	**2.529**	**42.005**	**40.343**	**1.662**	**42.005**	**84.010**
Helicopter	Eurocopter Astar	SA350D	4.913	0.259	5.171	4.913	0.259	5.171	10.342
	Sikorsky S-76A	S76	0.190	0.010	0.200	0.190	0.010	0.200	0.400
	Eurocopter EC-135	EC130	2.670	0.141	2.811	2.670	0.141	2.811	5.621
	Aerospatiale Dauphin	SA365N	1.414	0.074	1.488	1.414	0.074	1.488	2.977
	Kawasaki BK-117	B206L*	3.433	0.181	3.614	3.433	0.181	3.614	7.227
	Bell Jet Ranger	B206L	0.751	0.040	0.790	0.751	0.040	0.790	1.581
	Subtotal		**13.370**	**0.704**	**14.074**	**13.370**	**0.704**	**14.074**	**28.148**
Military	UH-60 Blackhawk	S70	0.305	0.000	0.305	0.305	0.000	0.305	0.610
	UH-1 Huey	B212	0.102	0.000	0.102	0.102	0.000	0.102	0.203
	Subtotal		**0.407**	**0.000**	**0.407**	**0.407**	**0.000**	**0.407**	**0.814**
	TOTAL		**77.097**	**6.263**	**83.360**	**78.393**	**4.967**	**83.360**	**166.720**

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H
* Requires FAA approval of aircraft substitution
Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Annual-Average Day Fleet Mix (Local operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

			Touch and Go		
Category	***Aircraft***	***INM Aircraft***	***Day***	***Night***	***Total***
ME/TP	Partenavia P68	BEC58P*	0.006	0.000	0.006
	Piper Comanche	PA30	0.017	0.000	0.017
	Diamond Twin Star	BEC58P*	0.000	0.000	0.000
	Piper Chieftain	PA31	0.323	0.007	0.330
	Multiple Aircraft (1)	BEC58P	0.346	0.001	0.347
	Subtotal		**0.693**	**0.007**	**0.700**
Single Engine	Cessna 180/182/206/210	CNA206	8.451	0.404	8.855
	Cessna 150/152/172/172RG/177	CNA172	25.175	1.195	26.370
	Piper Warrior	PA28	10.946	0.569	11.515
	Multiple Aircraft (2)	GASEPV	21.855	1.037	22.892
	Multiple Aircraft (3)	GASEPF	1.633	0.000	1.633
	Subtotal		**68.060**	**3.206**	**71.267**
Military	UH-60 Blackhawk	S70	0.132	0.000	0.132
	UH-1 Huey	B212	0.044	0.000	0.044
	Subtotal		**0.175**	**0.000**	**0.175**
	TOTAL		**68.928**	**3.214**	**72.142**

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Runway Utilization (Intinerant)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Runway	*Jets*	*Multi-Engine*	*Single-Engine*
9L	0.00%	2.60%	2.34%
27R	0.00%	4.01%	6.95%
9R	31.08%	35.95%	40.37%
27L	68.92%	54.03%	44.98%
5	0.00%	1.60%	3.72%
23	0.00%	0.52%	0.23%
14	0.00%	0.53%	0.60%
32	0.00%	0.77%	0.79%
Total	**100.00%**	**100.00%**	**100.00%**

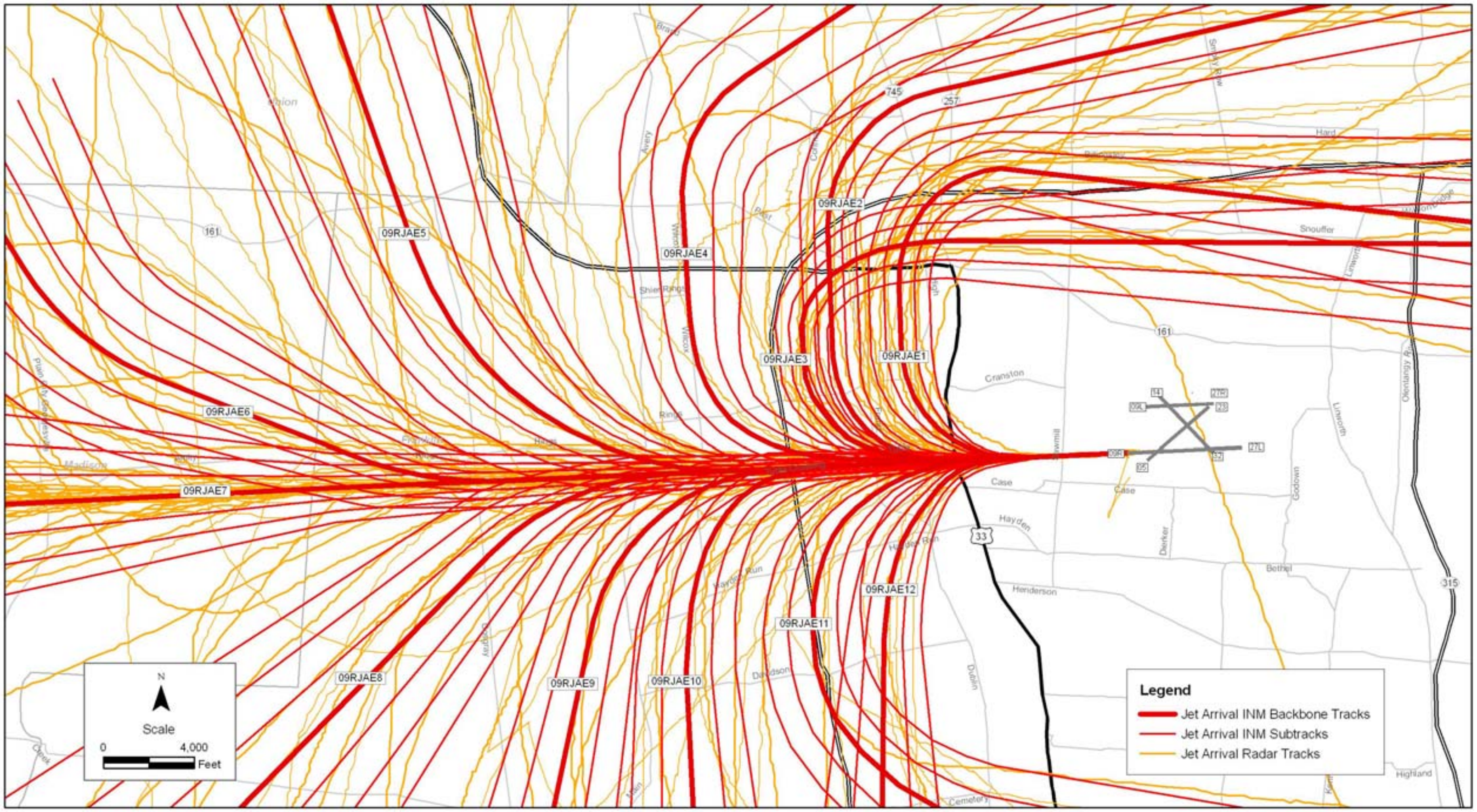
Source: ATCT; AirScene

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



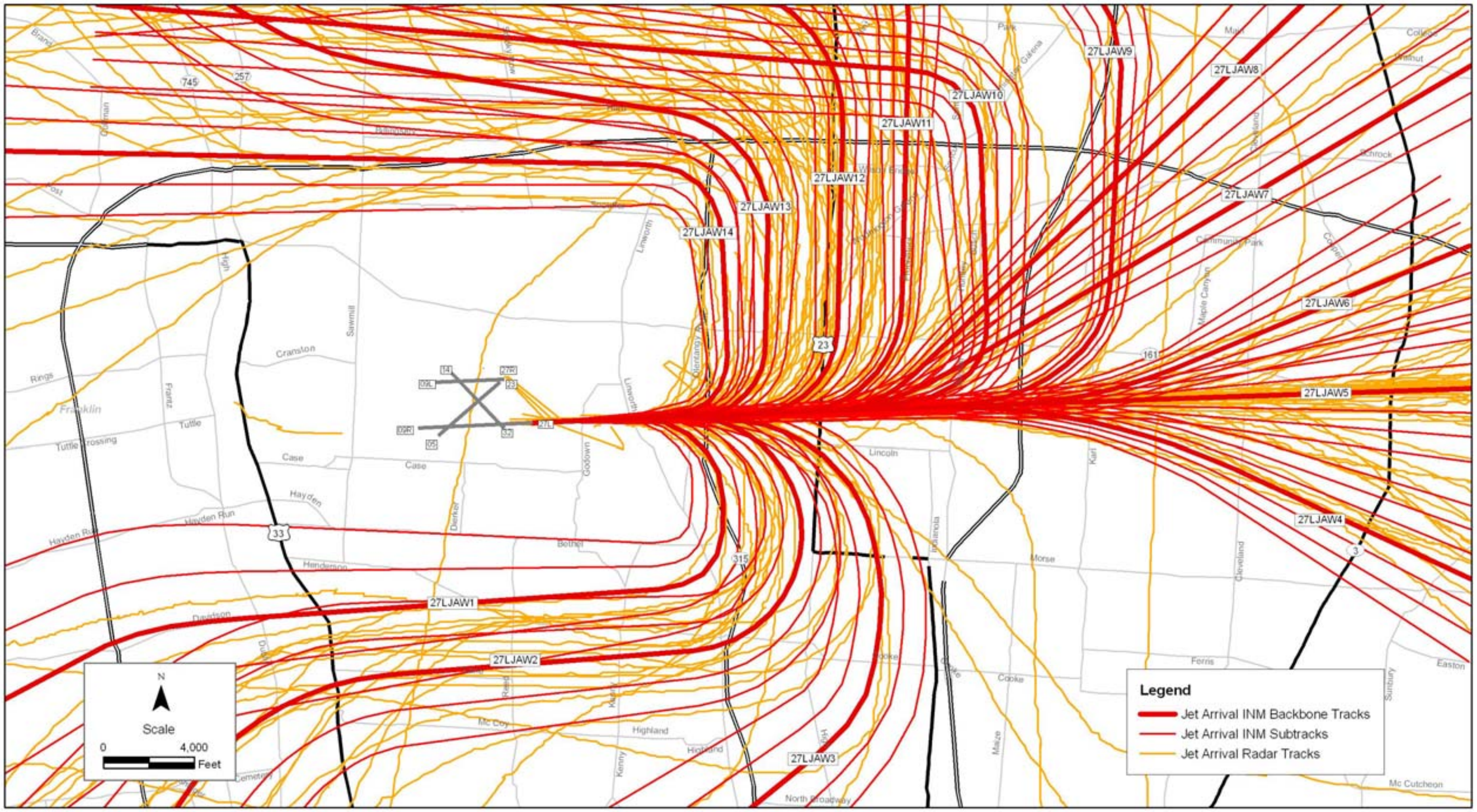
2007 Jet Arrivals – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



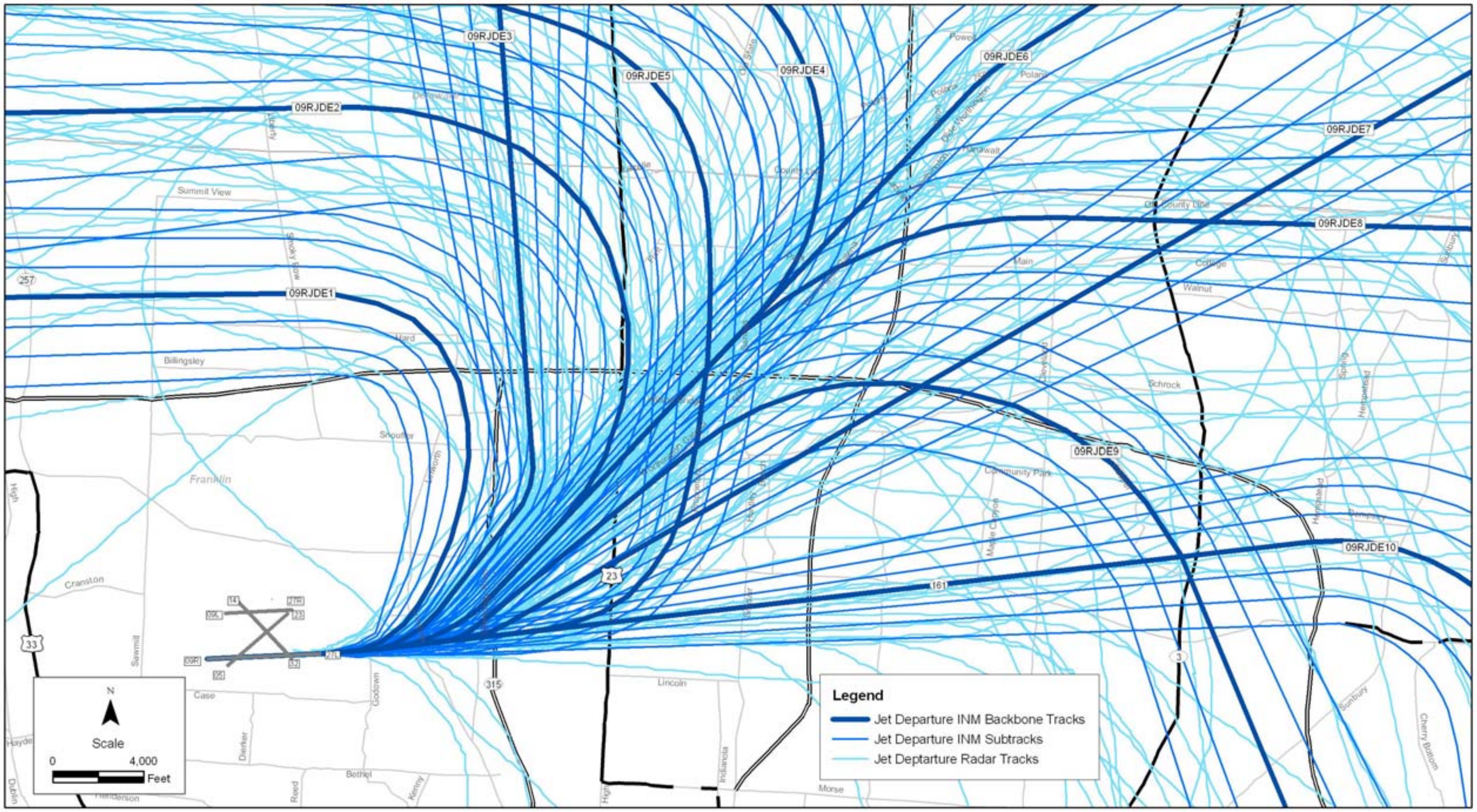
2007 Jet Arrivals – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



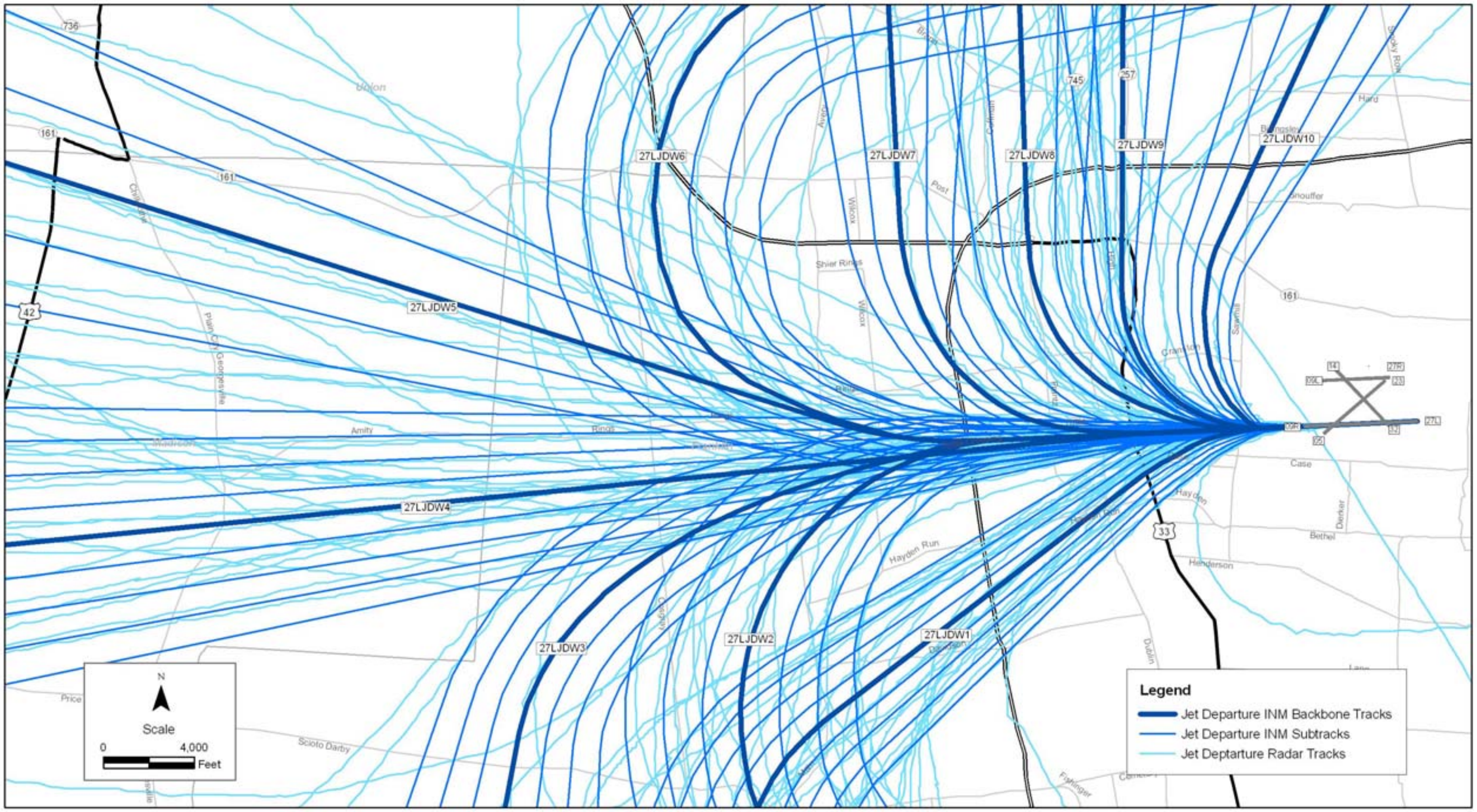
2007 Jet Departures – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



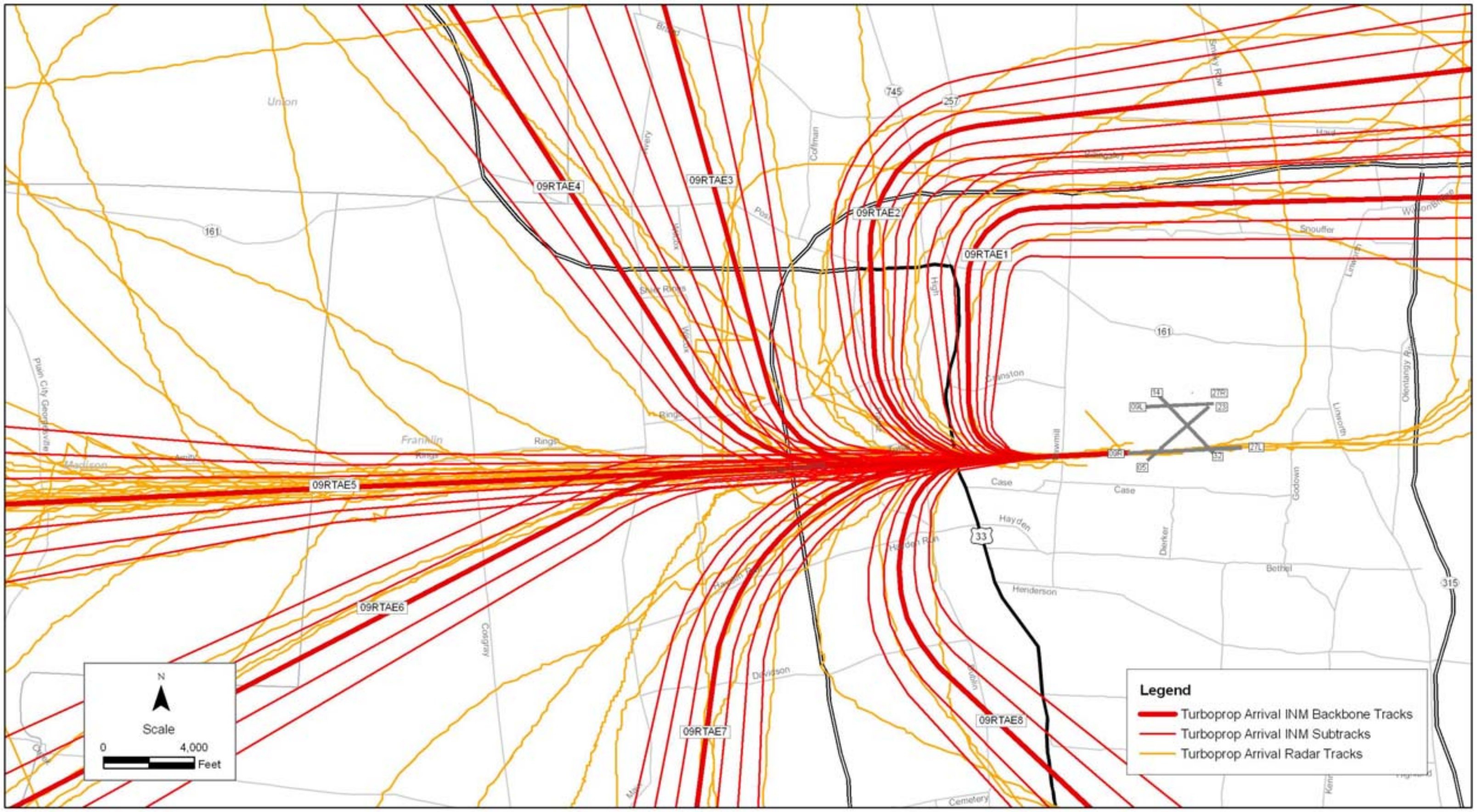
2007 Jet Departures – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



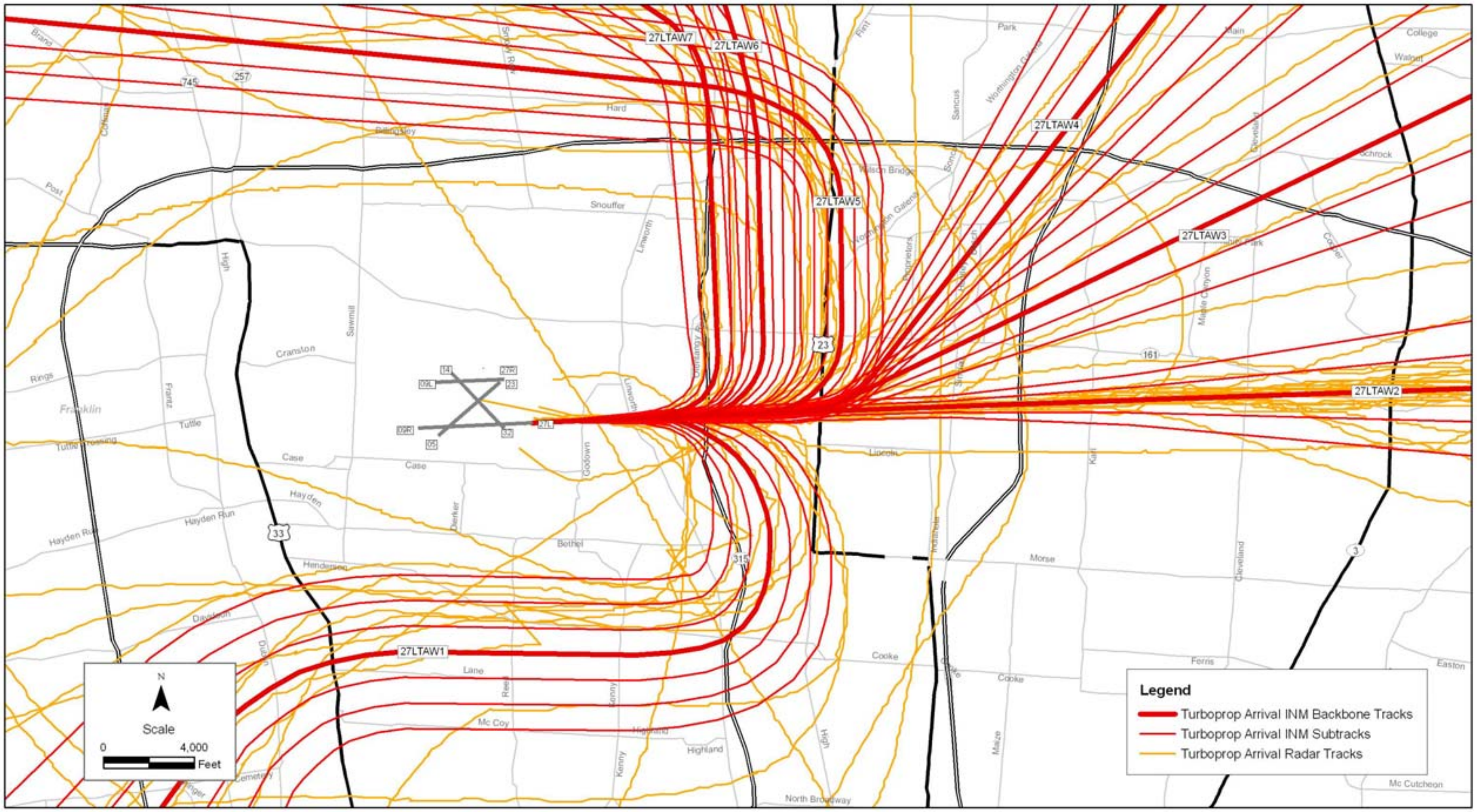
2007 Turboprop Arrivals – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



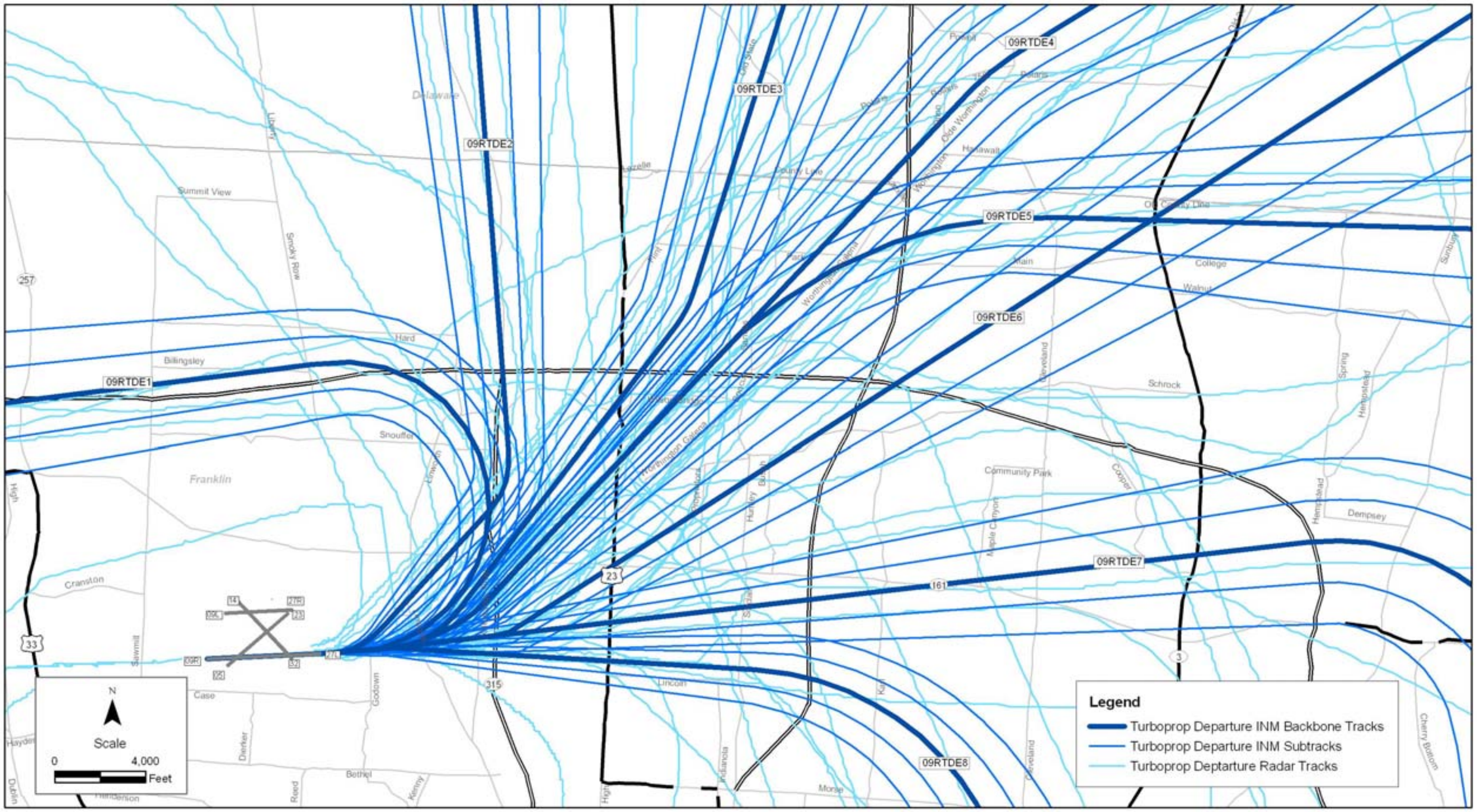
2007 Turboprop Arrivals – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



