



Appendix B



Forecast



Appendix B Forecast

A forecast of aviation activity was prepared for the purpose of developing noise exposure contours for projected future conditions for this Part 150 Noise Compatibility Study (Part 150 Study). The forecast was based upon the *2018 Forecast