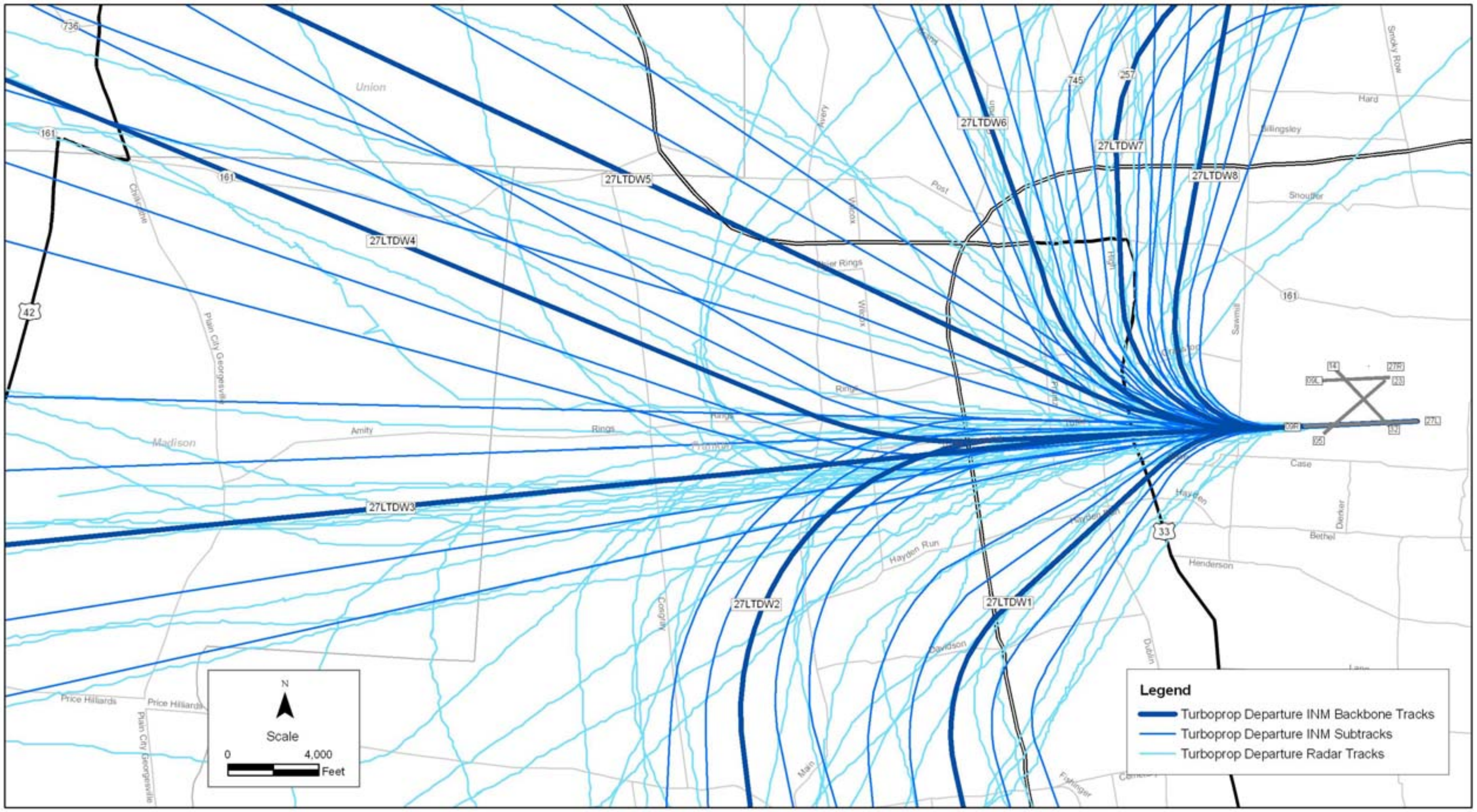
2007 Turboprop Departures – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



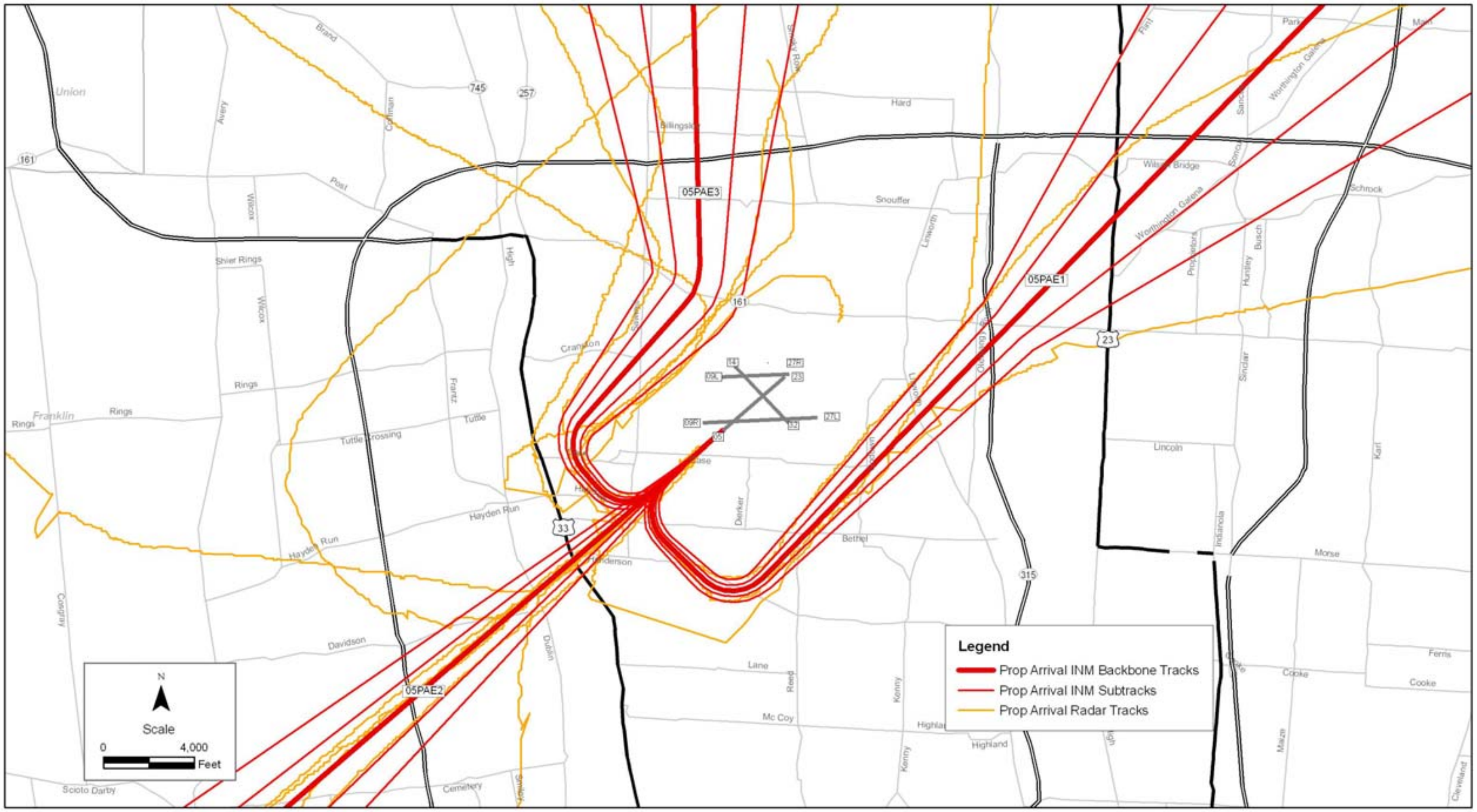
2007 Turboprop Departures – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



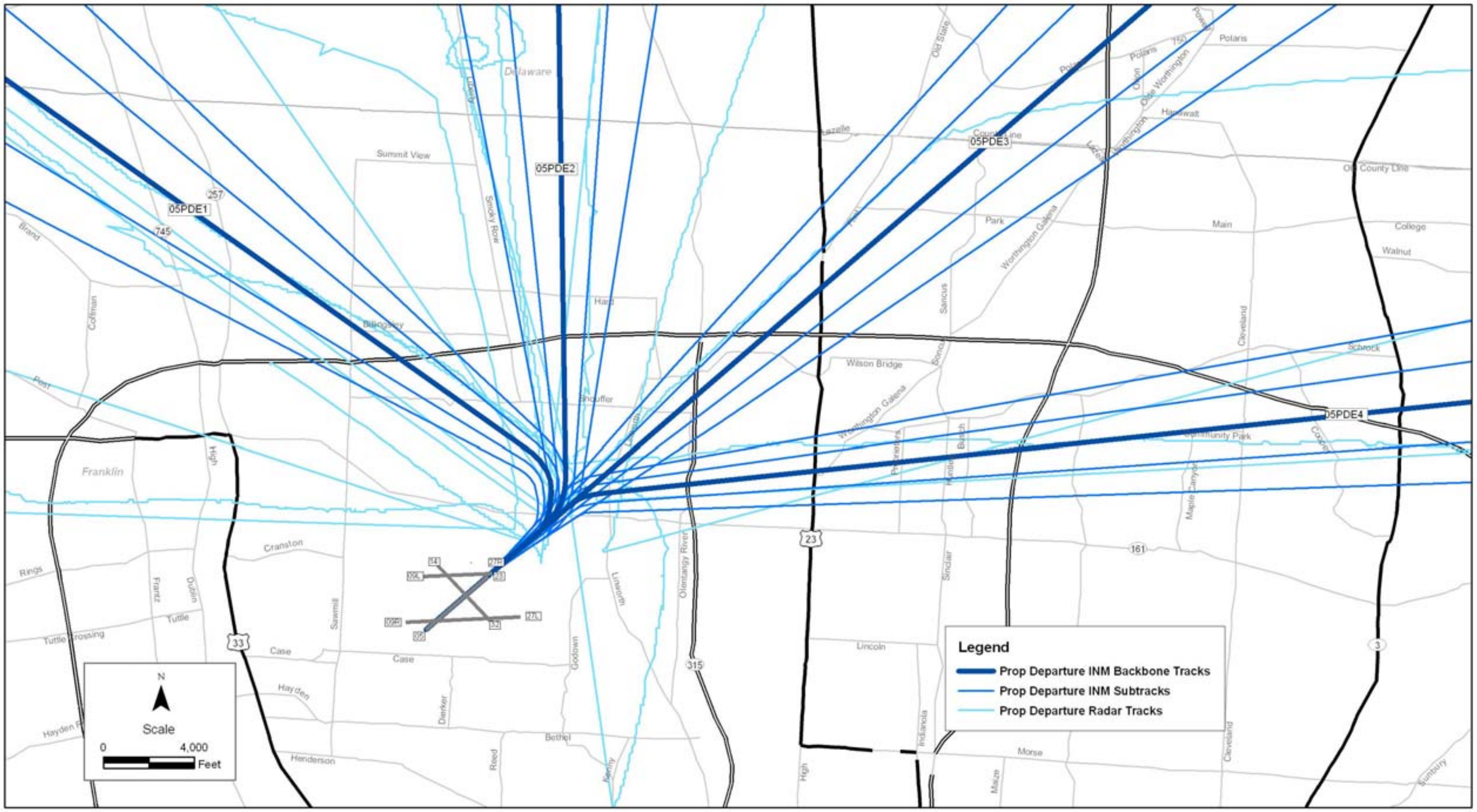
2007 Prop Arrivals – Runway 5

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



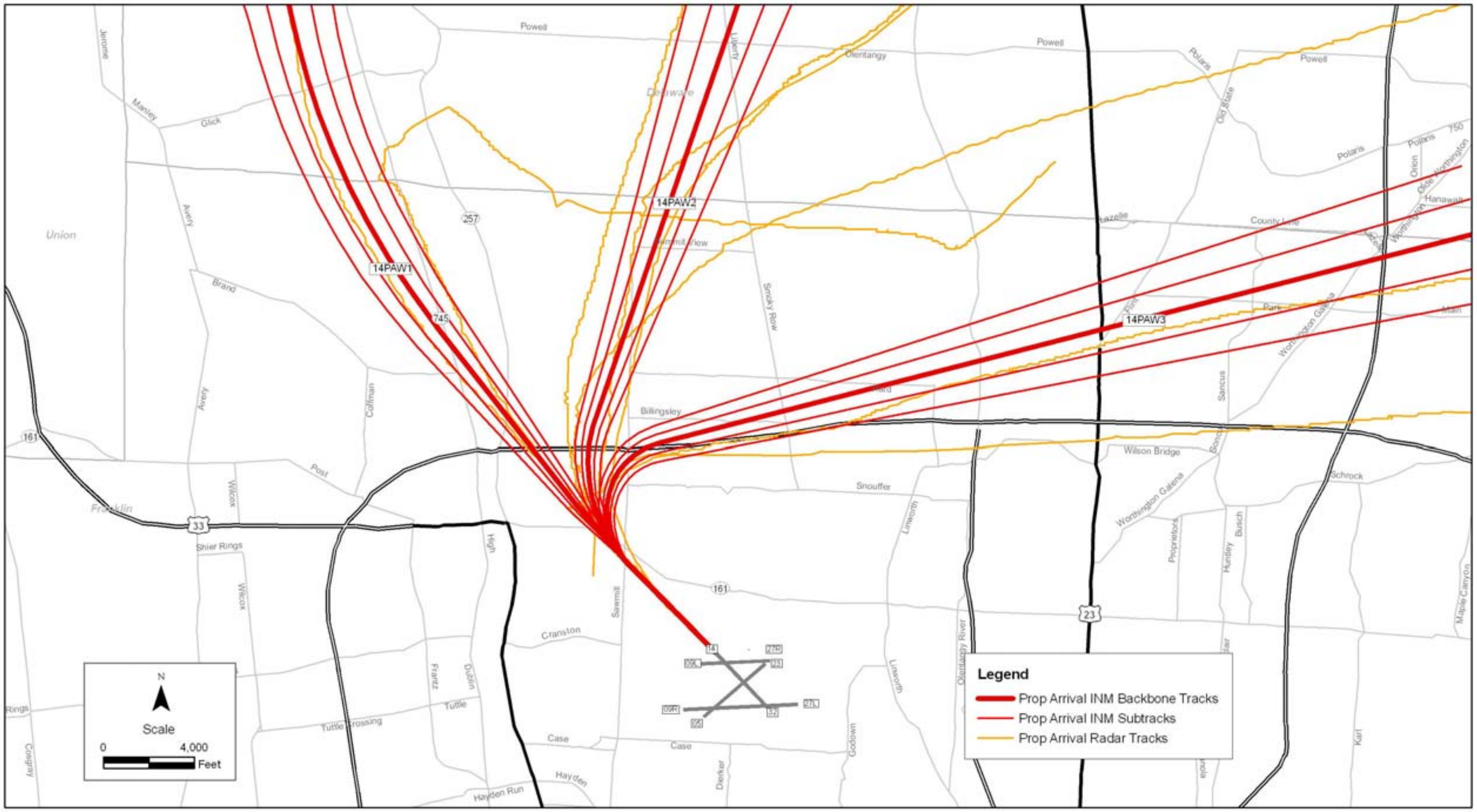
2007 Prop Departures – Runway 5

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



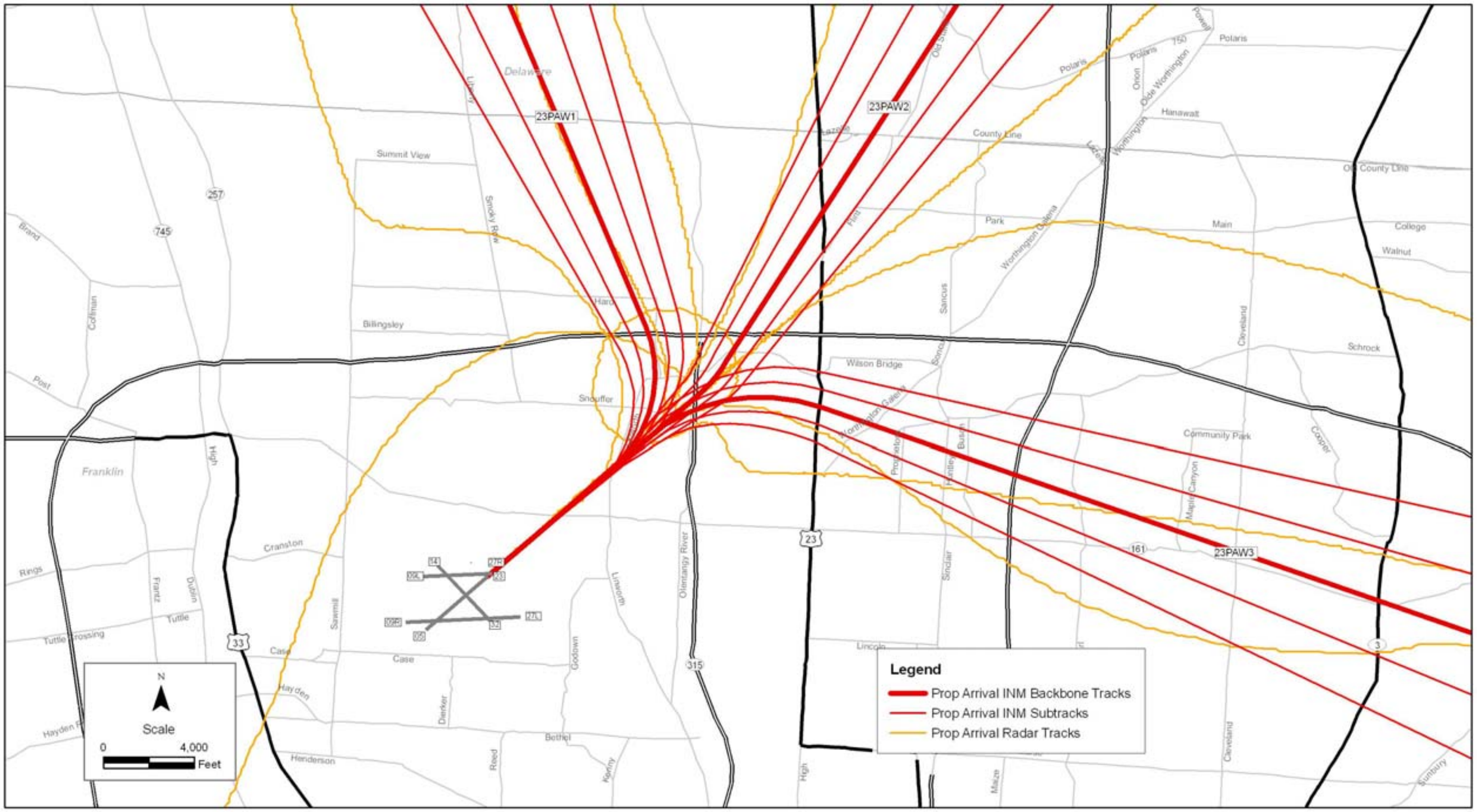
2007 Prop Arrivals – Runway 14

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



2007 Prop Arrivals – Runway 23

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2007 Prop Departures – Runway 23

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

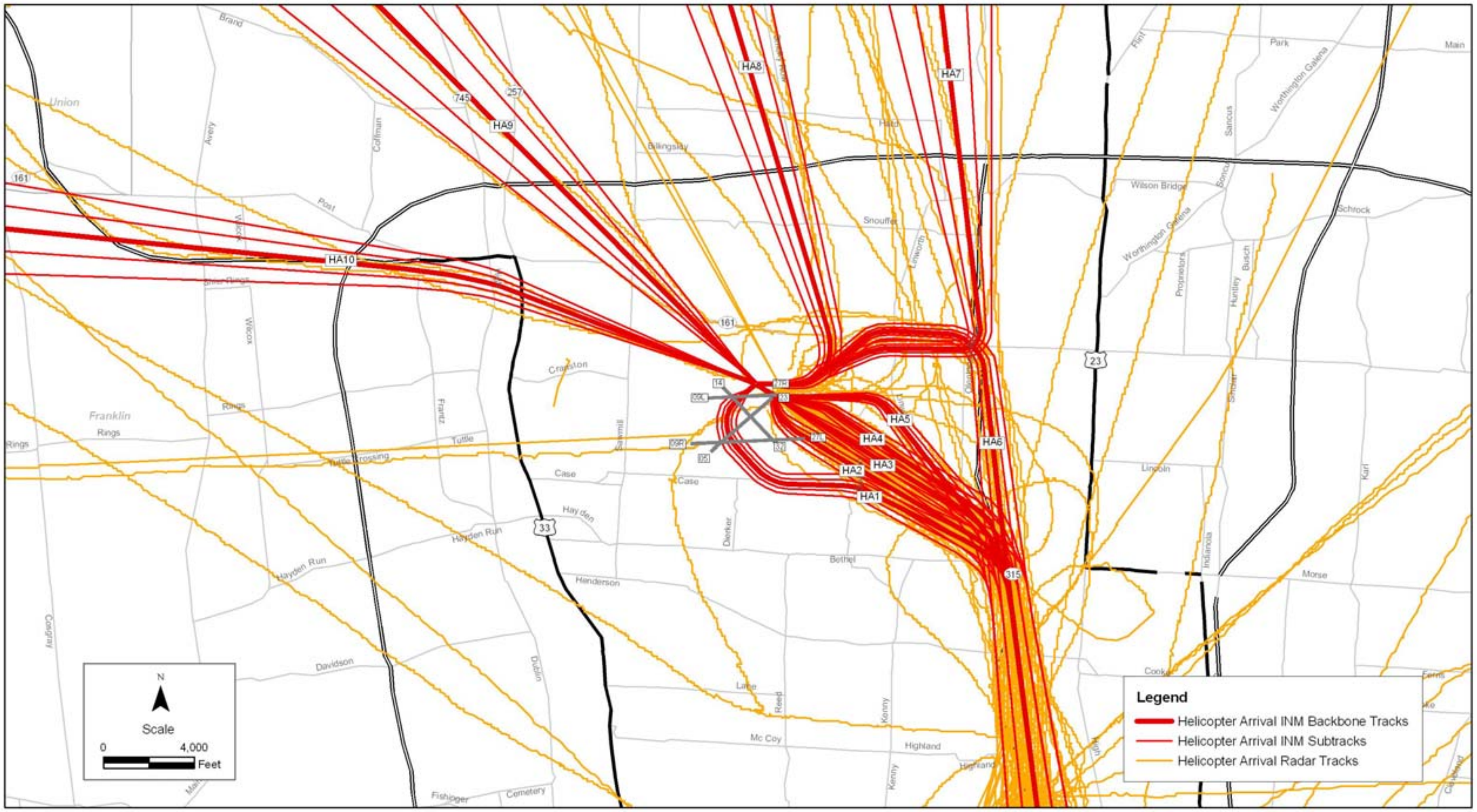
2007 Prop Departures – Runway 32

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



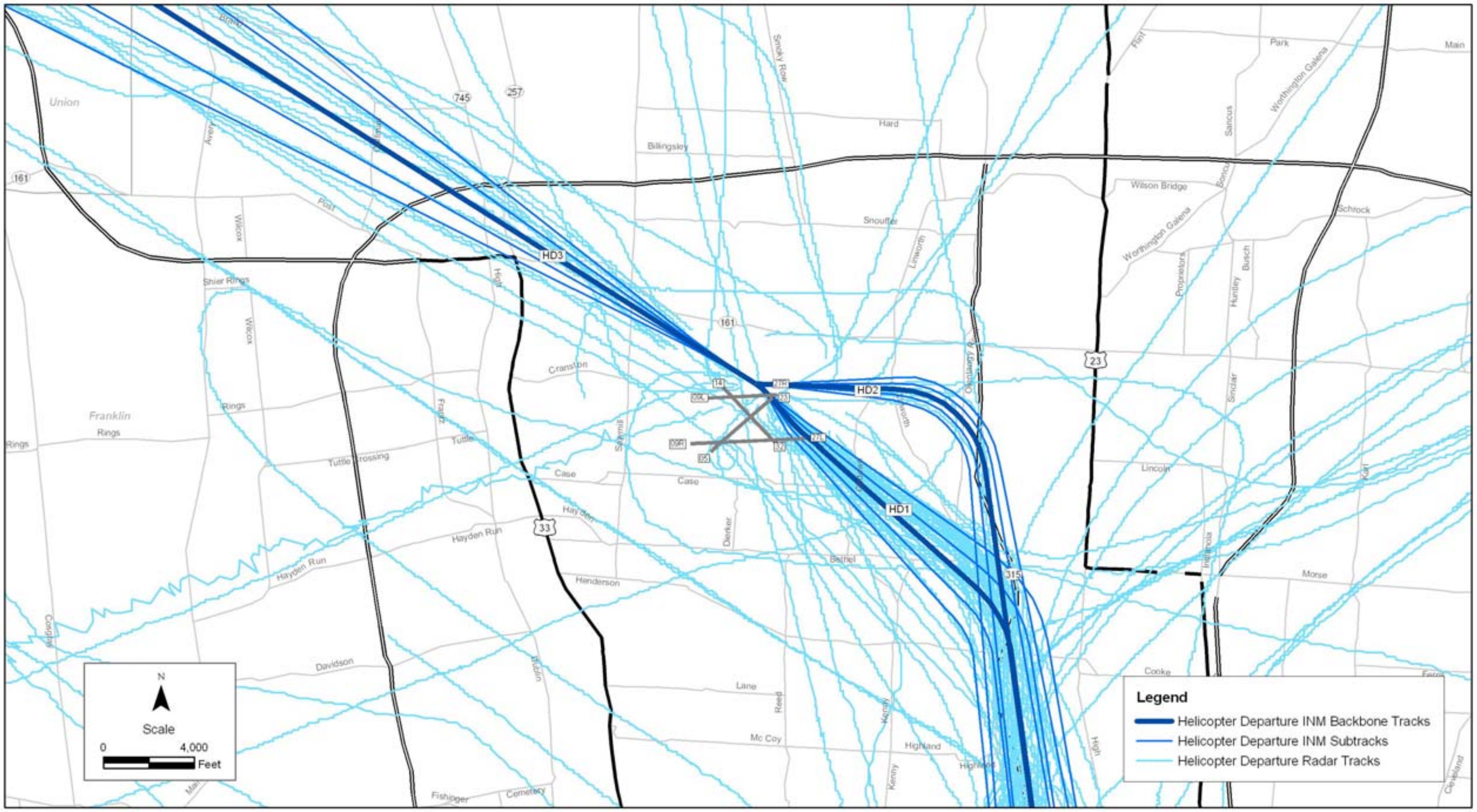
2007 Helicopter Arrivals

Data Subject to Change Based on
Technical Advisory Committee Input

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs



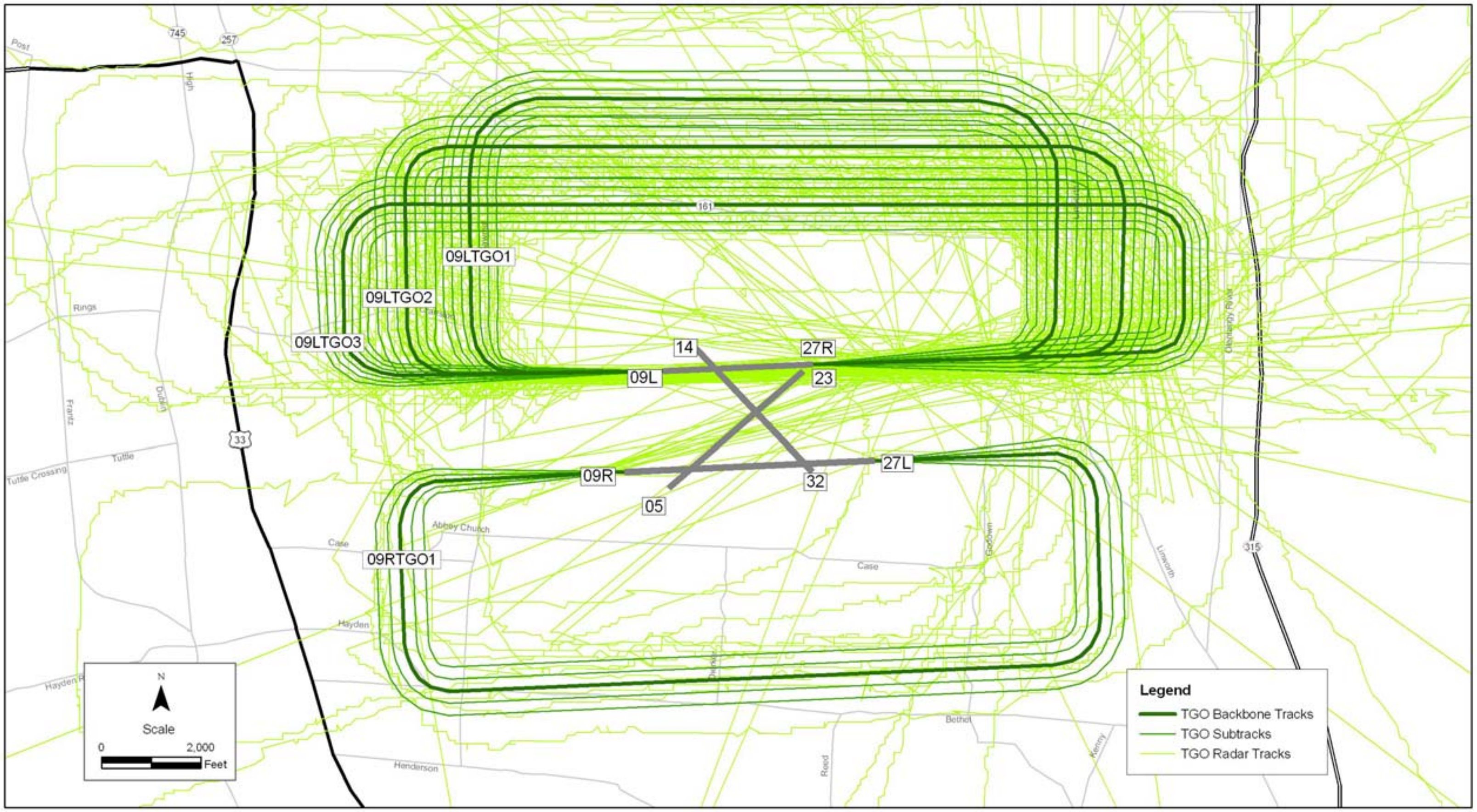
2007 Helicopter Departures

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



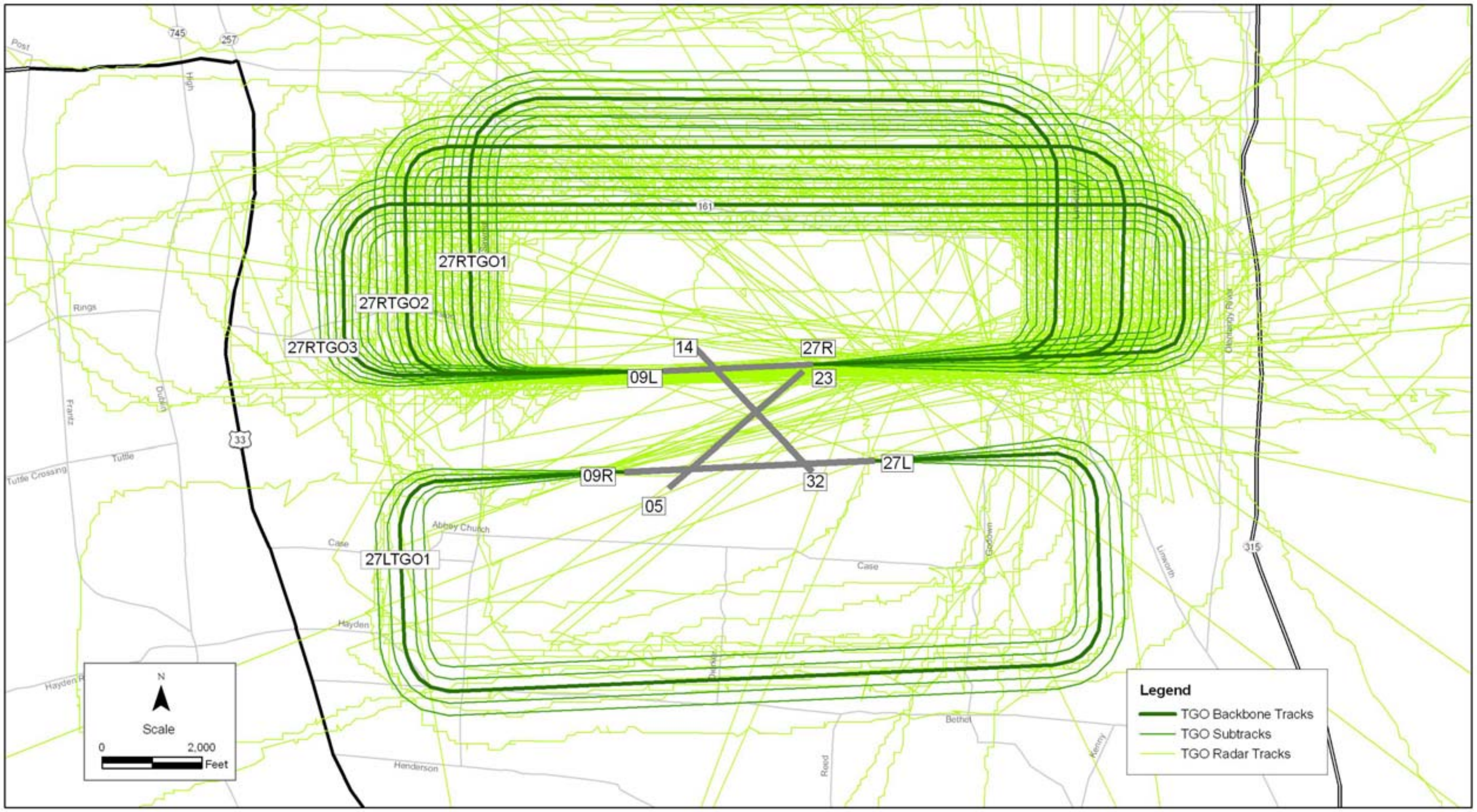
2007 Touch and Go – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



2007 Touch and Go – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Existing Track Use Percentages - Jet
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RJAE1	6.5
		09RJAE2	5.2
		09RJAE3	6.5
		09RJAE4	2.6
		09RJAE5	15.6
		09RJAE6	9.7
		09RJAE7	27.9
		09RJAE8	6.5
		09RJAE9	4.5
		09RJAE10	5.8
		09RJAE11	3.9
		09RJAE12	5.2
		Total	**100.0**
	27L	27LJAW1	4.4
		27LJAW2	3.9
		27LJAW3	3.4
		27LJAW4	3.9
		27LJAW5	42.7
		27LJAW6	4.4
		27LJAW7	1.5
		27LJAW8	1.5
		27LJAW9	1.5
		27LJAW10	3.9
		27LJAW11	5.8
		27LJAW12	10.7
		27LJAW13	7.8
		27LJAW14	4.9
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RJDE1	7.1
		09RJDE2	21.3
		09RJDE3	3.9
		09RJDE4	21.3
		09RJDE5	8.4
		09RJDE6	14.2
		09RJDE7	3.2
		09RJDE8	7.1
		09RJDE9	3.9
		09RJDE10	9.7
		Total	**100.0**
	27L	27LJDW1	20.2
		27LJDW2	12.4
		27LJDW3	4.7
		27LJDW4	17.1
		27LJDW5	10.1
		27LJDW6	12.4
		27LJDW7	3.9
		27LJDW8	10.9
		27LJDW9	6.2
		27LJDW10	2.3
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Existing Track Use Percentages - Propeller Aircraft
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RTAE1	5.2
		09RTAE2	8.6
		09RTAE3	5.2
		09RTAE4	6.9
		09RTAE5	50.0
		09RTAE6	5.2
		09RTAE7	13.8
		09RTAE8	5.2
		Total	**100.0**
	27L	27LTAW1	17.9
		27LTAW2	40.3
		27LTAW3	4.5
		27LTAW4	7.5
		27LTAW5	6.0
		27LTAW6	6.0
		27LTAW7	17.9
		Total	**100.0**
	5	05PAE1	14.3
		05PAE2	64.3
		05PAE3	21.4
		Total	**100.0**
	14	14PAW1	25.0
		14PAW2	50.0
		14PAW3	25.0
		Total	**100.0**
	23	23PAW1	40.0
		23PAW2	40.0
		23PAW3	20.0
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RTDE1	13.0
		09RTDE2	13.0
		09RTDE3	20.4
		09RTDE4	16.7
		09RTDE5	18.5
		09RTDE6	3.7
		09RTDE7	7.4
		09RTDE8	7.4
		Total	**100.0**
	27L	27LTDW1	12.9
		27LTDW2	17.1
		27LTDW3	24.3
		27LTDW4	5.7
		27LTDW5	7.1
		27LTDW6	10.0
		27LTDW7	14.3
		27LTDW8	8.6
		Total	**100.0**
	5	05PDE1	47.6
		05PDE2	23.8
		05PDE3	9.5
		05PDE4	19.0
		Total	**100.0**
	23	23PDW1	25.0
		23PDW2	33.3
		23PDW3	25.0
		23PDW4	16.7
		Total	**100.0**
	32	32PDW1	50.0
		32PDW2	25.0
		32PDW3	25.0
		Total	**100.0**

Source: AirScene; ESA Airports

Data Subject to Change Based on Technical Advisory Committee Input

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs

Existing Track Use Percentages - Helicopters
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	H1	HD1	60.7
		HD2	15.7
		HD3	23.6
		Total	**100.0**
Departures	H2	HA1	2.5
		HA2	10.7
		HA3	32.8
		HA4	25.4
		HA5	9.0
		HA6	6.6
		HA7	1.6
		HA8	4.1
		HA9	5.7
		HA10	1.6
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Existing Track Use Percentages - Touch And Go
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
East Flow	9L	09LTGO1	23.4
		09LTGO2	25.5
		09LTGO3	27.7
	9R	09RTGO1	23.4
		Total	**100.0**
West Flow	27R	27RTGO1	23.4
		27RTGO2	25.5
		27RTGO3	27.7
	27L	27LTGO1	23.4
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2012 INM Inputs

The Ohio State University Airport
PART 150 STUDY

ESA Airports

Review OSU Airport Noise Model Inputs

2012 Annual Operations
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

	Air Carrier	Air Taxi	Itinerant General Aviation	Local General Aviation	Itinerant Military	Local Military	Total
Yearly Totals	0	6,529	69,478	43,090	293	60	119,450
Average 24-Hour Day	0.00	17.89	190.35	118.05	0.80	0.16	327.26

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aware, OSU ATCT, Port Columbus Standard Terminal Automated Replacement System (STARS), RS&H

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2012 Annual-Average Day Fleet Mix - Itinerant Operations (Page 1 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

			Arrivals			*Departures*			*Total*
Category	***Aircraft***	***INM Aircraft***	***Day***	***Night***	***Total***	***Day***	***Night***	***Total***	***Operations***
Jet	Gulfstream II	GII	0.034	0.001	0.035	0.034	0.001	0.035	0.070
	Gulfstream III	GIIB	0.041	0.001	0.042	0.040	0.002	0.042	0.084
	Gulfstream IV	GIV	0.121	0.002	0.123	0.118	0.005	0.123	0.246
	Gulfstream V	GV	0.034	0.001	0.034	0.033	0.001	0.034	0.069
	CRJ-700	GV	0.002	0.000	0.002	0.002	0.000	0.002	0.005
	Cessna 750	CNA750	0.272	0.014	0.287	0.267	0.020	0.287	0.573
	Canadair BD-100	CL600*	0.777	0.041	0.818	0.760	0.057	0.818	1.635
	Challenger 600	CL600	0.282	0.015	0.296	0.276	0.021	0.296	0.593
	ERJ 135/140	EMB145	0.042	0.002	0.044	0.041	0.003	0.044	0.089
	Falcon 2000	CL600	0.094	0.005	0.099	0.092	0.007	0.099	0.198
	Falcon 900	LEAR35*	0.077	0.004	0.082	0.076	0.006	0.082	0.163
	Falcon 50	LEAR35*	0.082	0.004	0.087	0.080	0.006	0.087	0.173
	Astra 1125	IA1125	0.074	0.006	0.080	0.076	0.004	0.080	0.159
	Beechjet 400	MU3001	1.970	0.148	2.118	2.013	0.106	2.118	4.237
	Citation 525/500	CNA500	1.286	0.097	1.383	1.314	0.069	1.383	2.765
	Citation 550/560	MU3001	3.374	0.254	3.628	3.447	0.181	3.628	7.256
	Citation 650	CIT3	0.104	0.008	0.111	0.106	0.006	0.111	0.223
	Citation 680	MU3001*	0.253	0.019	0.272	0.258	0.014	0.272	0.543
	Falcon 10	LEAR35	0.072	0.005	0.077	0.073	0.004	0.077	0.155
	Falcon 20	CL600	0.114	0.009	0.122	0.116	0.006	0.122	0.245
	Gulfstream 150	LEAR35*	0.012	0.001	0.013	0.013	0.001	0.013	0.027
	Gulfstream 200	GII	0.066	0.005	0.071	0.068	0.004	0.071	0.142
	BAe-125 (400 Series)	LEAR35*	0.016	0.001	0.018	0.017	0.001	0.018	0.035
	BAe-125 (800 Series)	LEAR35	0.739	0.056	0.795	0.755	0.040	0.795	1.590
	Bae-125 (1000 Series)	LEAR35*	0.033	0.002	0.035	0.034	0.002	0.035	0.071
	Dornier 328	CNA750*	0.038	0.003	0.041	0.039	0.002	0.041	0.081
	Lear 24/25	LEAR25	0.183	0.014	0.197	0.187	0.010	0.197	0.394
	Lear 31/35/40/45/55/60	LEAR35	0.826	0.062	0.888	0.844	0.044	0.888	1.777
	Mitsubishi Diamond	CNA500	0.139	0.010	0.150	0.142	0.007	0.150	0.299
	Raytheon 390	MU3001*	0.027	0.002	0.029	0.027	0.001	0.029	0.057
	Sabreliner	LEAR35	0.046	0.003	0.049	0.047	0.002	0.049	0.098
	Westwind 1124	IA1125	0.018	0.001	0.020	0.019	0.001	0.020	0.040
	VLJ	CNA750*	2.185	0.164	2.349	2.232	0.117	2.349	4.699
	Subtotal		**13.434**	**0.962**	**14.396**	**13.644**	**0.752**	**14.396**	**28.792**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2012 Annual-Average Day Fleet Mix - Itinerant Operations (Page 2 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals* Day	*Arrivals* Night	*Arrivals* Total	*Departures* Day	*Departures* Night	*Departures* Total	*Total Operations*
Multi-Engine/Turboprop	Gulf Aero Commander	CNA441	0.883	0.132	1.015	0.914	0.102	1.015	2.031
	EMB-120	EMB120	0.031	0.005	0.035	0.032	0.004	0.035	0.071
	Beech 1900	1900D	0.051	0.008	0.059	0.053	0.006	0.059	0.118
	Raytheon B300	DHC6	2.193	0.328	2.520	2.268	0.252	2.520	5.041
	Beech King Air	CNA441	3.250	0.486	3.736	3.362	0.374	3.736	7.472
	Beech Super King Air	DHC6	3.795	0.567	4.362	3.926	0.436	4.362	8.723
	Swearingen Merlin 4	DHC6	0.015	0.002	0.018	0.016	0.002	0.018	0.035
	Cessna Conquest	CNA441	0.164	0.025	0.189	0.170	0.019	0.189	0.378
	Jetstream Super 31	DHC6	0.031	0.005	0.035	0.032	0.004	0.035	0.071
	Mitsubishi MU2	DHC6	0.046	0.007	0.053	0.048	0.005	0.053	0.106
	P180 Avanti	DHC6*	0.503	0.075	0.579	0.521	0.058	0.579	1.157
	Piper Cheyenne	CNA441	1.212	0.181	1.393	1.254	0.139	1.393	2.787
	Swearingen Merlin 3	CNA441	0.041	0.006	0.047	0.043	0.005	0.047	0.094
	Partinavia P68	BEC58P*	0.027	0.004	0.031	0.028	0.003	0.031	0.062
	Piper Comanche	PA30	0.075	0.011	0.086	0.077	0.009	0.086	0.172
	Diamond Twin Star	BEC58P*	0.002	0.000	0.003	0.002	0.000	0.003	0.005
	Piper Chieftain	PA31	1.895	0.283	2.179	1.961	0.218	2.179	4.357
	Cessna Caravan II	BEC58P*	0.038	0.006	0.043	0.039	0.004	0.043	0.086
	Cessna Caravan I	GASEPF	0.808	0.016	0.825	0.767	0.058	0.825	1.650
	Lancair Columbia 400	GASEPF*	0.248	0.005	0.253	0.235	0.018	0.253	0.505
	Malibu Meridian	GASEPV	0.519	0.011	0.529	0.492	0.037	0.529	1.058
	Pilatus PC12	GASEPV*	1.237	0.025	1.262	1.174	0.088	1.262	2.524
	Aerospatiale Socata	GASEPV	1.056	0.022	1.077	1.002	0.075	1.077	2.155
	Multiple Aircraft (1)	BEC58P	1.073	0.745	1.818	1.145	0.673	1.818	3.636
	Subtotal		**19.194**	**2.954**	**22.148**	**19.561**	**2.587**	**22.148**	**44.296**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2012 Annual-Average Day Fleet Mix - Itinerant Operations (Page 3 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals* Day	*Arrivals* Night	*Arrivals* Total	*Departures* Day	*Departures* Night	*Departures* Total	*Total Operations*
Single Engine	Cessna 180/182/206/210	CNA206	5.714	0.365	6.079	5.836	0.243	6.079	12.158
	Cessna 150/152/172/172RG/177	CNA172	15.956	1.018	16.975	16.296	0.679	16.975	33.949
	Piper Warrior	PA28	6.966	0.445	7.411	7.115	0.296	7.411	14.822
	Multiple Aircraft (2)	GASEPV	15.609	0.996	16.605	15.941	0.664	16.605	33.210
	Multiple Aircraft (3)	GASEPF	0.976	0.073	1.050	1.029	0.021	1.050	2.099
	Subtotal		**45.222**	**2.898**	**48.119**	**46.215**	**1.904**	**48.119**	**96.238**
Helicopter	Eurocopter Astar	SA350D	6.791	0.357	7.149	6.791	0.357	7.149	14.298
	Sikorsky S-76A	S76	0.262	0.014	0.276	0.262	0.014	0.276	0.552
	Eurocopter EC-135	EC130	8.437	0.444	8.881	8.437	0.444	8.881	17.761
	Aerospatiale Dauphin	SA365N	1.955	0.103	2.058	1.955	0.103	2.058	4.116
	Kawasaki BK-117	B206L*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Bell Jet Ranger	B206L	1.038	0.055	1.093	1.038	0.055	1.093	2.185
	Subtotal		**18.483**	**0.973**	**19.456**	**18.483**	**0.973**	**19.456**	**38.912**
Military	UH-60 Blackhawk	S70	0.301	0.000	0.301	0.301	0.000	0.301	0.602
	UH-1 Huey	B212	0.100	0.000	0.100	0.100	0.000	0.100	0.201
	Subtotal		**0.401**	**0.000**	**0.401**	**0.401**	**0.000**	**0.401**	**0.803**
	TOTAL		**96.734**	**7.786**	**104.521**	**98.305**	**6.216**	**104.521**	**209.041**

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H
* Requires FAA approval of aircraft substitution
Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

Data Subject to Change Based on
Technical Advisory Committee Input

Review OSU Airport Noise Model Inputs

2012 Annual-Average Day Fleet Mix (Local operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

			Touch and Go		
Category	***Aircraft***	***INM Aircraft***	***Day***	***Night***	***Total***
ME/TP	Partenavia P68	BEC58P*	0.010	0.000	0.010
	Piper Comanche	PA30	0.028	0.000	0.028
	Diamond Twin Star	BEC58P*	0.001	0.000	0.001
	Piper Chieftain	PA31	0.530	0.010	0.540
	Multiple Aircraft (1)	BEC58P	0.568	0.001	0.569
	Subtotal		**1.137**	**0.011**	**1.148**
Single Engine	Cessna 180/182/206/210	CNA206	13.862	0.664	14.526
	Cessna 150/152/172/172RG/177	CNA172	41.299	1.960	43.259
	Piper Warrior	PA28	17.957	0.933	18.890
	Multiple Aircraft (2)	GASEPV	35.849	1.703	37.552
	Multiple Aircraft (3)	GASEPF	2.680	0.000	2.680
	Subtotal		**111.647**	**5.260**	**116.907**
Military	UH-60 Blackhawk	S70	0.123	0.000	0.123
	UH-1 Huey	B212	0.041	0.000	0.041
	Subtotal		**0.164**	**0.000**	**0.164**
	TOTAL		**112.948**	**5.271**	**118.219**

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2012/2027 Runway Utilization (Intinerant & Local)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Runway	*Jets*	*Multi-Engine*	*Single-Engine*
9L	26.40%	11.55%	4.95%
27R	53.60%	23.45%	10.05%
9R	6.60%	19.80%	26.40%
27L	13.40%	40.20%	53.60%
5	0.00%	1.25%	1.25%
23	0.00%	3.75%	3.75%
14	0.00%	0.00%	0.00%
32	0.00%	0.00%	0.00%
Total	**100.00%**	**100.00%**	**100.00%**

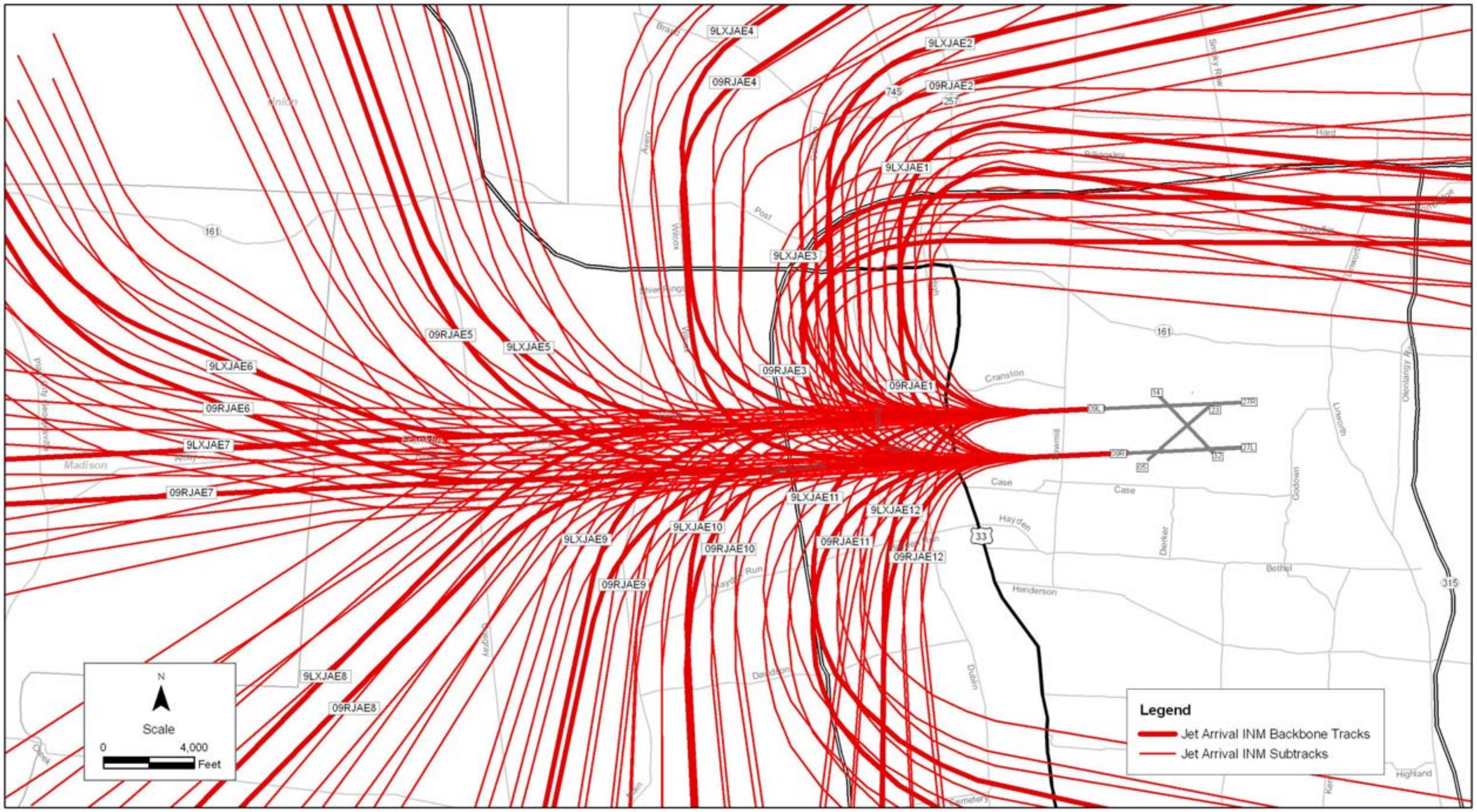
Source: Aircraft Noise Study for Ohio State University Airport; Draft Master Plan

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



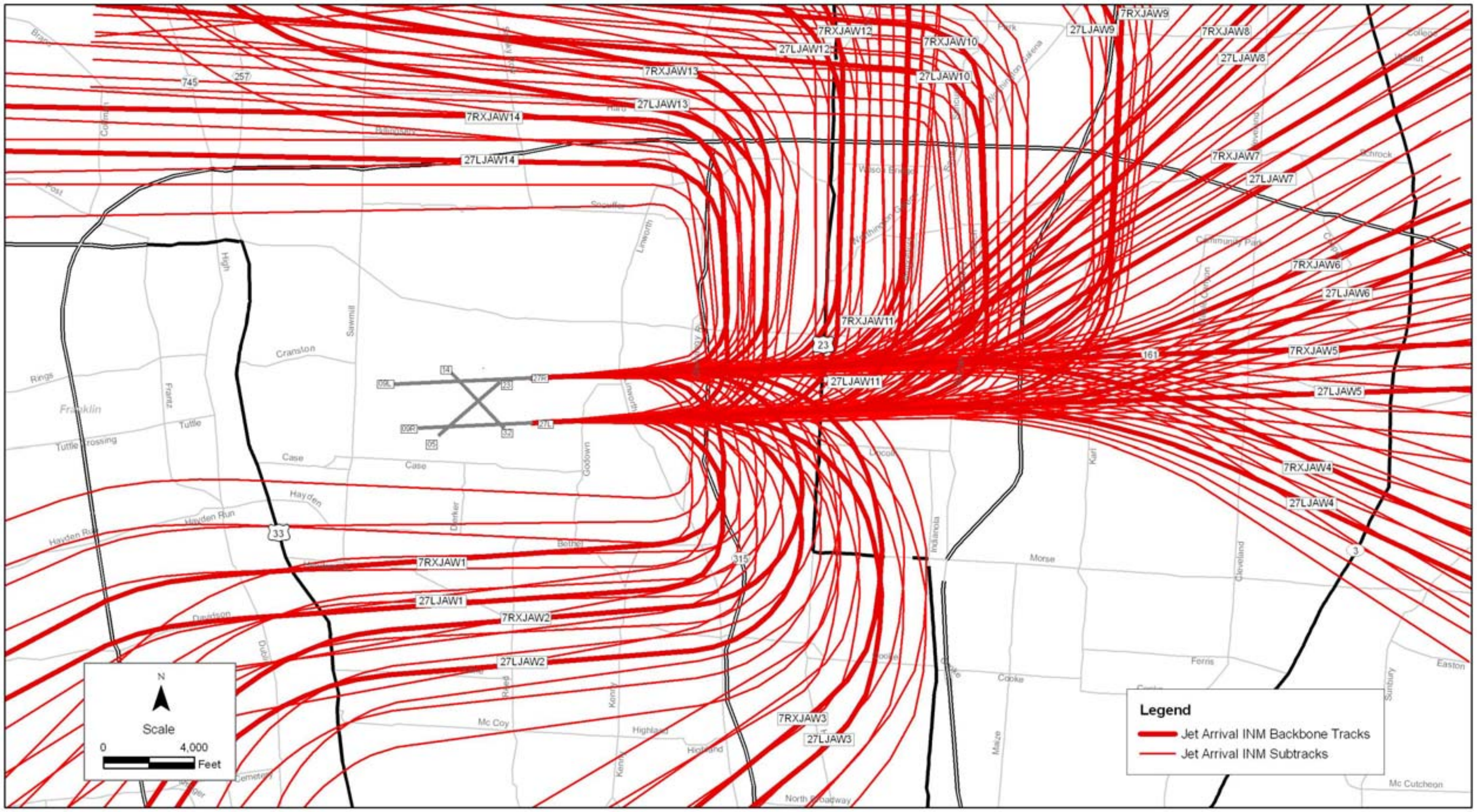
Future (2012) Jet Arrivals – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



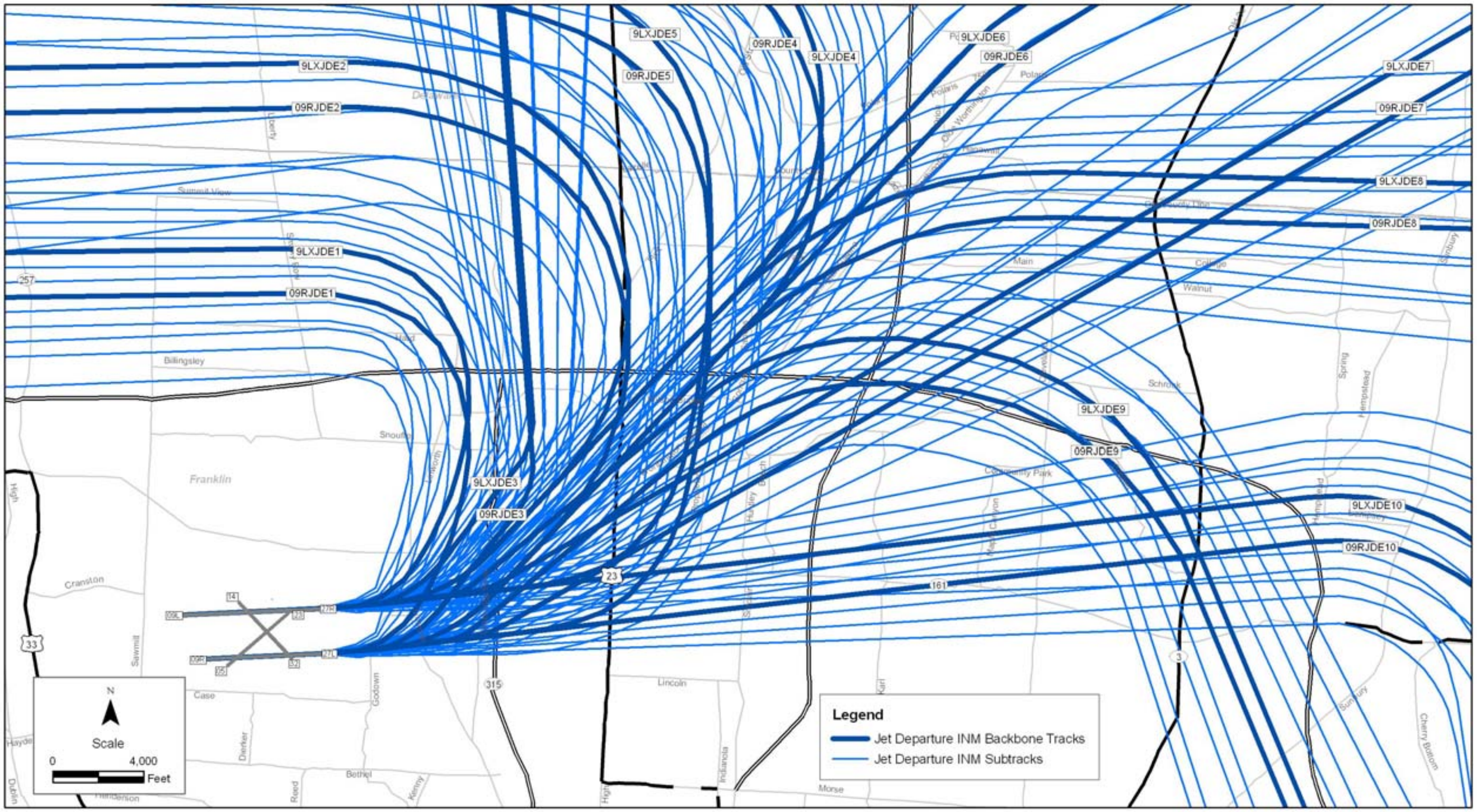
Future (2012) Jet Arrivals – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



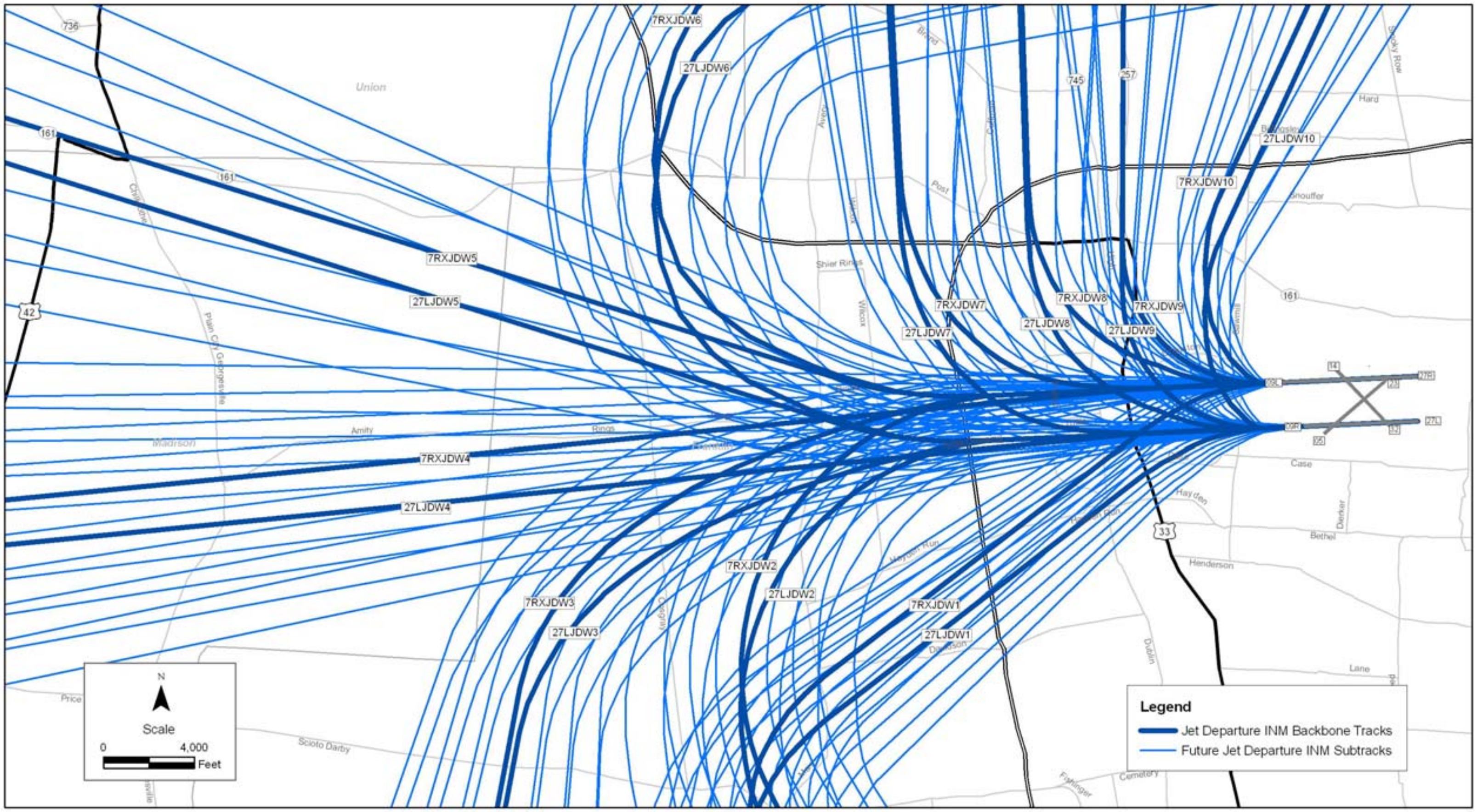
Future (2012) Jet Departures – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



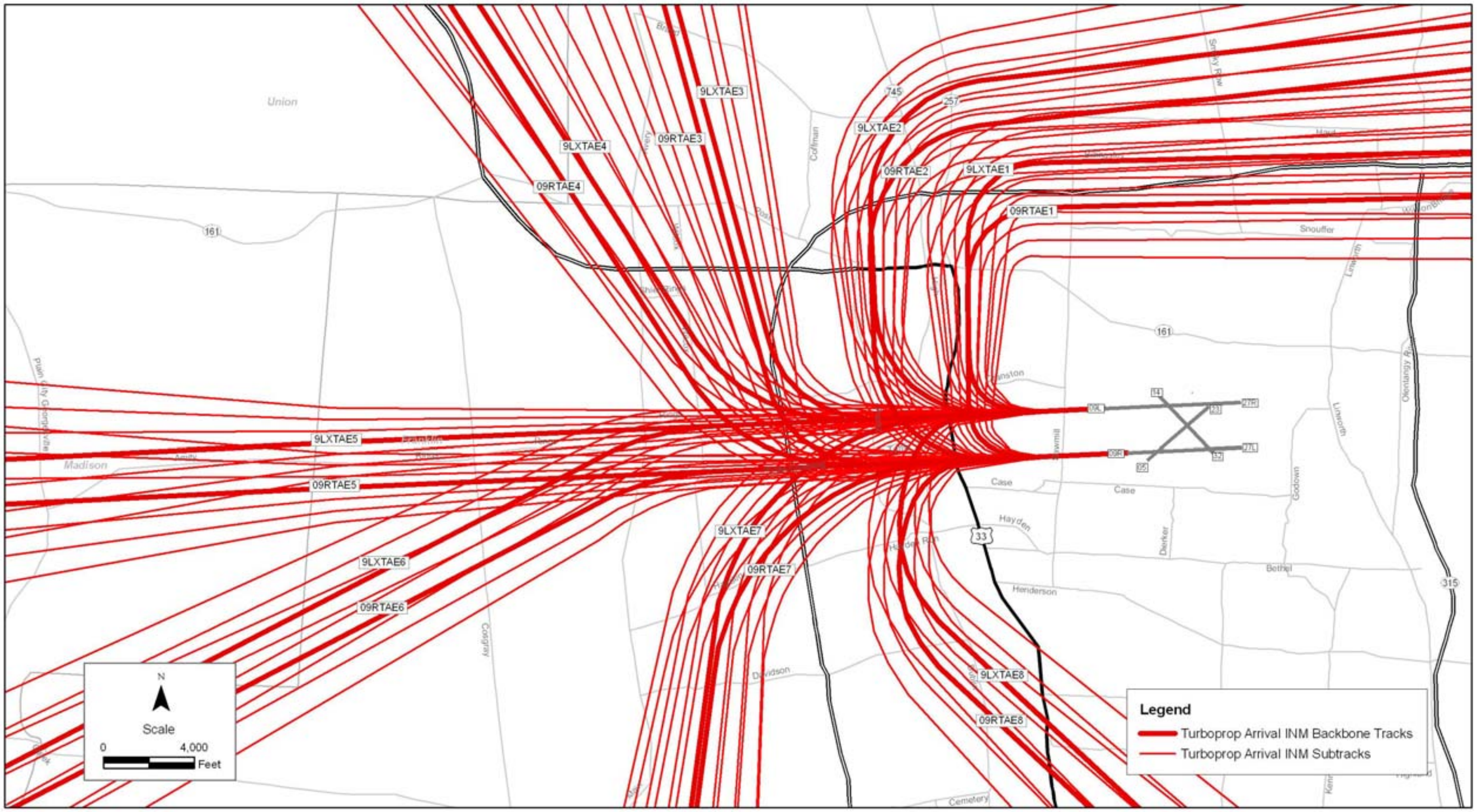
Future (2012) Jet Departures – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



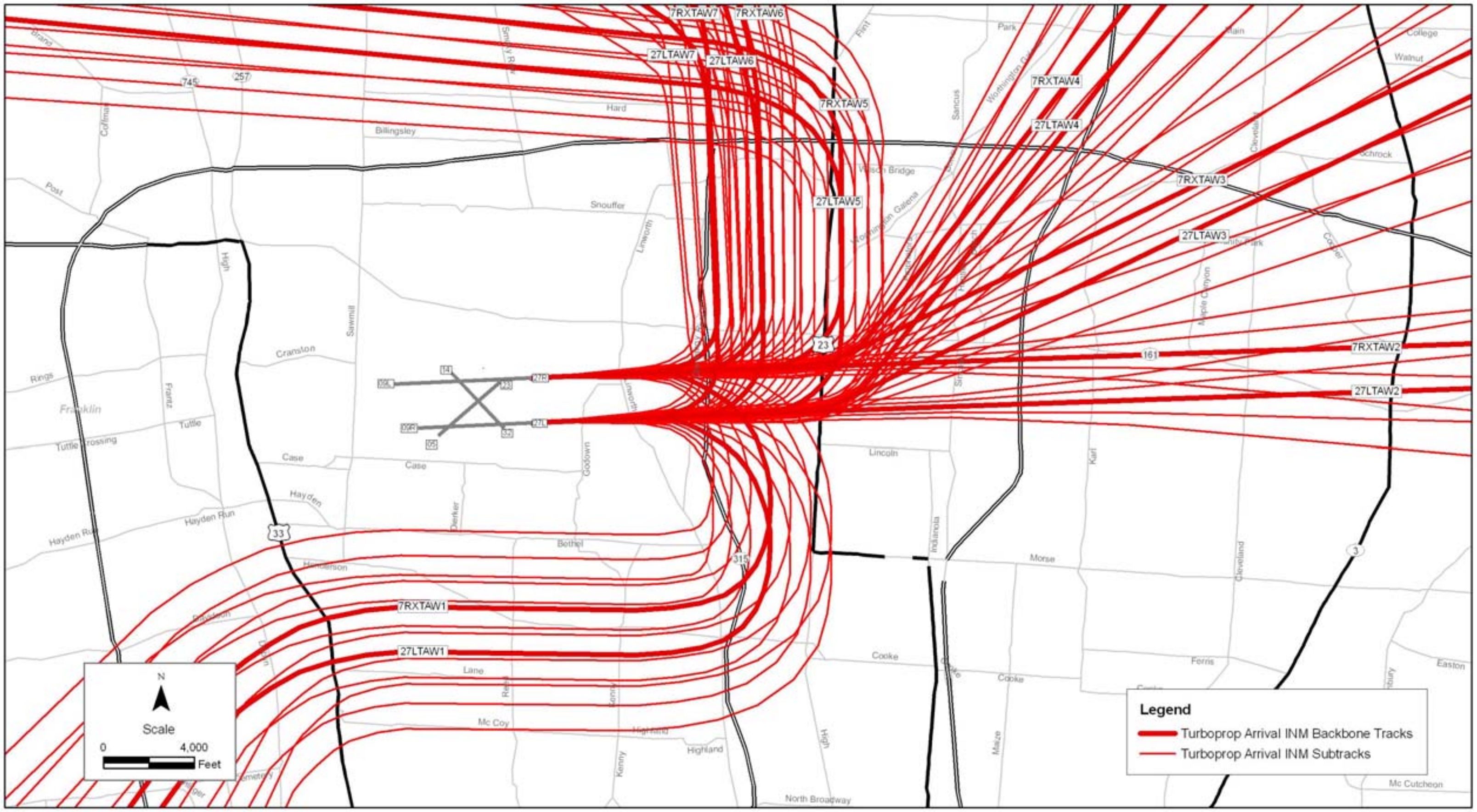
Future (2012) Turboprop Arrivals – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



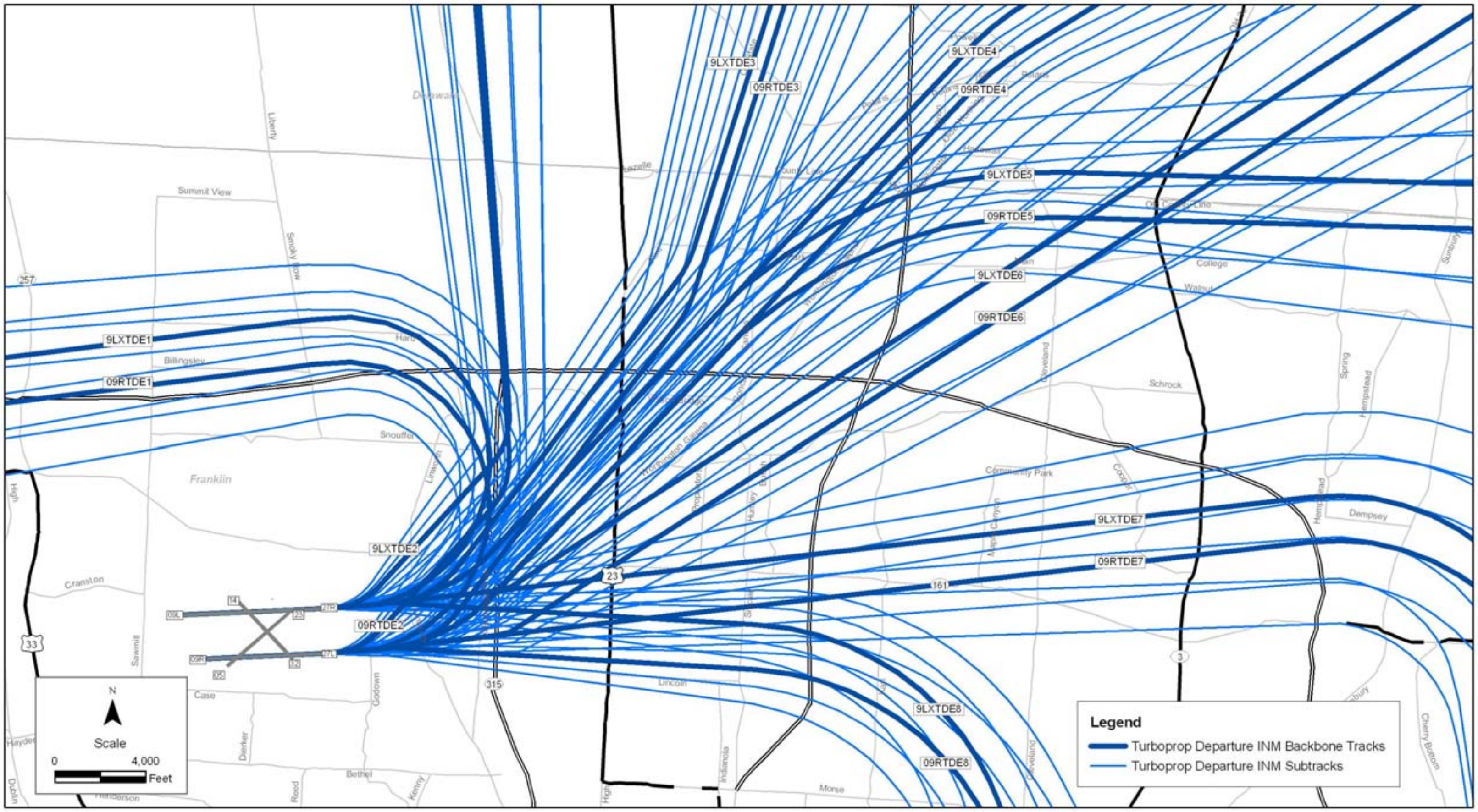
Future (2012) Turboprop Arrivals – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



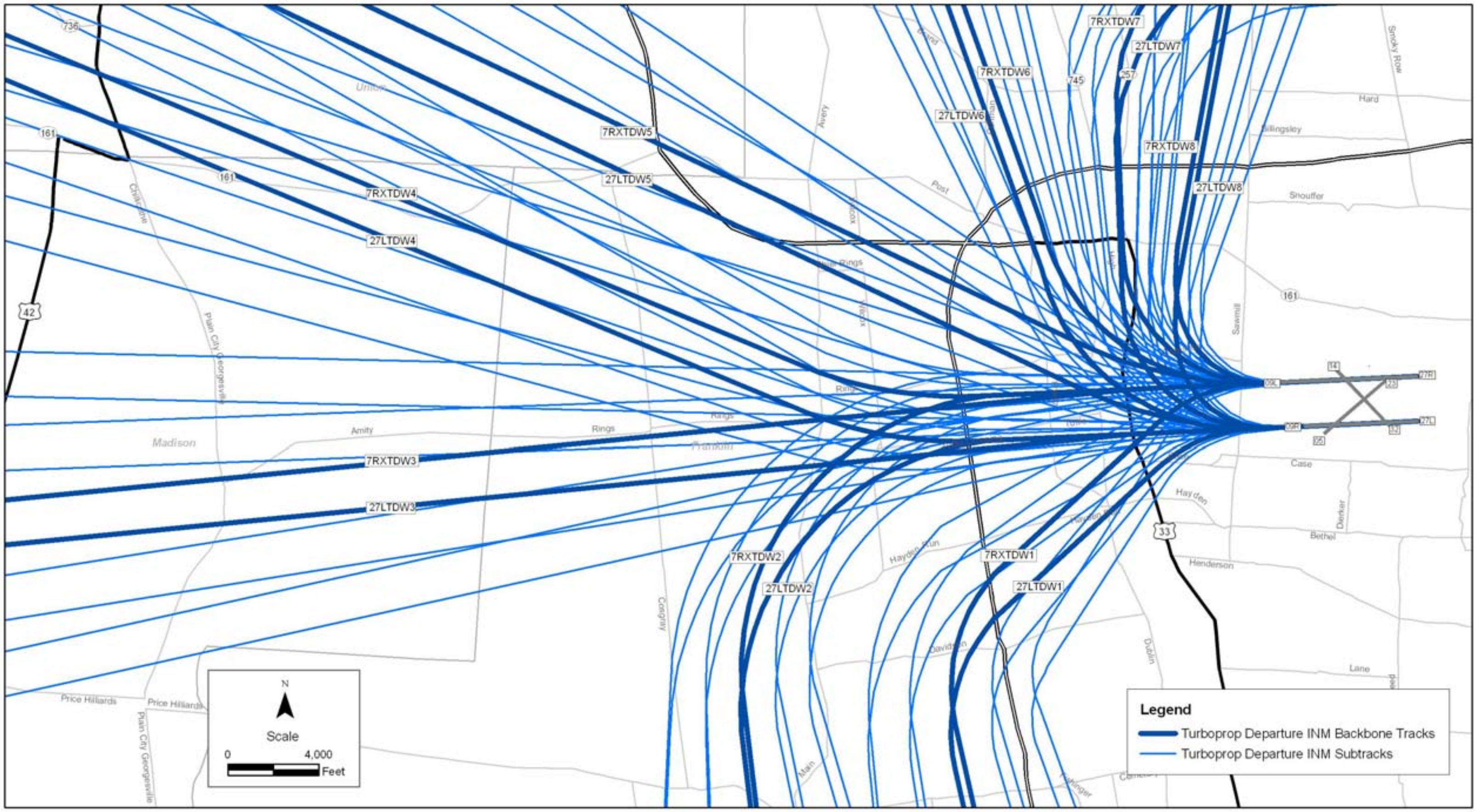
Future (2012) Turboprop Departures – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



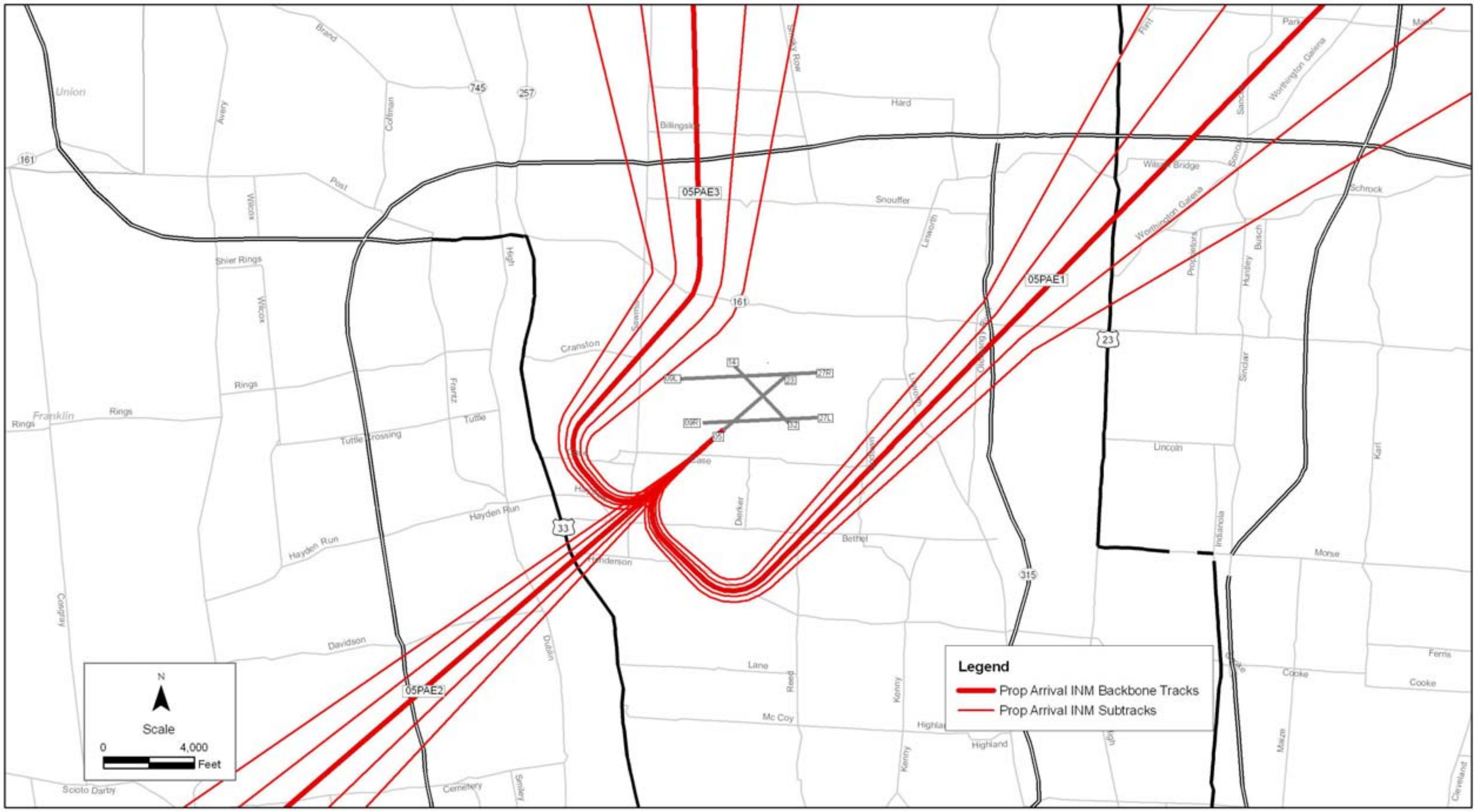
Future (2012) Turboprop Departures – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



Future (2012) Prop Arrivals – Runway 5

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

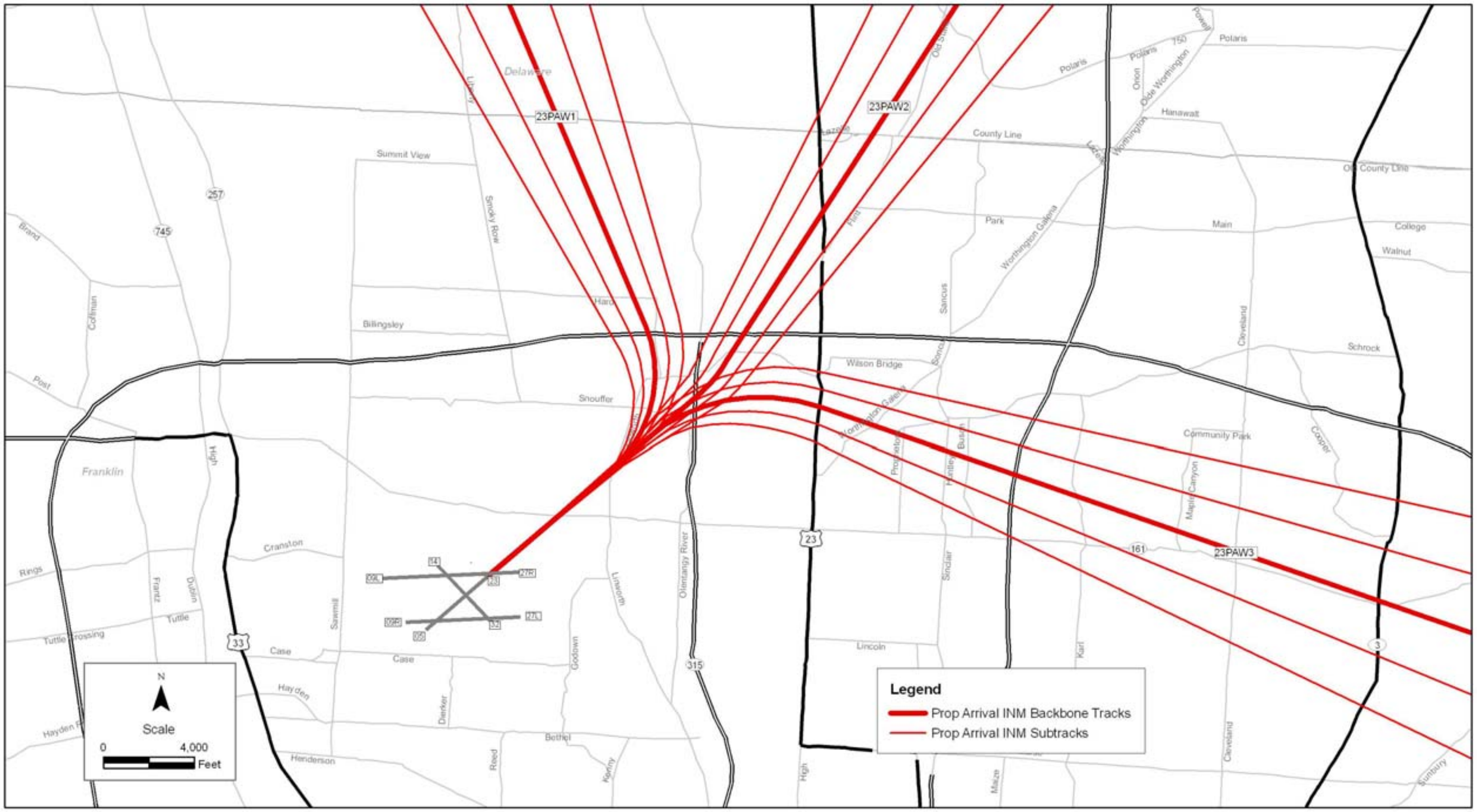
Future (2012) Prop Departures – Runway 5

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



Future (2012) Prop Arrivals – Runway 23

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

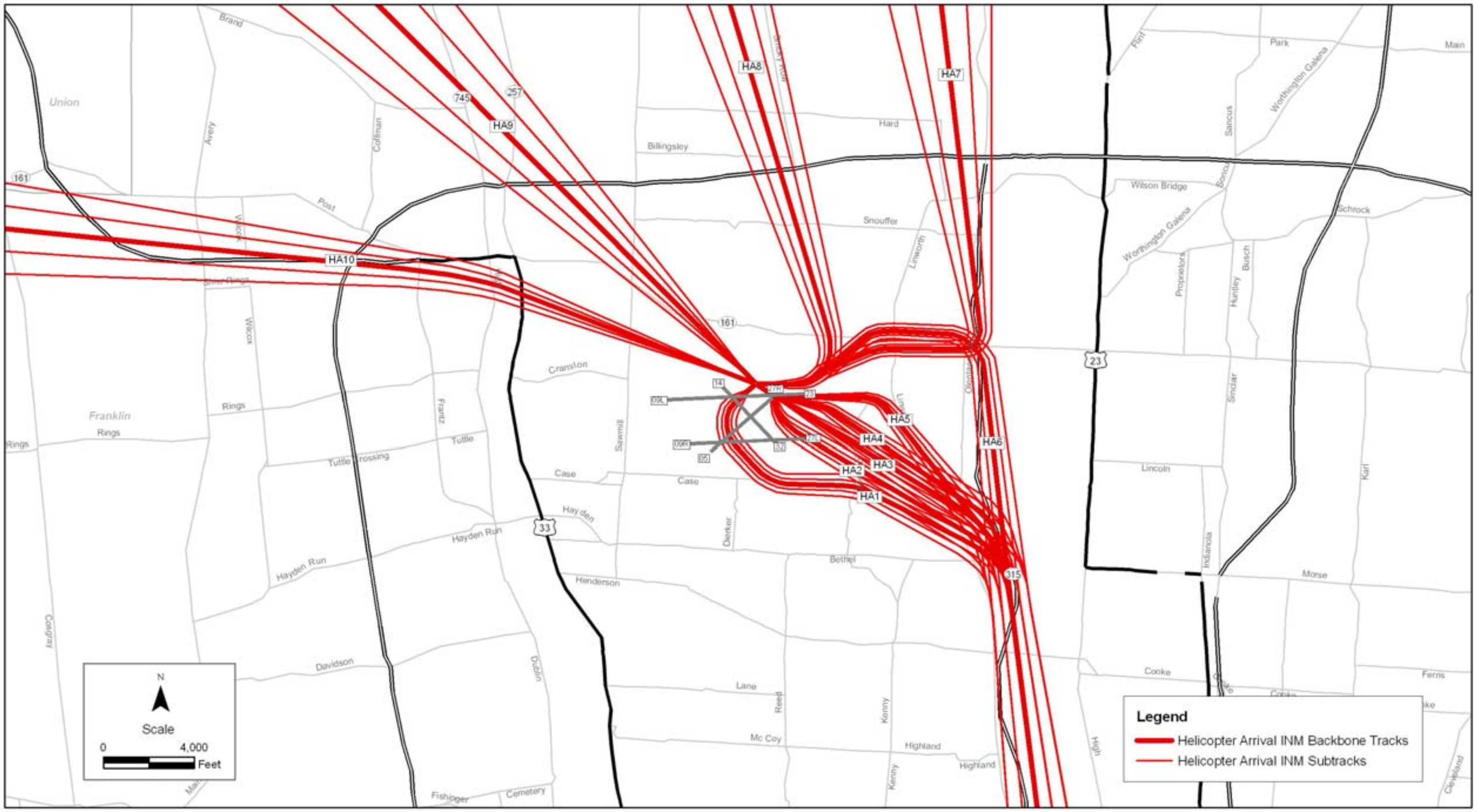
Future (2012) Prop Departures – Runway 23

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



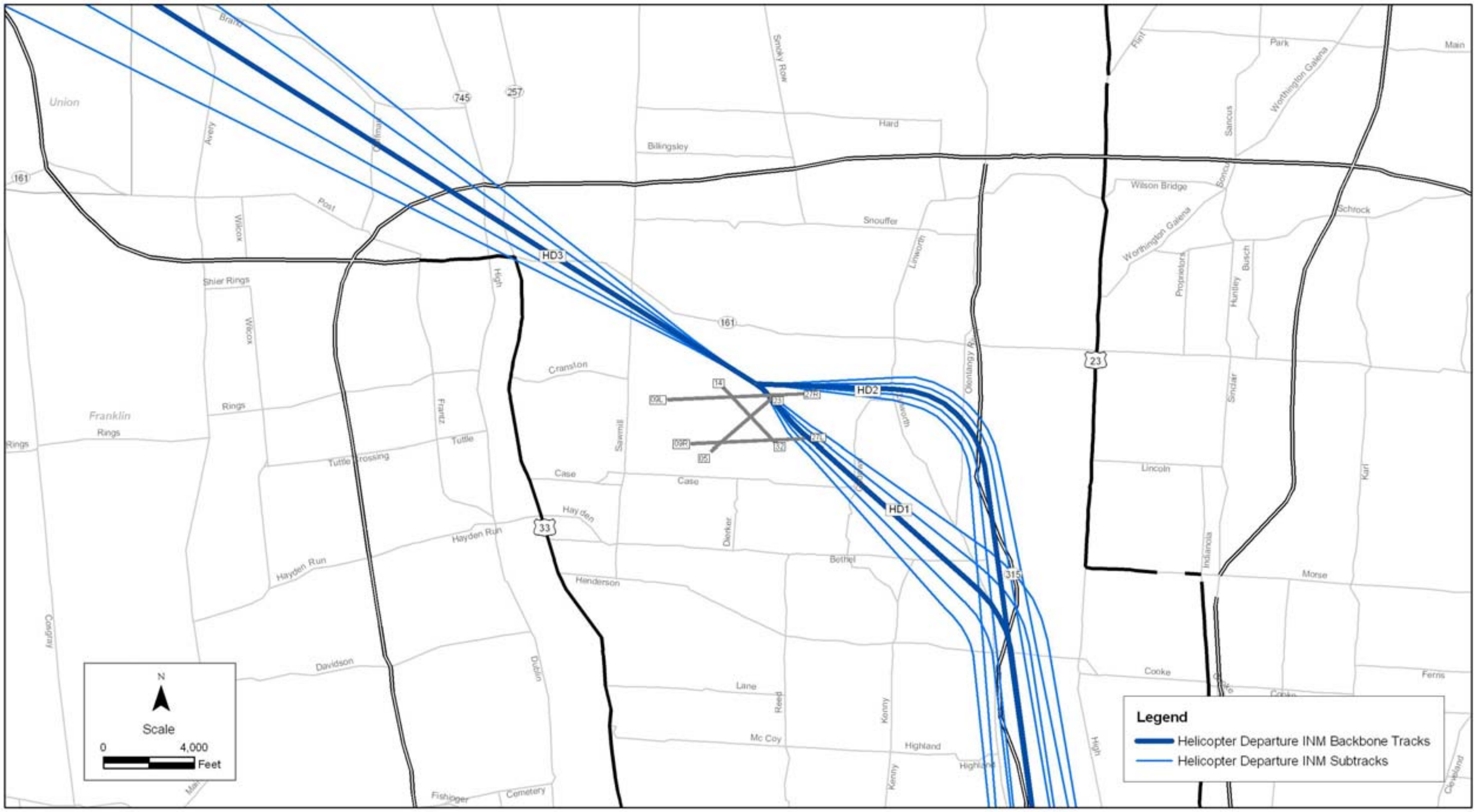
Future (2012) Helicopter Arrivals

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



Future (2012) Helicopter Departures

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future (2012) Touch and Go – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future (2012) Touch and Go – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Jet (Page 1 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RJAE1	6.5
		09RJAE2	5.2
		09RJAE3	6.5
		09RJAE4	2.6
		09RJAE5	15.6
		09RJAE6	9.7
		09RJAE7	27.9
		09RJAE8	6.5
		09RJAE9	4.5
		09RJAE10	5.8
		09RJAE11	3.9
		09RJAE12	5.2
		Total	**100.0**
	27L	27LJAW1	4.4
		27LJAW2	3.9
		27LJAW3	3.4
		27LJAW4	3.9
		27LJAW5	42.7
		27LJAW6	4.4
		27LJAW7	1.5
		27LJAW8	1.5
		27LJAW9	1.5
		27LJAW10	3.9
		27LJAW11	5.8
		27LJAW12	10.7
		27LJAW13	7.8
		27LJAW14	4.9
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9L	9LXJDE1	7.1
		9LXJDE2	21.3
		9LXJDE3	3.9
		9LXJDE4	21.3
		9LXJDE5	8.4
		9LXJDE6	14.2
		9LXJDE7	3.2
		9LXJDE8	7.1
		9LXJDE9	3.9
		9LXJDE10	9.7
		Total	**100.0**
	27R	7RXJDW1	20.2
		7RXJDW2	12.4
		7RXJDW3	4.7
		7RXJDW4	17.1
		7RXJDW5	10.1
		7RXJDW6	12.4
		7RXJDW7	3.9
		7RXJDW8	10.9
		7RXJDW9	6.2
		7RXJDW10	2.3
		Total	**100.0**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Jet (Page 2 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals (cont.)	9L	9LXJAE1	6.5
		9LXJAE2	5.2
		9LXJAE3	6.5
		9LXJAE4	2.6
		9LXJAE5	15.6
		9LXJAE6	9.7
		9LXJAE7	27.9
		9LXJAE8	6.5
		9LXJAE9	4.5
		9LXJAE10	5.8
		9LXJAE11	3.9
		9LXJAE12	5.2
		Total	**100.0**
	27R	7RXJAW1	4.4
		7RXJAW2	3.9
		7RXJAW3	3.4
		7RXJAW4	3.9
		7RXJAW5	42.7
		7RXJAW6	4.4
		7RXJAW7	1.5
		7RXJAW8	1.5
		7RXJAW9	1.5
		7RXJAW10	3.9
		7RXJAW11	5.8
		7RXJAW12	10.7
		7RXJAW13	7.8
		7RXJAW14	4.9
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures (cont.)	9R	09RJDE1	7.1
		09RJDE2	21.3
		09RJDE3	3.9
		09RJDE4	21.3
		09RJDE5	8.4
		09RJDE6	14.2
		09RJDE7	3.2
		09RJDE8	7.1
		09RJDE9	3.9
		09RJDE10	9.7
		Total	**100.0**
	27L	27LJDW1	20.2
		27LJDW2	12.4
		27LJDW3	4.7
		27LJDW4	17.1
		27LJDW5	10.1
		27LJDW6	12.4
		27LJDW7	3.9
		27LJDW8	10.9
		27LJDW9	6.2
		27LJDW10	2.3
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Propeller Aircraft (Page 1 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RTAE1	5.2
		09RTAE2	8.6
		09RTAE3	5.2
		09RTAE4	6.9
		09RTAE5	50.0
		09RTAE6	5.2
		09RTAE7	13.8
		09RTAE8	5.2
		Total	**100.0**
	27L	27LTAW1	17.9
		27LTAW2	40.3
		27LTAW3	4.5
		27LTAW4	7.5
		27LTAW5	6.0
		27LTAW6	6.0
		27LTAW7	17.9
		Total	**100.0**
	9L	9LXTAE1	5.2
		9LXTAE2	8.6
		9LXTAE3	5.2
		9LXTAE4	6.9
		9LXTAE5	50.0
		9LXTAE6	5.2
		9LXTAE7	13.8
		9LXTAE8	5.2
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RTDE1	13.0
		09RTDE2	13.0
		09RTDE3	20.4
		09RTDE4	16.7
		09RTDE5	18.5
		09RTDE6	3.7
		09RTDE7	7.4
		09RTDE8	7.4
		Total	**100.0**
	27L	27LTDW1	12.9
		27LTDW2	17.1
		27LTDW3	24.3
		27LTDW4	5.7
		27LTDW5	7.1
		27LTDW6	10.0
		27LTDW7	14.3
		27LTDW8	8.6
		Total	**100.0**
	9L	9LXTDE1	13.0
		9LXTDE2	13.0
		9LXTDE3	20.4
		9LXTDE4	16.7
		9LXTDE5	18.5
		9LXTDE6	3.7
		9LXTDE7	7.4
		9LXTDE8	7.4
		Total	**100.0**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Propeller Aircraft (Page 2 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals (cont.)	27R	7RXTAW1	17.9
		7RXTAW2	40.3
		7RXTAW3	4.5
		7RXTAW4	7.5
		7RXTAW5	6.0
		7RXTAW6	6.0
		7RXTAW7	17.9
		Total	**100.0**
	5	05PAE1	14.3
		05PAE2	64.3
		05PAE3	21.4
		Total	**100.0**
	23	23PAW1	40.0
		23PAW2	40.0
		23PAW3	20.0
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures (cont.)	27R	7RXTDW1	12.9
		7RXTDW2	17.1
		7RXTDW3	24.3
		7RXTDW4	5.7
		7RXTDW5	7.1
		7RXTDW6	10.0
		7RXTDW7	14.3
		7RXTDW8	8.6
	5	05PDE1	47.6
		05PDE2	23.8
		05PDE3	9.5
		05PDE4	19.0
		Total	**100.0**
	23	23PDW1	25.0
		23PDW2	33.3
		23PDW3	25.0
		23PDW4	16.7
		Total	**100.0**

Source: AirScene; ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Helicopters
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	H1	HD1	60.7
		HD2	15.7
		HD3	23.6
		Total	**100.0**
Departures	H2	HA1	2.5
		HA2	10.7
		HA3	32.8
		HA4	25.4
		HA5	9.0
		HA6	6.6
		HA7	1.6
		HA8	4.1
		HA9	5.7
		HA10	1.6
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Touch And Go
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
East Flow	9R	9RXTGO1	23.4
		9RXTGO2	25.5
		9RXTGO3	27.7
	9L	9LXTGO1	23.4
		Total	**100.0**
West Flow	27L	7LXTGO1	23.4
		7LXTGO2	25.5
		7LXTGO3	27.7
	27R	7RXTGO1	23.4
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2027 INM Inputs

Review OSU Airport Noise Model Inputs

2027 Annual Operations
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

	Air Carrier	***Air Taxi***	***Itinerant General Aviation***	***Local General Aviation***	***Itinerant Military***	***Local Military***	***Total***
Yearly Totals	0	11,422	89,453	55,400	295	60	156,630
Average 24-Hour Day	0.00	31.29	245.08	151.78	0.81	0.16	429.12

Sources: FAA TAF, FAA Air Traffic Activity Data System, Flight Aware, OSU ATCT, Port Columbus Standard Terminal Automated Replacement System (STARS), RS&H

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2027 Annual-Average Day Fleet Mix - Itinerant Operations (Page 1 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals* Day	*Arrivals* Night	*Arrivals* Total	*Departures* Day	*Departures* Night	*Departures* Total	*Total Operations*
Jet	Gulfstream II	GII	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Gulfstream III	GIIB	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Gulfstream IV	GIV	0.175	0.004	0.179	0.172	0.007	0.179	0.357
	Gulfstream V	GV	0.154	0.003	0.157	0.151	0.006	0.157	0.315
	CRJ-700	GV	0.004	0.000	0.004	0.003	0.000	0.004	0.007
	Cessna 750	CNA750	0.388	0.020	0.408	0.380	0.029	0.408	0.817
	Canadair BD-100	CL600*	1.107	0.058	1.165	1.084	0.082	1.165	2.330
	Challenger 600	CL600	0.401	0.021	0.422	0.393	0.030	0.422	0.845
	ERJ 135/140	EMB145	0.060	0.003	0.063	0.059	0.004	0.063	0.127
	Falcon 2000	CL600	0.134	0.007	0.141	0.131	0.010	0.141	0.282
	Falcon 900	LEAR35*	0.227	0.012	0.239	0.223	0.017	0.239	0.479
	Falcon 50	LEAR35*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Astra 1125	IA1125	0.105	0.008	0.113	0.108	0.006	0.113	0.226
	Beechjet 400	MU3001	2.804	0.211	3.015	2.864	0.151	3.015	6.029
	Citation 525/500	CNA500	1.830	0.138	1.967	1.869	0.098	1.967	3.935
	Citation 550/560	MU3001	4.801	0.361	5.163	4.905	0.258	5.163	10.325
	Citation 650	CIT3	0.628	0.047	0.676	0.642	0.034	0.676	1.351
	Citation 680	MU3001*	0.624	0.047	0.671	0.637	0.034	0.671	1.342
	Falcon 10	LEAR35	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Falcon 20	CL600	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Gulfstream 150	LEAR35*	0.018	0.001	0.019	0.018	0.001	0.019	0.038
	Gulfstream 200	GII	0.094	0.007	0.101	0.096	0.005	0.101	0.202
	BAe-125 (400 Series)	LEAR35*	0.023	0.002	0.025	0.024	0.001	0.025	0.050
	BAe-125 (800 Series)	LEAR35	1.052	0.079	1.131	1.075	0.057	1.131	2.263
	Bae-125 (1000 Series)	LEAR35*	0.047	0.004	0.050	0.048	0.003	0.050	0.101
	Dornier 328	CNA750*	0.054	0.004	0.058	0.055	0.003	0.058	0.116
	Lear 24/25	LEAR25	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Lear 31/35/40/45/55/60	LEAR35	1.020	0.077	1.097	1.042	0.055	1.097	2.194
	Mitsubishi Diamond	CNA500	0.198	0.015	0.213	0.202	0.011	0.213	0.426
	Raytheon 390	MU3001*	0.038	0.003	0.041	0.039	0.002	0.041	0.082
	Sabreliner	LEAR35*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Westwind 1124	IA1125	0.026	0.002	0.028	0.027	0.001	0.028	0.057
	VLJ	CNA750*	7.765	0.584	8.349	7.932	0.417	8.349	16.699
	Subtotal		**23.778**	**1.719**	**25.497**	**24.177**	**1.320**	**25.497**	**50.995**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2027 Annual-Average Day Fleet Mix - Itinerant Operations (Page 2 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

			Arrivals			Departures			Total
Category	*Aircraft*	*INM Aircraft*	*Day*	*Night*	*Total*	*Day*	*Night*	*Total*	*Operations*
Multi-Engine/Turboprop	Gulf Aero Commander	CNA441	1.181	0.176	1.357	1.221	0.136	1.357	2.714
	EMB-120	EMB120	0.041	0.006	0.047	0.043	0.005	0.047	0.095
	Beech 1900	1900D	0.069	0.010	0.079	0.071	0.008	0.079	0.158
	Raytheon B300	DHC6	2.931	0.438	3.369	3.032	0.337	3.369	6.737
	Beech King Air	CNA441	4.344	0.649	4.993	4.494	0.499	4.993	9.986
	Beech Super King Air	DHC6	5.071	0.758	5.829	5.246	0.583	5.829	11.659
	Swearingen Merlin 4	DHC6	0.021	0.003	0.024	0.021	0.002	0.024	0.047
	Cessna Conquest	CNA441	0.220	0.033	0.253	0.227	0.025	0.253	0.505
	Jetstream Super 31	DHC6	0.041	0.006	0.047	0.043	0.005	0.047	0.095
	Mitsubishi MU2	DHC6	0.062	0.009	0.071	0.064	0.007	0.071	0.142
	P180 Avanti	DHC6*	0.673	0.101	0.773	0.696	0.077	0.773	1.547
	Piper Cheyenne	CNA441	1.620	0.242	1.862	1.676	0.186	1.862	3.724
	Swearingen Merlin 3	CNA441	0.055	0.008	0.063	0.057	0.006	0.063	0.126
	Partinavia P68	BEC58P*	0.030	0.005	0.035	0.031	0.003	0.035	0.070
	Piper Comanche	PA30	0.084	0.012	0.096	0.086	0.010	0.096	0.192
	Diamond Twin Star	BEC58P*	0.003	0.000	0.003	0.003	0.000	0.003	0.006
	Piper Chieftain	PA31	2.120	0.317	2.437	2.193	0.244	2.437	4.874
	Cessna Caravan II	BEC58P*	0.050	0.007	0.058	0.052	0.006	0.058	0.115
	Cessna Caravan I	GASEPF	1.079	0.022	1.101	1.024	0.077	1.101	2.202
	Lancair Columbia 400	GASEPF*	0.330	0.007	0.337	0.314	0.024	0.337	0.674
	Malibu Meridian	GASEPV	0.692	0.014	0.706	0.657	0.049	0.706	1.413
	Pilatus PC12	GASEPV*	1.651	0.034	1.684	1.566	0.118	1.684	3.369
	Aerospatiale Socata	GASEPV	1.409	0.029	1.438	1.337	0.101	1.438	2.876
	Multiple Aircraft (1)	BEC58P	1.200	0.834	2.034	1.282	0.753	2.034	4.069
	Subtotal		**24.976**	**3.721**	**28.697**	**25.436**	**3.261**	**28.697**	**57.394**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2027 Annual-Average Day Fleet Mix - Itinerant Operations (Page 3 of 3)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Arrivals* Day	*Arrivals* Night	*Arrivals* Total	*Departures* Day	*Departures* Night	*Departures* Total	*Total Operations*
Single Engine	Cessna 180/182/206/210	CNA206	6.391	0.408	6.798	6.526	0.272	6.798	13.597
	Cessna 150/152/172/172RG/177	CNA172	17.844	1.139	18.983	18.224	0.759	18.983	37.966
	Piper Warrior	PA28	7.791	0.497	8.288	7.956	0.332	8.288	16.576
	Multiple Aircraft (2)	GASEPV	17.638	1.126	18.764	18.013	0.751	18.764	37.528
	Multiple Aircraft (3)	GASEPF	1.092	0.082	1.174	1.150	0.023	1.174	2.348
	Subtotal		**50.755**	**3.252**	**54.007**	**51.870**	**2.137**	**54.007**	**108.014**
Helicopter	Eurocopter Astar	SA350D	10.466	0.551	11.017	10.466	0.551	11.017	22.034
	Sikorsky S-76A	S76	0.404	0.021	0.426	0.404	0.021	0.426	0.851
	Eurocopter EC-135	EC130	13.001	0.684	13.686	13.001	0.684	13.686	27.371
	Aerospatiale Dauphin	SA365N	3.013	0.159	3.171	3.013	0.159	3.171	6.342
	Kawasaki BK-117	B206L*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Bell Jet Ranger	B206L	1.600	0.084	1.684	1.600	0.084	1.684	3.368
	Subtotal		**28.484**	**1.499**	**29.984**	**28.484**	**1.499**	**29.984**	**59.967**
Military	UH-60 Blackhawk	S70	0.404	0.000	0.404	0.404	0.000	0.404	0.808
	UH-1 Huey	B212	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Subtotal		**0.404**	**0.000**	**0.404**	**0.404**	**0.000**	**0.404**	**0.808**
	TOTAL		**128.398**	**10.191**	**138.589**	**130.372**	**8.217**	**138.589**	**277.178**

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H
* Requires FAA approval of aircraft substitution
Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole Cessna 337, Cessna 340

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

Data Subject to Change Based on
Technical Advisory Committee Input

Review OSU Airport Noise Model Inputs

2027 Annual-Average Day Fleet Mix (Local operations)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Category	*Aircraft*	*INM Aircraft*	*Touch and Go Day*	*Touch and Go Night*	*Touch and Go Total*
ME/TP	Partinavia P68	BEC58P*	0.013	0.000	0.013
	Piper Comanche	PA30	0.036	0.000	0.036
	Diamond Twin Star	BEC58P*	0.001	0.000	0.001
	Piper Chieftain	PA31	0.683	0.012	0.695
	Multiple Aircraft (1)	BEC58P	0.730	0.002	0.732
	Subtotal		**1.463**	**0.014**	**1.477**
Single Engine	Cessna 180/182/206/210	CNA206	17.823	0.854	18.677
	Cessna 150/152/172/172RG/177	CNA172	53.095	2.520	55.616
	Piper Warrior	PA28	23.086	1.200	24.286
	Multiple Aircraft (2)	GASEPV	46.091	2.190	48.281
	Multiple Aircraft (3)	GASEPF	3.445	0.000	3.445
	Subtotal		**143.540**	**6.764**	**150.304**
Military	UH-60 Blackhawk	S70	0.164	0.000	0.164
	UH-1 Huey	B212	0.000	0.000	0.000
	Subtotal		**0.164**	**0.000**	**0.164**
	TOTAL		**145.167**	**6.778**	**151.945**

Sources: Flight Aware Ohio State University Airport Activity July 2006 to July 2007; Ohio State University Airport Base Aircraft and Hangar Waiting List, October 2007; AirScene; RS&H

* Requires FAA approval of aircraft substitution

Note: Totals may not equal totals from forecast due to rounding

Multiple Aircraft (1): Beech Baron, Beech Duke, Beech Queen Air, Beech Duchess, Beech Travel Air, Cessna 310, Cessna 336, Businessliner, Cessna Chancellor, Golden Eagle, Piper Apache, Piper Aztec, Piper Seneca, Piper Seminole

Multiple Aircraft (2): Commander, Beechcraft Bonanza, Lake LA-4-200, Mooney, Piper Challenger, Piper Dakota, Piper Arrow, Piper Cherokee Six, Piper Lance, Beech Mentor, Cessna 177B, Lancair Columbia 300, Helio Courier, Diamond DA 40/41/42, Lancair Legacy 2000, Rockwell Navion, Cirrus SR 20/22, Aerospatiale Trinidad , Cozy Mark IV

Multiple Aircraft (3): American Traveler, Beechcraft Musketeer, Beechcraft Sierra, Bellanca Viking, Piper Super Cub, Piper Cherokee 140, Piper Archer, Glasair SII, RUTAN Long-EZ, RV7A, RV-8, WACO YKS-7, Liberty XL-2

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

2012/2027 Runway Utilization (Intinerant & Local)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Runway	*Jets*	*Multi-Engine*	*Single-Engine*
9L	26.40%	11.55%	4.95%
27R	53.60%	23.45%	10.05%
9R	6.60%	19.80%	26.40%
27L	13.40%	40.20%	53.60%
5	0.00%	1.25%	1.25%
23	0.00%	3.75%	3.75%
14	0.00%	0.00%	0.00%
32	0.00%	0.00%	0.00%
Total	**100.00%**	**100.00%**	**100.00%**

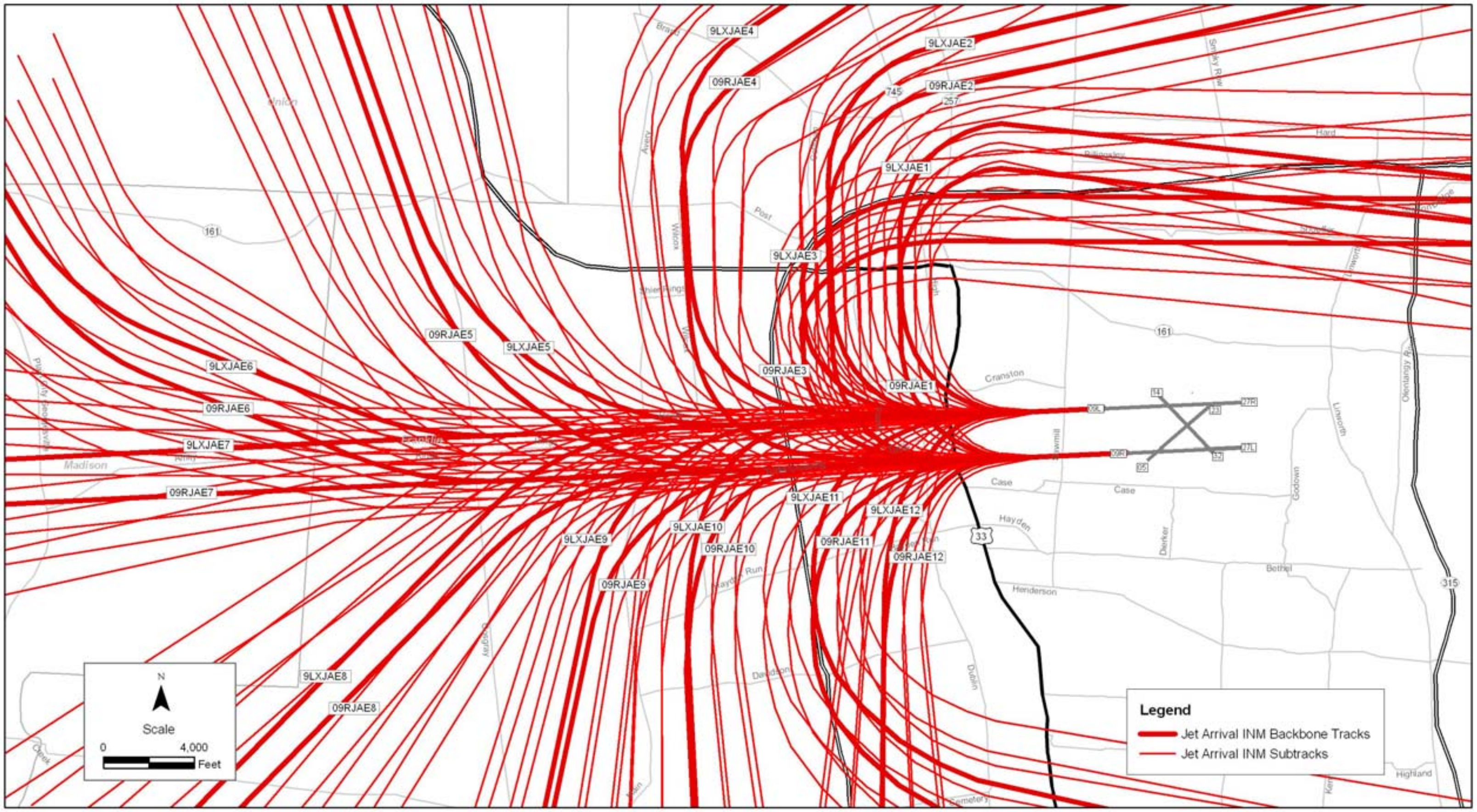
Source: Aircraft Noise Study for Ohio State University Airport; Draft Master Plan

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



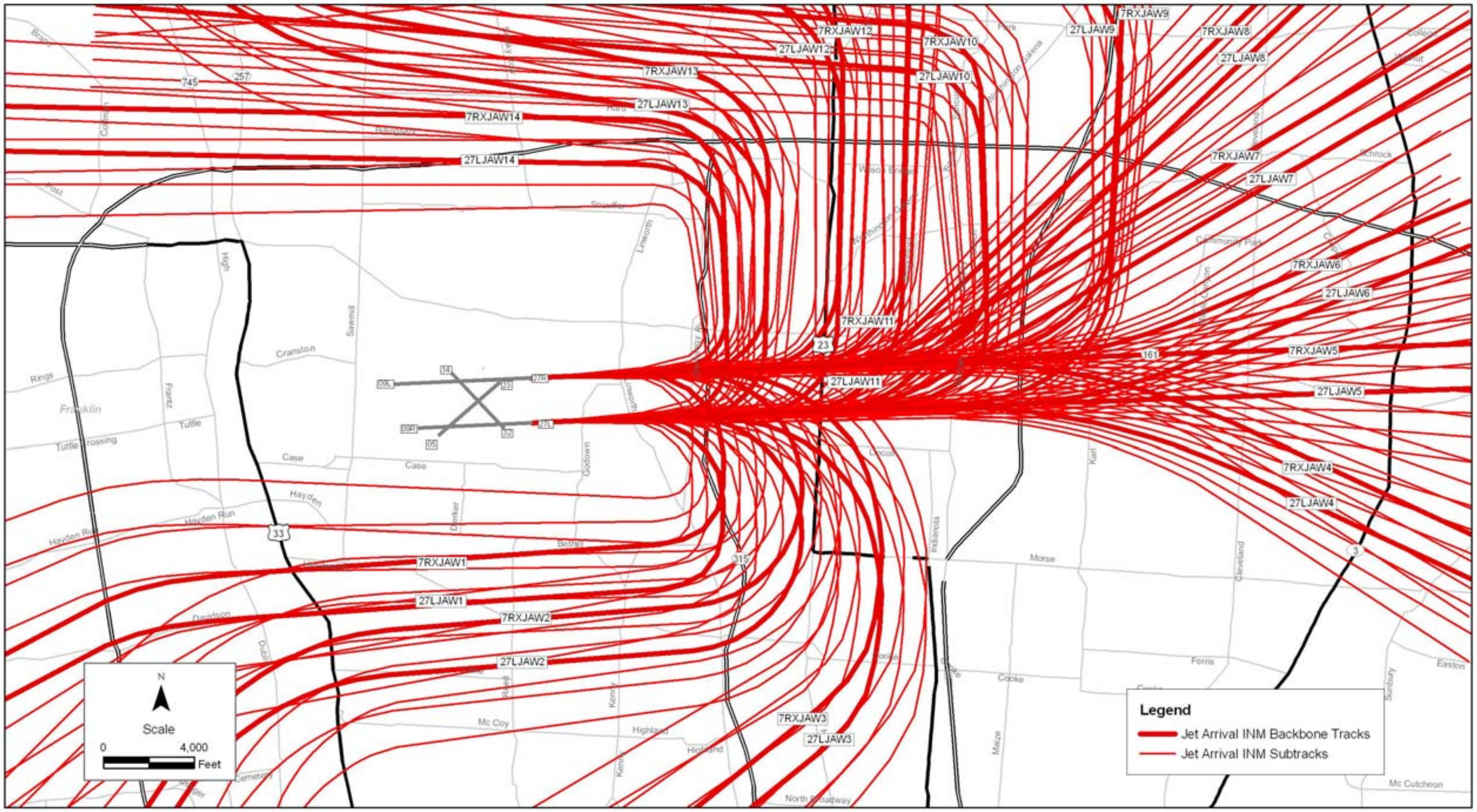
Future (2027) Jet Arrivals – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



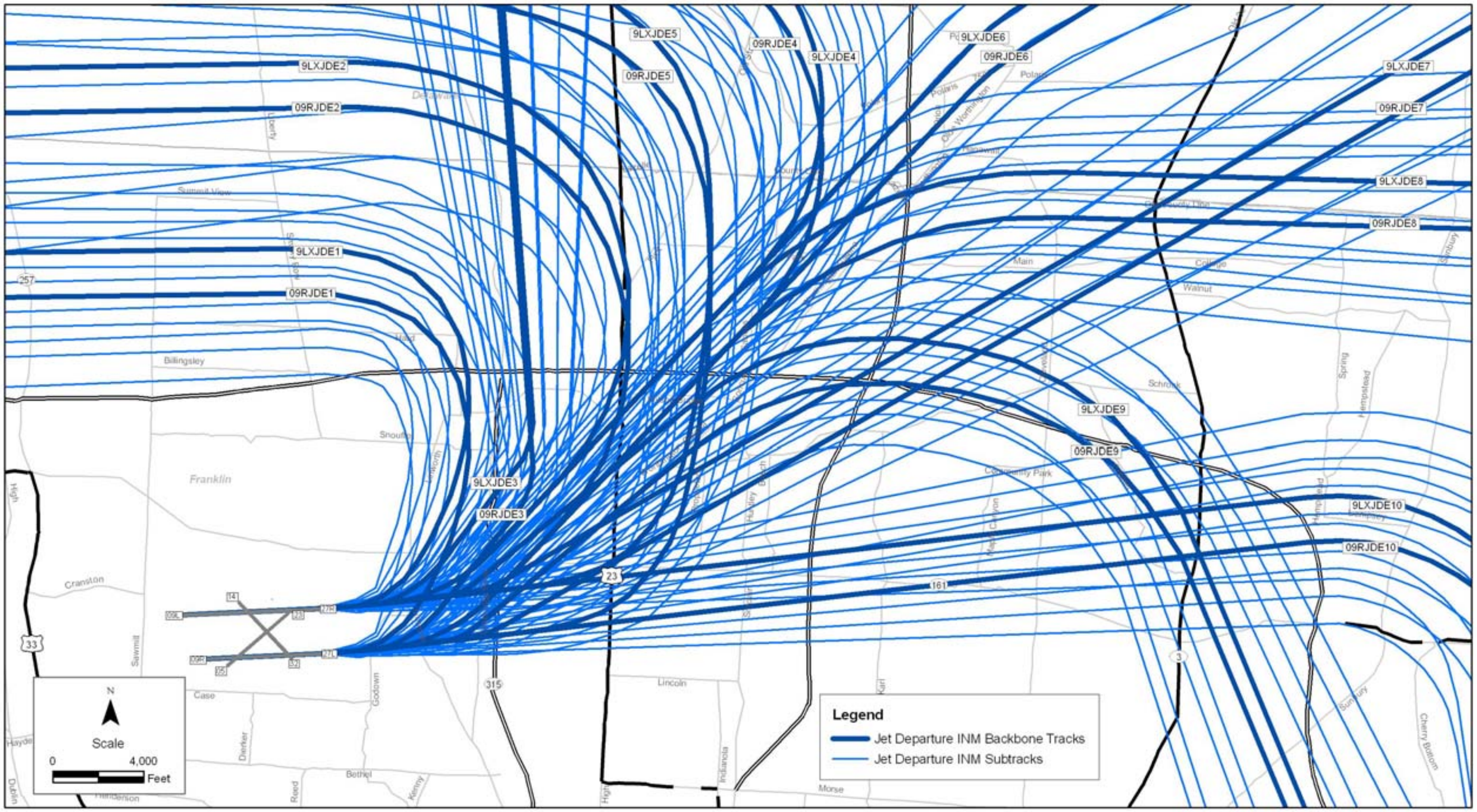
Future (2027) Jet Arrivals – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



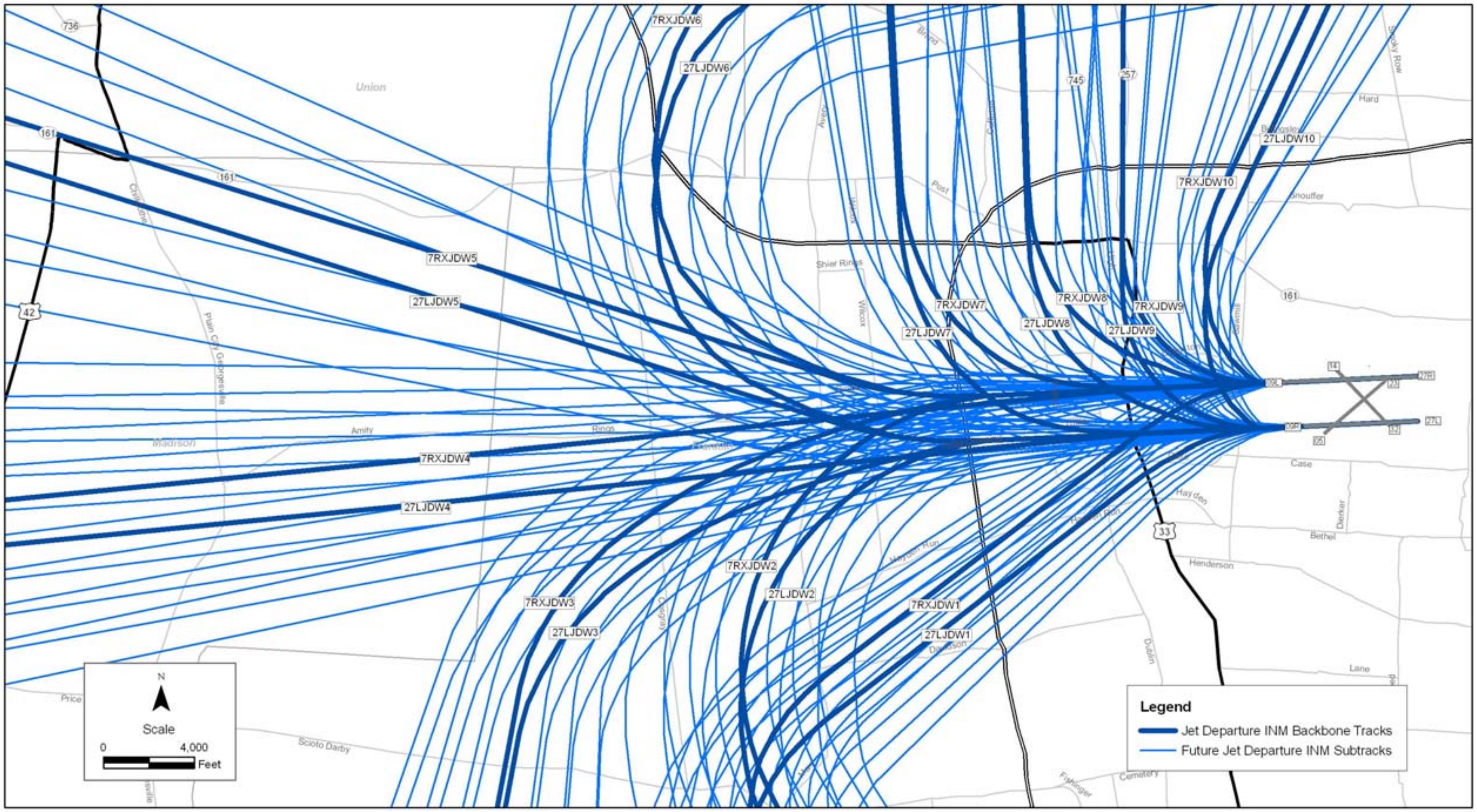
Future (2027) Jet Departures – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



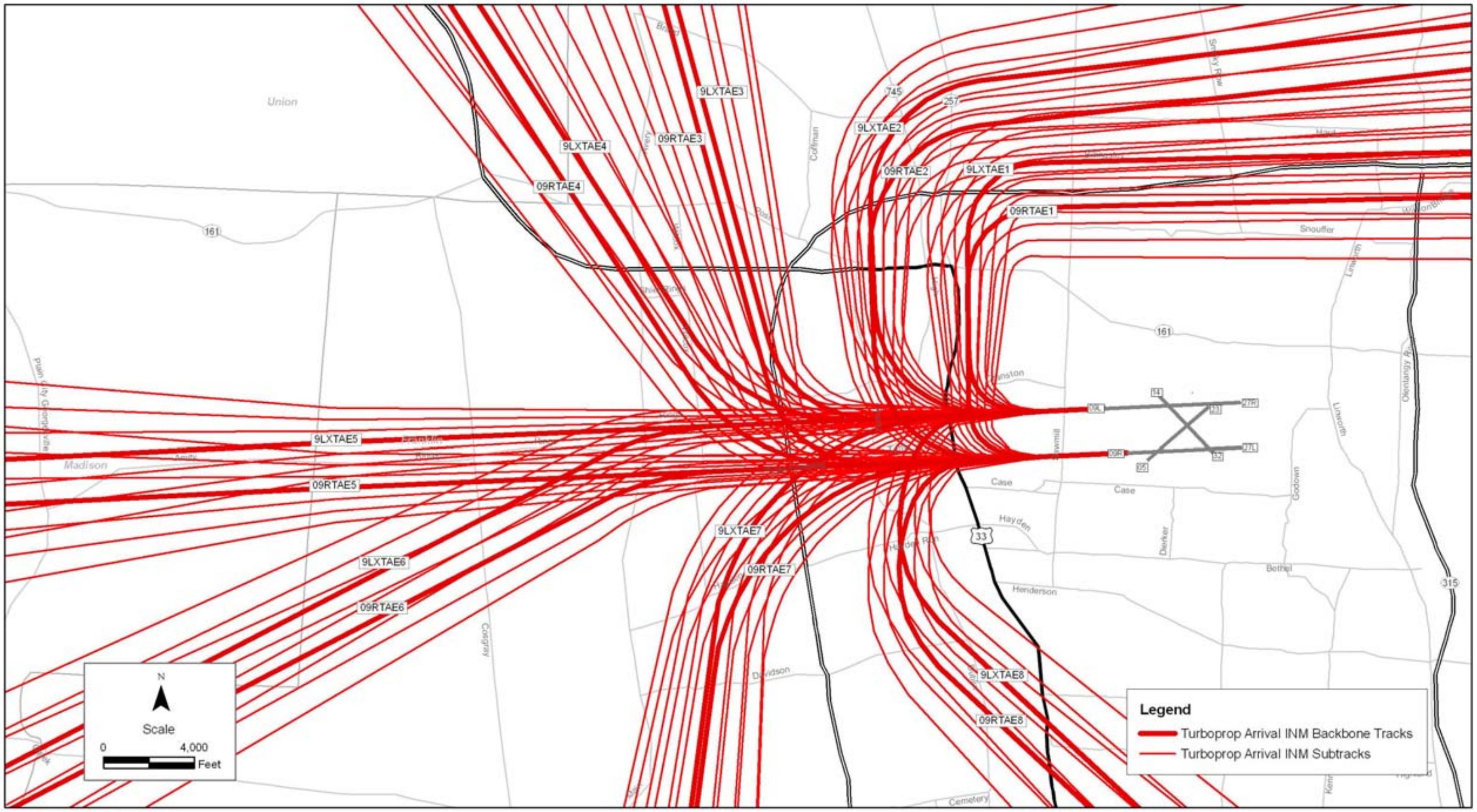
Future (2027) Jet Departures – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



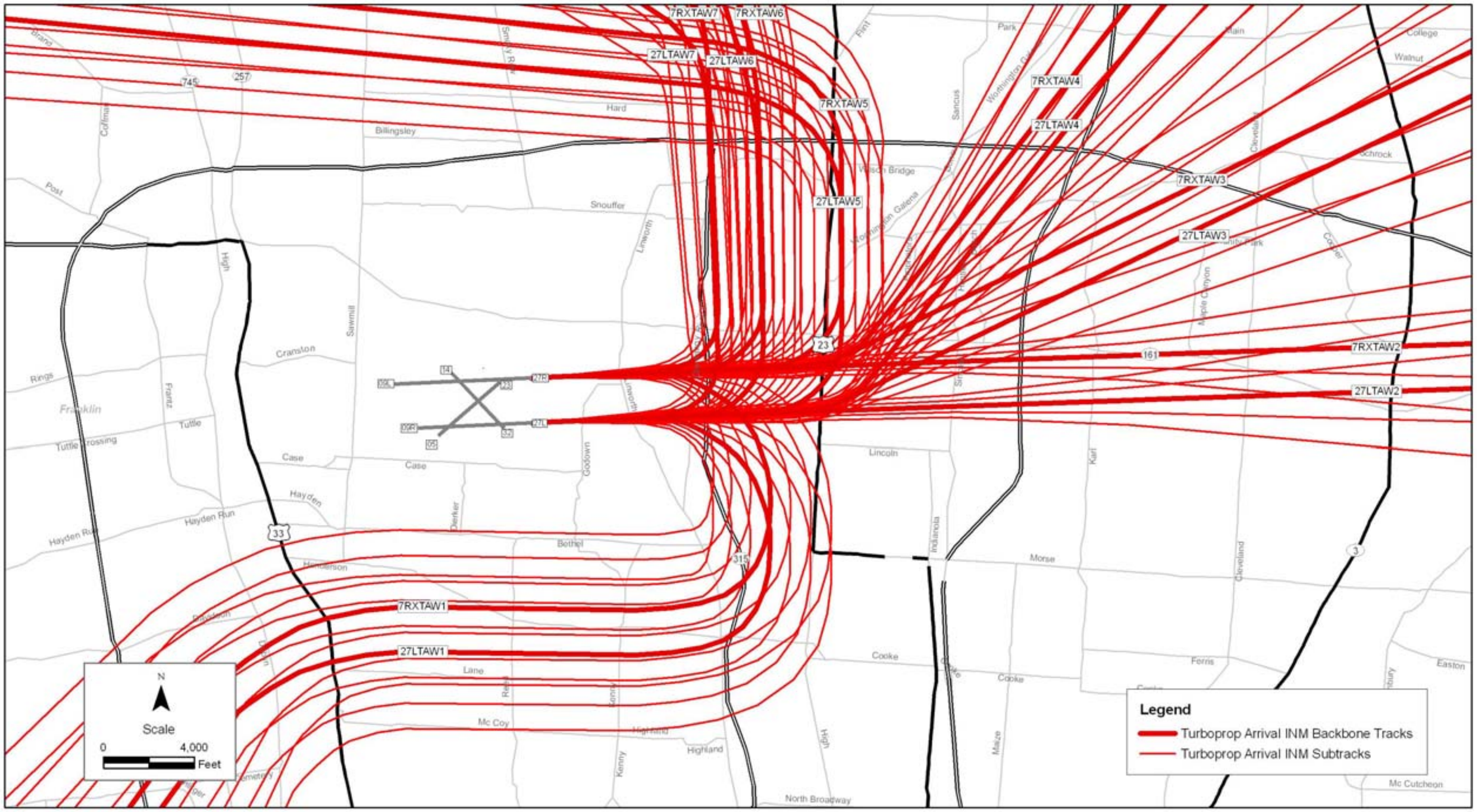
Future (2027) Turboprop Arrivals – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



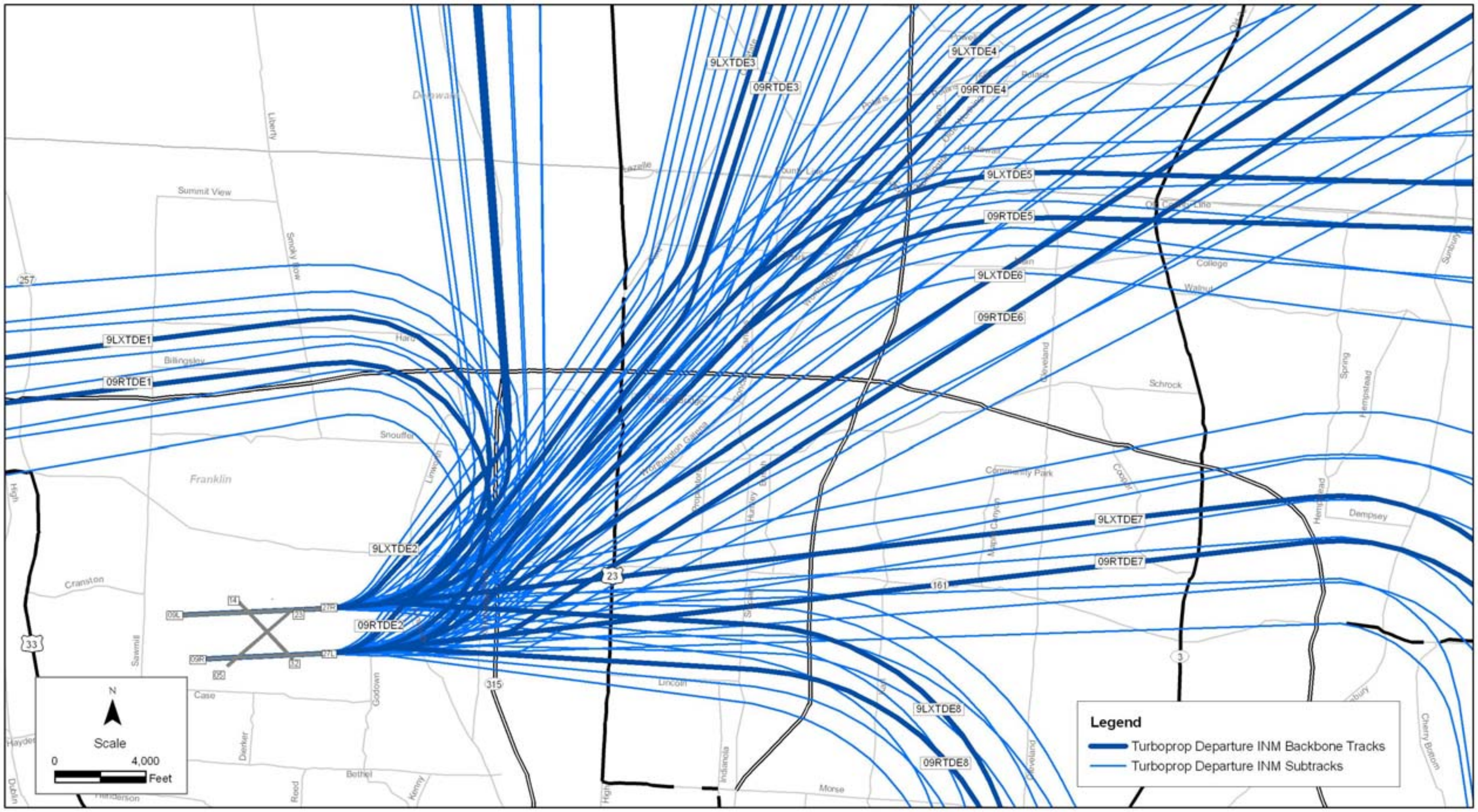
Future (2027) Turboprop Arrivals – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



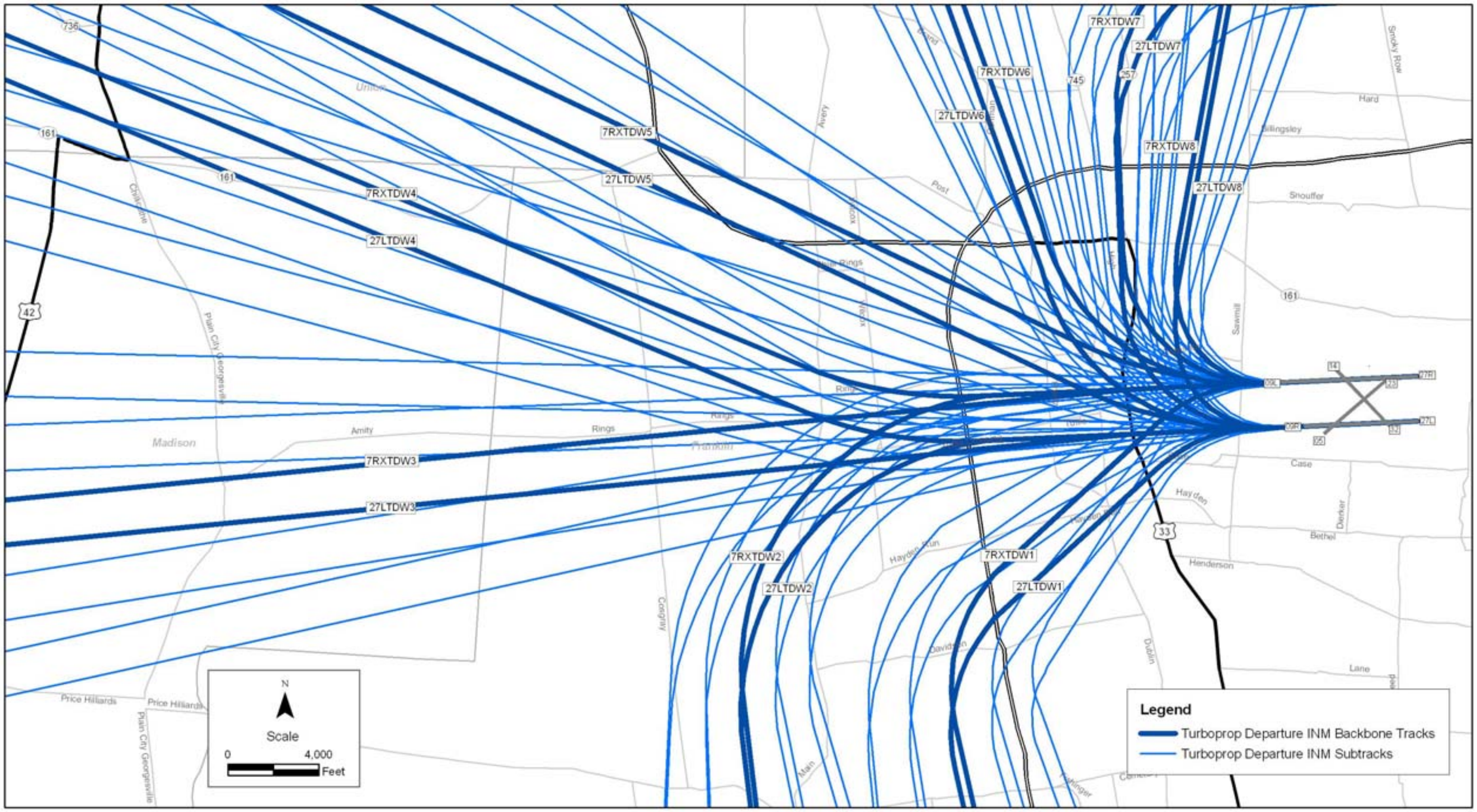
Future (2027) Turboprop Departures – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



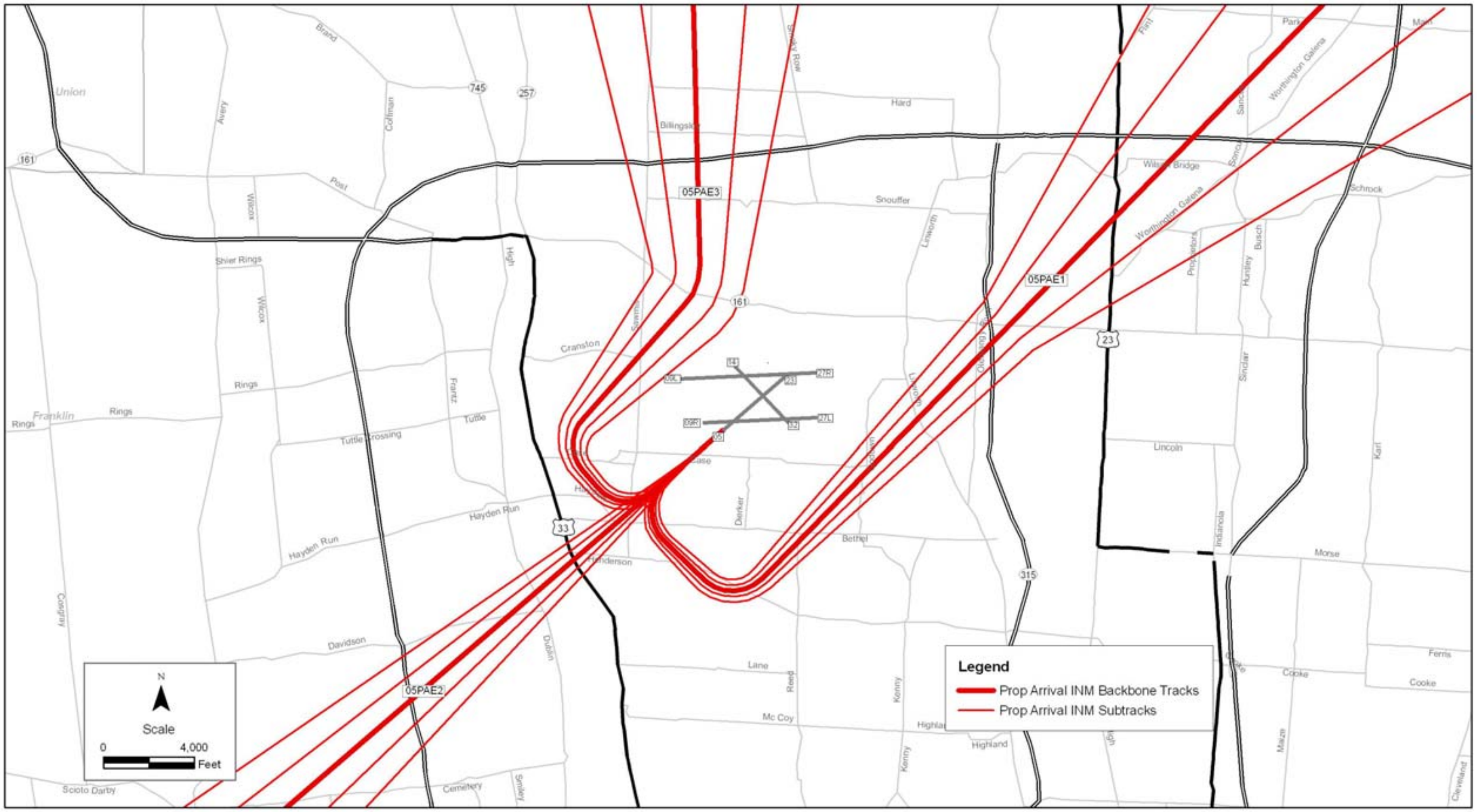
Future (2027) Turboprop Departures – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



Future (2027) Prop Arrivals – Runway 5

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

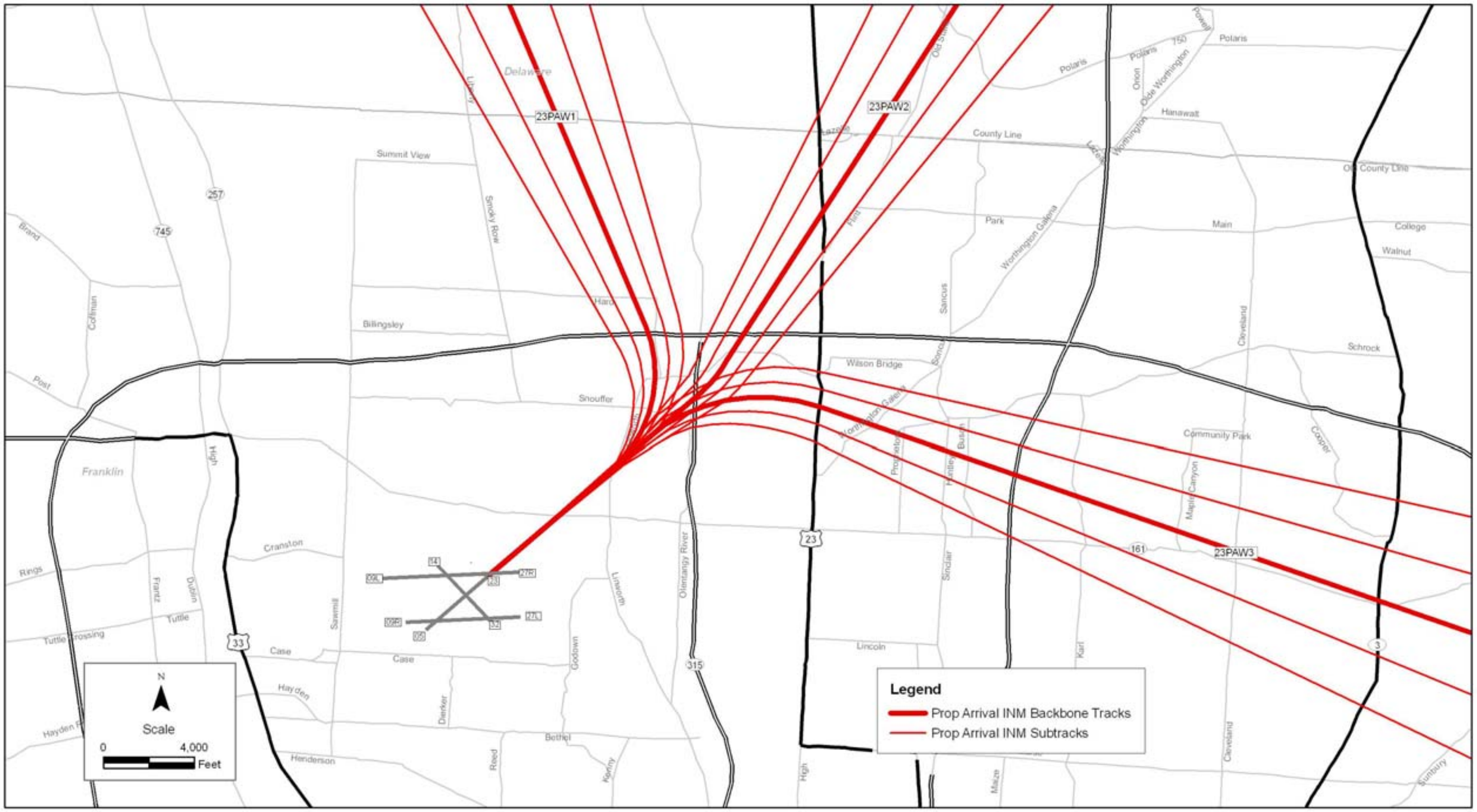
Future (2027) Prop Departures – Runway 5

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



Future (2027) Prop Arrivals – Runway 23

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

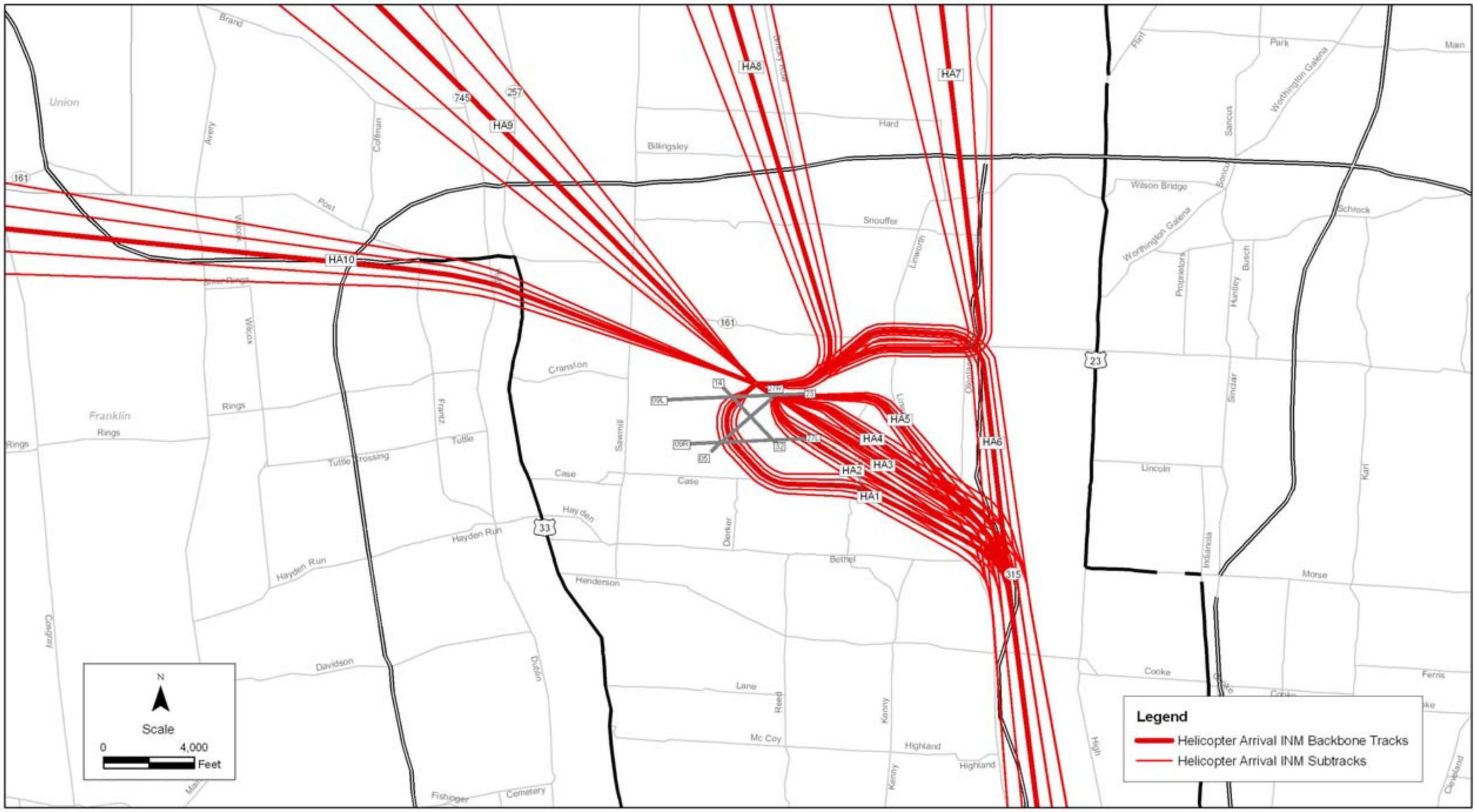
Future (2027) Prop Departures – Runway 23

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



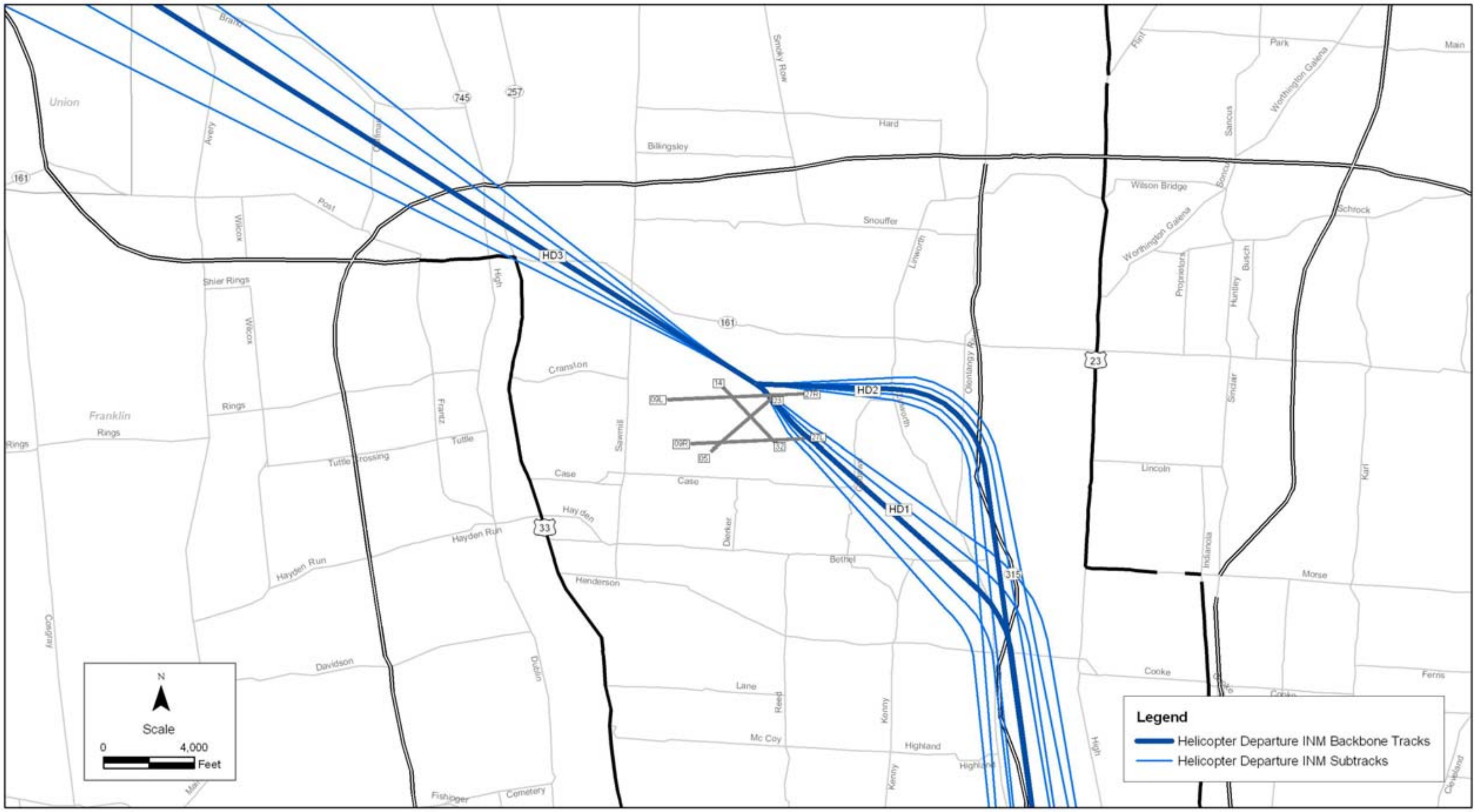
Future (2027) Helicopter Arrivals

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs



Future (2027) Helicopter Departures

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future (2027) Touch and Go – East Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future (2027) Touch and Go – West Flow

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Jet (Page 1 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RJAE1	6.5
		09RJAE2	5.2
		09RJAE3	6.5
		09RJAE4	2.6
		09RJAE5	15.6
		09RJAE6	9.7
		09RJAE7	27.9
		09RJAE8	6.5
		09RJAE9	4.5
		09RJAE10	5.8
		09RJAE11	3.9
		09RJAE12	5.2
		Total	**100.0**
	27L	27LJAW1	4.4
		27LJAW2	3.9
		27LJAW3	3.4
		27LJAW4	3.9
		27LJAW5	42.7
		27LJAW6	4.4
		27LJAW7	1.5
		27LJAW8	1.5
		27LJAW9	1.5
		27LJAW10	3.9
		27LJAW11	5.8
		27LJAW12	10.7
		27LJAW13	7.8
		27LJAW14	4.9
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9L	9LXJDE1	7.1
		9LXJDE2	21.3
		9LXJDE3	3.9
		9LXJDE4	21.3
		9LXJDE5	8.4
		9LXJDE6	14.2
		9LXJDE7	3.2
		9LXJDE8	7.1
		9LXJDE9	3.9
		9LXJDE10	9.7
		Total	**100.0**
	27R	7RXJDW1	20.2
		7RXJDW2	12.4
		7RXJDW3	4.7
		7RXJDW4	17.1
		7RXJDW5	10.1
		7RXJDW6	12.4
		7RXJDW7	3.9
		7RXJDW8	10.9
		7RXJDW9	6.2
		7RXJDW10	2.3
		Total	**100.0**

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Jet (Page 2 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*	*Operation Type*	*Runway*	*Track*	*Percent Use %*
Arrivals (cont.)	9L	9LXJAE1	6.5	Departures (cont.)	9R	09RJDE1	7.1
		9LXJAE2	5.2			09RJDE2	21.3
		9LXJAE3	6.5			09RJDE3	3.9
		9LXJAE4	2.6			09RJDE4	21.3
		9LXJAE5	15.6			09RJDE5	8.4
		9LXJAE6	9.7			09RJDE6	14.2
		9LXJAE7	27.9			09RJDE7	3.2
		9LXJAE8	6.5			09RJDE8	7.1
		9LXJAE9	4.5			09RJDE9	3.9
		9LXJAE10	5.8			09RJDE10	9.7
		9LXJAE11	3.9			**Total**	**100.0**
		9LXJAE12	5.2				
		Total	**100.0**		27L	27LJDW1	20.2
						27LJDW2	12.4
	27R	7RXJAW1	4.4			27LJDW3	4.7
		7RXJAW2	3.9			27LJDW4	17.1
		7RXJAW3	3.4			27LJDW5	10.1
		7RXJAW4	3.9			27LJDW6	12.4
		7RXJAW5	42.7			27LJDW7	3.9
		7RXJAW6	4.4			27LJDW8	10.9
		7RXJAW7	1.5			27LJDW9	6.2
		7RXJAW8	1.5			27LJDW10	2.3
		7RXJAW9	1.5			**Total**	**100.0**
		7RXJAW10	3.9				
		7RXJAW11	5.8				
		7RXJAW12	10.7				
		7RXJAW13	7.8				
		7RXJAW14	4.9				
		Total	**100.0**				

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Propeller Aircraft (Page 1 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	9R	09RTAE1	5.2
		09RTAE2	8.6
		09RTAE3	5.2
		09RTAE4	6.9
		09RTAE5	50.0
		09RTAE6	5.2
		09RTAE7	13.8
		09RTAE8	5.2
		Total	**100.0**
	27L	27LTAW1	17.9
		27LTAW2	40.3
		27LTAW3	4.5
		27LTAW4	7.5
		27LTAW5	6.0
		27LTAW6	6.0
		27LTAW7	17.9
		Total	**100.0**
	9L	9LXTAE1	5.2
		9LXTAE2	8.6
		9LXTAE3	5.2
		9LXTAE4	6.9
		9LXTAE5	50.0
		9LXTAE6	5.2
		9LXTAE7	13.8
		9LXTAE8	5.2
		Total	**100.0**

Operation Type	*Runway*	*Track*	*Percent Use %*
Departures	9R	09RTDE1	13.0
		09RTDE2	13.0
		09RTDE3	20.4
		09RTDE4	16.7
		09RTDE5	18.5
		09RTDE6	3.7
		09RTDE7	7.4
		09RTDE8	7.4
		Total	**100.0**
	27L	27LTDW1	12.9
		27LTDW2	17.1
		27LTDW3	24.3
		27LTDW4	5.7
		27LTDW5	7.1
		27LTDW6	10.0
		27LTDW7	14.3
		27LTDW8	8.6
		Total	**100.0**
	9L	9LXTDE1	13.0
		9LXTDE2	13.0
		9LXTDE3	20.4
		9LXTDE4	16.7
		9LXTDE5	18.5
		9LXTDE6	3.7
		9LXTDE7	7.4
		9LXTDE8	7.4
		Total	**100.0**

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Propeller Aircraft (Page 2 of 2)
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*	*Operation Type*	*Runway*	*Track*	*Percent Use %*
Arrivals (cont.)	27R	7RXTAW1	17.9	Departures (cont.)	27R	7RXTDW1	12.9
		7RXTAW2	40.3			7RXTDW2	17.1
		7RXTAW3	4.5			7RXTDW3	24.3
		7RXTAW4	7.5			7RXTDW4	5.7
		7RXTAW5	6.0			7RXTDW5	7.1
		7RXTAW6	6.0			7RXTDW6	10.0
		7RXTAW7	17.9			7RXTDW7	14.3
		Total	**100.0**			7RXTDW8	8.6
	5	05PAE1	14.3		5	05PDE1	47.6
		05PAE2	64.3			05PDE2	23.8
		05PAE3	21.4			05PDE3	9.5
		Total	**100.0**			05PDE4	19.0
						Total	**100.0**
	23	23PAW1	40.0				
		23PAW2	40.0		23	23PDW1	25.0
		23PAW3	20.0			23PDW2	33.3
		Total	**100.0**			23PDW3	25.0
						23PDW4	16.7
						Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Helicopters
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
Arrivals	H1	HD1	60.7
		HD2	15.7
		HD3	23.6
		Total	**100.0**
Departures	H2	HA1	2.5
		HA2	10.7
		HA3	32.8
		HA4	25.4
		HA5	9.0
		HA6	6.6
		HA7	1.6
		HA8	4.1
		HA9	5.7
		HA10	1.6
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Review OSU Airport Noise Model Inputs

Future Track Use Percentages - Touch And Go
OHIO STATE UNIVERSITY AIRPORT
14 CFR PART 150 STUDY

Operation Type	*Runway*	*Track*	*Percent Use %*
East Flow	9R	9RXTGO1	23.4
		9RXTGO2	25.5
		9RXTGO3	27.7
	9L	9LXTGO1	23.4
		Total	**100.0**
West Flow	27L	7LXTGO1	23.4
		7LXTGO2	25.5
		7LXTGO3	27.7
	27R	7RXTGO1	23.4
		Total	**100.0**

Source: AirScene; ESA Airports

The Ohio State University Airport
PART 150 STUDY

Data Subject to Change Based on
Technical Advisory Committee Input

ESA Airports

Next Steps

- Consider feedback received today
- Make adjustment to inputs as appropriate
- Run INM for each case (2007, 2012, and 2027)
- Make revisions, if any, as indicated by the model
- Re-run INM to generate Draft DNL contours
- Place Draft DNL contours on a base map
- Display Draft DNL contours at the 12 February public meeting

The Ohio State University Airport
PART 150 STUDY

ESA Airports

The Ohio State University Airport

PART 150 STUDY

Technical Committee Meeting
Noise Model Inputs

17 January 2008

ESA Airports

The Ohio State University Airport

Part 150 Technical Subcommittee

Meeting #2 – SUMMARY[1]

9:30 – 12:30 a.m.
March 26, 2008
OSU Airport Administration Building
2160 West Case Rd., Columbus, 43235

This is a summary of the March 26, 2008 meeting of the Ohio State University Airport's Part 150 Committee's Technical Subcommittee.

Participants

Part 150 Technical Subcommittee Members Present

City of Worthington, David Zoll
Franklin County, Matthew Brown
Northwest Civic Association, Bill Carlton
We Oppose Ohio State University Airport Expansion, Jane Weislogel
Midwest (OSU) Air Traffic Control, Deral Carson
Port Columbus Air Traffic Control (FAA), Dennis Shea for Chris Lenfest
Aircraft Owners & Pilots Association, E.J. Thomas
Columbus Flight Watch, Don Peters

OSU/Consultant Team Members Present

Cathy Ferrari and Elizabeth Ike (OSU)
David Full and Don Andrews (RS&H)
Steve Alverson (ESA Airports)
Marie Keister (Engage)
Bill Habig and Latane Montague (OSU consultants)

Public Observers

Kimberly Nixon-Bell, Riverlea Mayor Mary Jo Cusack, Rosemarie Lisko, Bob Tedrick, Vera Tedrick and Scott Whitlock

[1] This Summary is intended to provide a paraphrased overview of presentations made, materials discussed, questions asked and comments made. It is not intended to be a word-for-word representation of the Technical Subcommittee proceedings.

Materials Reviewed at the Meeting

- Agenda *(sent in advance)*
- Technical Memorandum *(sent in advance)*
- PowerPoint Presentation *(see web site)*

Meeting Summary

Meeting Introductions
Marie Keister, the facilitator, convened the meeting at 9:30 a.m.

Meeting Goals
At the Subcommittee's request, this meeting was convened to review FAR Part 150 noise model inputs, explain how each data source was used and respond to questions and comments raised during and immediately following the Technical Subcommittee meeting held on January 17, 2008.

Meeting Ground Rules
Ms. Keister reviewed the purpose and operating guidelines of the Part 150 Committee and the Technical Subcommittee, emphasizing that both committees are advisory in nature. The University and FAA have the statutory decision-making authority in the FAR Part 150 process. She stated that questions and discussion would be welcomed from members of the Technical Subcommittee at the end of each presentation segment. She said the public would have an opportunity to provide comment and ask questions at the end of the meeting.

Ms. Keister noted that Technical Subcommittee members had received a Technical Memorandum on March 20th. While today's meeting would review many issues raised in that document, it was not the purpose of this meeting to word-smith the document. If any wording issues were not addressed during the course of the Technical Subcommittee meeting, the consultant team would be available after the meeting to discuss those concerns.

> ***Questions and Comments (OSU/Consultant Team Responses in Italics)***
> Aircraft Owners and Pilots Association representative E.J. Thomas also asked that questions be held until the end of each presentation segment. City of Worthington representative David Zoll asked when it would be appropriate to share his approximately 10 minutes of questions and comments on the document, particularly as they related to the Source Data and INM Inputs on Aircraft Operational Fleet Mix. *Ms. Keister explained that those comments should be provided during those two segments of the meeting.*

Agenda Review
David Full, RS&H Part 150 Study Project Manager, explained that the meeting would cover:

- Review of source data

- Review of jet arrival and departure altitude profile analysis
- Review of INM input aircraft operational fleet mix
- Review of new flight tracks
- Runway use percentages
- Next steps

Review of Source Data
Don Andrews, RS&H Part 150 Study Project Officer, recapped the source data and how it was used (*see Technical Subcommittee Presentation)* for to develop the INM inputs, which includes:

- Federal Aviation Administration (FAA), Terminal Area Forecast (TAF) and Air Traffic Activity Data System (ATADS) online databases
- Based aircraft and hangar waiting lists
- FlightAware
- AirScene
- Columbus Regional Airport Authority (CRAA) Noise Office

Questions and Comments (OSU/Consultant Team Responses in Italics)
Mr. Zoll asked if the noise model inputs would exclude aircraft that were listed within the 55,000 records provided by the Port Columbus Noise Office? *Mr. Andrews said no. From the 60,000 records collected by the team, some of that data were outside of the desired year of data that was dropped. However, there are two different data sources – FlightAware and Port Columbus Noise Office – so the team used the FlightAware data as a check on Port Columbus Noise Office data, but primarily used the Port Columbus Noise Office data to develop the noise model inputs.*

Mr. Zoll asked Mr. Andrews to clarify his comment indicating that there were about 80,000 total operations at OSU Airport in one year, but there were only 55,000 OSUA operations in the Port Columbus data. *Mr. Andrews said he would explain this in more detail later in the meeting, but basically the team had a good accounting for the approximately 30,000 flights not itemized in the Port Columbus Noise Office data and that these operations would be reflected in the noise modeling inputs.*

Mr. Thomas asked if there was there a statistical difference between the 80,000 total records and the 55,000 records from the Port Columbus Noise Office? *Mr. Andrews said there was not.*

WOOSE representative Jane Weislogel commented that she couldn't find the Hawker 800 in the Master Look-up Table. She hears it flying over her home, but it didn't appear to be in the source data. This is an aircraft that is based here. *Mr. Andrews said he would answer this in more detail later in the meeting, but that all aircraft were accounted for, even if they weren't specifically listed in the source data.*

Jet Arrival and Departure Altitude Profile Analysis Presentation

Mr. Steve Alverson, Part 150 Study Task Manager, recapped that the meeting purpose was not to review all of the information that was presented at the Jan. 17th meeting, but to respond to issues raised at and immediately following that meeting. Specifically, the Technical Subcommittee raised concerns regarding the effect of perceived hold downs to the east of OSU Airport on altitude profiles. Mr. Alverson said he examined actual Runway 9R departure and Runway 27L arrival aircraft jet altitude profiles. He then compared the actual altitude profiles in the Integrated Noise Model (INM). He found that:

- Business jets dominate noise exposure
- Beechjet 400 and Cessna 560 are the most common types of jets at OSU Airport – accounting for 42 percent of the business jets
- There are few hold downs on departure, with most occurring beyond four nautical miles from start-of-takeoff roll
- There are many hold downs on arrival, but most occur beyond four nautical miles from the touchdown point
- Hold downs do not influence noise exposure in areas of likely incompatibility

Mr. Alverson said he had looked into nearly 100,000 data points. The first two nautical miles from start-of-takeoff roll are likely to be particularly relevant to possible areas of land use incompatibility. After careful review, he is confident that for noise modeling purposes the MU3001 INM altitude profile is an accurate reflection of the actual departure and arrival altitude profiles for the BE400 and C560 flying at OSU Airport.

> ***Questions and Comments (OSU/Consultant Team Responses in Italics)***
>
> Ms. Weislogel said her home is just two nautical miles from the start of the take-off roll on Runway 9R, so she is very concerned about the altitude used during the first two nautical miles – about 12,000 feet. A big source of noise is the Citation C560. On page 5 of the Technical Memo, Figure 2 shows that one aircraft is well above the M3001 profile, one is slightly above, one is at the profile and 25 or 28 are below the profile, many by 500 feet or more. At two nautical miles from start of the take-off roll some C560s are at less than 700 feet above the homes. Shouldn't you model on that basis? *Mr. Alverson said the team was not assuming these are straight out flight tracks. Instead, the team is assuming that aircraft are making turns. These are reflected in the profiles. Regarding whether the profiles should be moved down to a lower altitude, his concern with doing that is that the thrust of the planes would have to be reduced to lower the INM altitude profile. Lowering the thrust would reduce noise exposure. Although it would not be appropriate from a noise modeling standpoint, leaving the thrust setting the same and lower the altitude would require an increase in aircraft speed, which would likely reduce the duration of the noise event. This would also reduce the noise exposure, and it's premature to do that before the model can show us what is happening today.*

Mr. Zoll asked how many profiles were reviewed, since the team was showing just two here? Also, why is the team characterizing the hold downs as “a few”, when it shows there are many with the Citation 560? Why does the team refer to the earlier noise exposure study? *Mr. Alverson said to get a sense of where the 65 DNL contour might fall to assist with knowing where to focus our examination of the aircraft altitudes, the team looked at the most recently completed OSU Airport noise exposure study as well as the previous OSU Part 150 Noise Exposure Maps. In general, aircraft noise exposure does not change that much over time. If any change has occurred at OSUA, it is likely that the contours have become smaller due to the improvement in the jet aircraft fleet. However, this does not mean a conclusion is being drawn based on the old noise contours. New noise contours will be prepared based on all of the noise model inputs this Committee has been reviewing. The new noise contours will provide direction on what conclusions to make regarding land use compatibility.*

Mr. Zoll asked if the study area was being influenced by the former study – which in his opinion is contrary to FAA requirements. He also expressed his opinion that the incompatible land use areas will be within two to three miles of take off, noting that at two miles out most aircraft are below the INM profile. *Mr. Alverson said the present study area will not be determined by the previous noise studies. Changing an aircraft’s profile will have the most impact within the first two to three miles of take-off or landing.*

Mr. Zoll asked that Mr. Alverson look at the impacts within four nautical miles. *Mr. Alverson said no impacts have been assessed yet because the contours have not been run.*

Franklin County representative Matthew Brown asked about the effect of reducing an aircraft’s thrust. *Mr. Alverson said lowering an aircraft’s thrust reduces its noise exposure.*

Mr. Zoll said he wanted to address the issue that there are other ways in the INM to compensate for lower profiles. For example, by using a different stage length to indicate an aircraft may be carrying more fuel. *Mr. Alverson said there is only one stage length available (Stage Length One) for the business jets in the INM. Therefore, we do not have the option of choosing a longer stage length to represent lower altitude profiles.*

Mr. Zoll said Mr. Alverson was making an assumption that because an aircraft is going fast it will be there for a shorter period of time, and therefore have less noise. Mr. Zoll said he didn’t accept the assumption that no change in altitude profile is necessary. *Mr. Alverson said that Sound Exposure Level is based on both the magnitude and duration of a noise event. If the event is shorter, the Sound Exposure Level will be lower.* Mr. Zoll said he did not accept Mr. Alverson’s opinion. *Mr. Alverson said that the relationship between a reduction in the duration of an event resulting in a reduction in the sound exposure level was not his opinion, but rather a matter of physics.*

Ms. Weislogel asked how modeling is done for the years 2012 and 2027. Does the model take into account the primary reason for extending the runway – that at present some aircraft can't take off with full fuel? Will the model take into consideration a flight by Cardinal Health from Columbus to Europe? Is it likely that after the extension of Runway 9L/27R would most of the approaches would be precision approaches? Should the model use the airport's Long-Range Master Plan? *Mr. Alverson said the model forecasts will include the runway extension cited in the Master Plan and that the INM profiles are representative of a precision approach.*

Ms. Weislogel also asked if a glide scope of 50:1 was being assumed in the Long-Range Master Plan? Mrs. Weislogel then distributed a map depicting the FAR Part 77 surfaces to the Committee. *Mr. Andrews explained that the 50:1 approach surface is not the glide slope, but rather an area below which obstructions such as trees, power poles, etc. must remain. Aircraft on the 3-degree approach are higher than the 50:1 approach surface.*

Operational Fleet Mix Presentation

Ms. Cathy Ferrari, External Relations Director for OSU Airport, noted that an earlier comment was made that a Hawker 800 was based at the airport. She said the one that was based at OSU was sold, and that there is no longer a Hawker 800 based at the airport.

Mr. Andrews then explained how the consultant team follows these six, industry-standard steps to arrive at the aircraft operational fleet mix:

1. Prepare a first-level sort
2. Create a Master Look-up Table
3. Reassemble Table B-1 at "Model Combination" level
4. Equalize arrivals/departures
5. Prepare allocations for FY 2007
6. Prepare 2012/2027 fleet mix

Mr. Andrews went into extensive detail on steps 5 and 6, explaining how allocations are conducted; how law enforcement, military, single/multi-engine and helicopter flights are accounted for; and how the team arrived at its conclusions (*see Technical Subcommittee Presentation).*

Questions and Comments (OSU/Consultant Team Responses in Italics)

Ms. Weislogel noted that the operations information from Port Columbus showed 478 nighttime jet operations, but only one jet operation is added in the normalization process conducted by the consultants. Is that reasonable? *Mr. Andrews said the team was confident that it had accounted for all the "high–end" operation; that is the business jets. The team also made adjustments on other aircraft types that don't send specific aircraft identification information to the radar data system. The team understands that most of these aircraft use a transponder code of 1200. The 1200 codes are aircraft operating under Visual Flight Rules (VFR) and primarily single-engine propeller-driven aircraft. The high-end or jet aircraft are almost always on Instrument Flight Rules (IFR) and send their aircraft type information to the radar data system.*

Ms. Weislogel commented that some of the PA31s jump from OSU Airport to Port Columbus on a VFR flight plan. Could that be factored in? Also, the Ford Tri-Motor was not included in the tables in the Technical Memo. Why? *Mr. Andrews explained that these operations are accounted for under the category of "multi-engine unknowns", and thus will be included in the modeling process. He noted there will be all sorts of aircraft not specifically listed in the tables, but they'll be accounted for. "Unknown" indicates lack of tail identification numbers, but there is still enough other information provided under this category to make the modeling effort accurate.*

Mr. Zoll said his main concern was with Step 5 of the process, preparing allocations for FY 2007. He asked Mr. Andrews if he would agree that this study has a disproportionate number of "unknowns"? *Mr. Andrews said no. In a Part 150 study for a general aviation airport like OSU Airport, it is highly unusual to have this level of data available since many of the smaller aircraft don't "squawk" – or provide tail identification. The higher volume of data the team was able to get from the Port Columbus noise office confirms the earlier conclusions the team made from the much smaller volume of data presented to the Technical Subcommittee in January. At a commercial service airport the percentage of non-squawking aircraft is very small, so there would be a much smaller number of aircraft falling under the "unknown" category.*

Mr. Zoll asked if there was any testing done to confirm that the vast majority of unknowns are single-engine aircraft. Could you take a period of time – like a week of data -- to reconfirm what the team was finding here? *Mr. Andrews said this isn't necessary because unknowns had already been accounted for. For example, there were only 1,100 helicopter operations captured in the Port Columbus noise office data. But the team knew from interviews there were actually about 8,000 helicopter operations. So the team was confident it already had good data on any aircraft falling under the "unknown" category.*

Ms. Weislogel asked if LabCorp was consulted about their operations. *Mr. Andrews said yes, they were included in the interviews and their operations were accounted for.*

Mr. Zoll said his main concern when he received the Technical Memorandum was that he couldn't determine if the team had allocated unknown aircraft, and that they might have been allocating unknowns to quieter aircraft. He said the presentation helped him understand this better. *Mr. Andrews said the "unknown" category heading is misleading, as there was much information that was provided on these aircraft, including arrival and departure times, altitude and so forth.*

Mr. Zoll asked if an aircraft is squawking 1200, does it rule out the fact that it could be a business jet? *Mr. Andrews said you couldn't totally rule it out 100 percent of the time, but company operating procedures and insurance requirements require that they file an IFR flight plan. Therefore, he is confident it is a reasonable assumption that 100 percent of the jet operations are identified by aircraft type.*

Mr. Zoll asked for clarification on how one third each of the top three model combinations were calculated. The top three of what? *Mr. Andrews said the top three model combinations reflect those three aircraft types that use OSU Airport most in terms of aircraft operations*

Mr. Thomas commented that most business aircraft operations, if they fly IFR, will display a tail number or flight number in the radar data system. So it is a reasonable assumption that most of the unknowns will not be jets; they will primarily be general aviation, single-engine aircraft that are much lower in noise impact.

Mr. Zoll said he doesn't want to just challenge the information because he doesn't like it – it's because residents want to verify the underlying assumptions of modeling. He reiterated his concern was about the high number of unknowns, but he said most of his work has been at commercial airports where this hasn't been the case. Mr. Zoll said he understood now why the number of unknowns is different for a general aviation airport. He said at this point he was comfortable with the methodology to assign the unknown aircraft.

Mr. Zoll then commented that two citizens had taken the time and energy to review the Technical Memorandum and run a test on the Technical Memorandum's assumptions for a week's period time. Kimberly Nixon-Bell and Scott Whitlock looked at a week's worth of FlightAware data and the Port Columbus Noise Office data and found flaws. For example, they found higher jet operations than assumed in the Technical Memorandum, with as many as 20 to 21 flight operations that appear to have not been captured in the Technical Memorandum. Mr. Zoll asked if he could have Mr. Whitlock explain their analysis. *Ms. Keister said that only Technical Subcommittee members were authorized by the discussion ground rules to participate during this portion of the meeting, but that public comment would be allowed at the end of the meeting and Mr. Whitlock could present his analysis at that time.*

Review of New Flight Tracks Presentation
Mr. Alverson explained that the Technical Subcommittee had asked in January if there were different flight tracks for the nighttime period than the daytime period. As a result, the team reviewed the daytime and nighttime flight tracks from OSU's AirScene. They compared the daytime and nighttime tracks and created new nighttime tracks when there were differences. He presented them to the Technical Subcommittee (*see Technical Subcommittee Presentation).* The Technical Subcommittee had also asked if there would be different flight tracks for single-engine versus multi-engine propeller driven aircraft. After further analysis of OSU's AirScene, the team created new single-engine modeled flight tracks. These were presented to the Technical Subcommittee.

> ***Questions and Comments (OSU/Consultant Team Responses in Italics)***
> Ms. Weislogel thanked Mr. Alverson for this additional review and addition of the nighttime flight tracks.

Runway Use Percentages Presentation
Mr. Alverson explained that itinerant runway use information was updated since January using the Port Columbus Noise Office data for OSU Airport. He noted that the future runway use remained unchanged. He then shared the updated tables of runway use information that would be used in the modeling effort *(see Technical Subcommittee Presentation and Technical Memo).*

> ***Questions and Comments (OSU/Consultant Team Responses in Italics)***
> Ms Weislogel asked for clarification on a local operation vs. an itinerant operation. For example, if a student is practicing and comes back to OSU Airport, is this considered a local or itinerant operation? *Mr. Alverson said that it is typically a local operation if the aircraft stays within five miles of the airport.* Ms. Weislogel commented that she sees Runway 5-23 being used and asked are these all itinerant operations? OSU Airport Air Traffic Control Tower representative Deral Carson responded that it's very rare for OSU Airport to use that runway for touch and goes, unless there are high winds or something else unusual. He said the tower usually considers operations itinerant when they don't know when the aircraft leave OSU Airport's airspace.
>
> Mr. Zoll asked if touch and go flight tracks cover the Castle Crest Street area. *Mr. Alverson said that the flight tracks cover Castle Crest and showed him the visual.*

Next Steps Presentation
Mr. Full summarized the next steps in the study, which are to:
- Use the model to prepare draft DNL contours for 2007, 2012 and 2027
- Prepare supplemental noise metric contours
- Prepare for the Part 150 Committee meeting and public open house-meeting

Questions and Comments (OSU/Consultant Team Responses in Italics)
Mr. Thomas asked the team how many Part 150 studies it had completed. *Mr. Andrews noted he has personally done 10 to 12; Mr. Alverson said ESA Airports has prepared over two dozen, ranging from studies for the busiest commercial airport to busy general aviation airports throughout the U.S.*

Mr. Thomas asked how they would rate the drill down into data that's been done here compared to other Part 150 studies. *Mr. Alverson said he has personally never worked with this much detail before. Mr. Andrews agreed, saying that this level of information isn't typically available, but in this case it has reconfirmed that the work presented to the Subcommittee in January was accurate.*

Mr. Thomas asked if this additional work, even though it has resulted in some adjustments, has given the team a high level of confidence in this effort. *Mr. Alverson and Mr. Andrews said they have a very high level of confidence in the development of the noise model inputs for OSU Airport.*

Mr. Thomas asked what the likely impact would be if anything else is introduced that needs to be reviewed? Would that make the conclusions any less accurate? *Mr. Andrews said that there would be little or no impact in the modeling outcome.*

After confirming with Mr. Alverson and Mr. Andrews that the Cessna Citation 560 and the BE 500 are the two jet aircraft with the most noise impact at OSU Airport, Mr. Zoll asked if it would be worthwhile to look at the altitude profiles of the next most impactful aircraft to determine whether it would have an impact on the noise exposure? *Mr. Alverson said it would require more work and data collection, and the next aircraft that would have the most impact are split between multiple jets that represent roughly 10 percent of the OSU Airport jet operations.*

Mr. Zoll commented that Stage 2 jets have the largest impact on the noise footprint, then asked if the team has profiles for all of these? *Mr. Alverson said no, and confirmed that Mr. Zoll was correct that some of the Stage 2 aircraft are noisier. However, they have substantially fewer operations than the BE400 and C560. As other aircraft fall much lower in the percentage of jet operations, they have less noise impact on the noise exposure.*

Mr. Zoll asked if Mr. Alverson could show a slide that illustrates assumed departure flight tracks with the 50-degree heading, and what was assigned to that? *Mr. Alverson said this question came up at the January Technical Subcommittee meeting, and indicated how one of the slides presented at that meeting illustrated that the flight tracks on the 50-degree heading will be put into the model.*

Mr. Zoll commented that, based on the cases he's worked on in the past, there appears to be an unusually high amount of flight tracks. Will the team be reducing the number of flight tracks in the final model inputs? *Mr. Alverson said no, because these flight tracks* *accurately portray where aircraft are flying over the neighborhoods. Mr. Andrews noted that earlier versions of the INM that Mr. Zoll may be more familiar with did not provide the ability to enter in as many flight tracks to depict how aircraft disperse after takeoff as compared to the most recent version of the INM that the team is using. The most recent version of the INM has been upgraded based on citizen input, and allows the team* to *spread the flight tracks based on actual flight data instead of using estimates as in the past. This results in more flight tracks being used to model the noise exposure.* Mr. Zoll commented that rather than concentrating the noise on a single flight track, the modeled flight tracks would disperse the noise over a larger area. *Mr. Alverson agreed and said that is the way aircraft noise exposure really works.*

Mr. Zoll asked what will happen to flight tracks in future years? Will most of the jets be put on the north runway? *Mr. Alverson said that, based on the Master Plan, the team assumed the more extensive runway usage would be on the north runway and reflected this in the projected flight track usage tables.* Mr. Carson confirmed this is what the tower would do in the future if the north runway were to be extended.

Mr. Thomas commented that it sounded like the new model provides a more accurate picture of what is happening. *Mr. Andrews confirmed that the new model was a major improvement over earlier versions of the model.*

Public Comment

Ms. Keister recapped the ground rules that everyone be respectful of each other's comments, that discussion be focused on issues and not on individuals, and that everyone be respectful of the time allotted for the meeting.

Questions and Comments (OSU/Consultant Team Responses in Italics)

Public observer Scott Whitlock offered to the Technical Subcommittee and consultant team a white paper for their review. The white paper, written by Mr. Whitlock and public observer Kimberly Nixon-Bell, provided analysis and comment on the Technical Memorandum. Mr. Whitlock summarized how they had looked at WebScene and FlightAware data during one week in June to see if they could verify the findings and conclusions in the Technical Memorandum (*See Whitlock-Nixon-Bell White Paper).*

Mr. Whitlock expressed his opinion that the Technical Memorandum had errors and, as a result, the INM will understate the noise problem. He and Ms. Nixon-Bell recommended that the Technical Subcommittee not accept the RS&H's Team Technical Memorandum's modeling recommendations until their White Paper is reviewed.

Mr. Andrews asked how Mr. Whitlock had come to his conclusions. Mr. Andrews said he could not respond to the specifics without thoroughly reviewing the White Paper, but that he was confident that the jet traffic is accounted for.

Mr. Thomas asked Mr. Andrews if he was confident that the work done to date would meet FAA guidelines. *Mr. Andrews said he was confident this Part 150 Study went well* *beyond FAA guidelines and best practices, and may in fact be one of the most thoroughly researched Part 150 studies for a general aviation airport.*

Mr. Montague clarified that the Whitlock-Nixon-Bell paper used WebScene and FlightAware, while the consultant team used AirScene, FlightAware and Port Columbus Noise Office data. So there are different data sources being reviewed here.

Mr. Whitlock offered to review the White Paper's analysis of data. He said their analysis showed an extraordinary number of Hawker 800s, for example, compared to what was proposed in the inputs. He summarized these details, then said the consultant team's proposed inputs need more verification. *Mr. Andrews said further verification is not needed, and that Mr. Whitlock was using a completely different data source.*

Mr. Zoll said it was unfair to ask the RS&H consultant team to respond in a few minutes to a document they just received that took Mr. Whitlock and Ms. Nixon-Bell four days to prepare. He suggested the RS&H team should have time to respond. He said it seemed there ought to be some way to verify the validity of the data when there is a discrepancy between databases.

Mr. Montague said OSU Airport and the consultant team would certainly review the White Paper and take it under advisement (s*ee Response Memo to Whitlock-Nixon-Bell White Paper).*

Mr. Alverson thanked Mr. Whitlock and Ms. Nixon-Bell for their hard work. He noted it would be difficult for the consultant team to approach the Technical Subcommittee with a week's worth of data extrapolated out to one year and have it pass muster. The team has used a year's worth of data to conduct the noise modeling. Mr. Alverson also pointed out the White Paper noted some Airbus 320 operations at OSU Airport. The Airbus does not fly into or out of OSU Airport.

Mr. Whitlock said that Port Columbus Noise Office data does not agree with the FlightAware data. *Mr. Alverson reiterated that the team uses professional judgment to make decisions on how to use various pieces of data.*

Mr. Whitlock said he hadn't heard in presentations that the team had found aircraft in the FlightAware data that they did not include in the noise modeling inputs, which from his perspective would be a basic quality control mechanism.

Public observer and Riverlea Mayor Mary Jo Cusack said she would like to second David Zoll's proposal to allow the consultant team time to respond to the issues raised in the White Paper. She said at least four large jets a night go over her home.

Ms. Nixon-Bell said the team was asking the residents to accept a lot of assumptions based on professional judgment. She said that by doing this effort she was trying to be sure she would be able to accept and verify the consultant's information. The residents want this to be right. Ms. Nixon-Bell said she understood that their review of one week may not reflect an entire year's worth of aircraft operations, but she didn't think there was enough verification of the consultant team's data yet.

Public observer Vera Tedrick explained that she lives under the 50-degree heading turn that pilots make to avoid Port Columbus airspace. She said her life is completely turned upside down. She uses ear plugs due to the noise and fears she might not hear a fire alarm. She expressed her opinion that the consultant team was expecting her to not understand what they were seeing in one week of analysis. Ms. Tedrick said at the public open house the consultant team will meet a lot of people whose lives have been turned upside down.

Mr. Whitlock asked for more clarification on the Cessna Citation 560 altitude on departure. With regard to MU3001 – is that a straight out departure or a turning aircraft? *Mr. Alverson said that the team used a straight out departure to develop the MU3001 profile.*

Mr. Whitlock said that could explain why one sees the actual Cessna Citation 560 profiles at lower altitudes. This is a discrepancy. Eliminating this discrepancy is important. *Mr. Alverson said this was a point well-taken and when the model is run, the MU3001 profile will be applied to the flight tracks that turn.*

Mr. Whitlock asked Mr. Andrews why the number of PA31 flights shown in January had now increased to over 1,500 flights. Why the difference between those numbers? *Mr. Andrews explained that the numbers shown in January were based on FlightAware data. Since then, the team has been able to access Port Columbus Noise Office data, which is more complete, so some of the numbers presented earlier have been updated accordingly*.

Mr. Whitlock asked Mr. Andrews to confirm that he assumed the Port Columbus data on jet operations at OSU Airport were correct. *Mr. Andrews said that is correct.*

Ms. Keister concluded the meeting by noting that the consultant team would review the Whitlock-Nixon-Bell White Paper and send a response. She also reminded the Technical Subcommittee that its role is to advise the OSU Airport. The Ohio State University and the FAA retain the statutory decision-making authority on the Part 150 process and would make a determination on whether further verification of the model inputs was required.

Adjourn
The meeting adjourned at 12:30 p.m.

The Ohio State University Airport

<u>Part 150 Committee – Technical Subcommittee</u>

Meeting #2

AGENDA

9:30 a.m. – 12:30 p.m.

March 26, 2008

OSU Airport Training Room

2160 West Case Road, Columbus, 43235

Meeting Goals: Review FAR Part 150 noise model inputs, explain how each data source was used and respond to questions and comments raised during and immediately following the Technical Subcommittee meeting held on January 17th.

9:30 a.m. **Convene the Meeting – *Marie Keister, Engage Public Affairs, LLC***

- Welcome and introductions
- Meeting purpose and discussion ground rules
- Agenda review – *David Full, RS&H*

9:45 a.m. **Review of Source Data – *Don Andrews, RS&H***

10:15 a.m. **Review of Jet Arrival and Departure Altitude Profile Analysis – *Steve Alverson, ESA Airports***

10:45 a.m. **Review of INM Input Aircraft Operational Fleet Mix – *Don Andrews, RS&H***

11:30 a.m. **Review of New Flight Tracks – *Steve Alverson, ESA Airports***

11:45 a.m. **Runway Use Percentages – *Steve Alverson, ESA Airports***

12:15 p.m. **Next Steps – *David Full, RS&H***

12:30 p.m. **Adjourn – *Marie Keister, Engage***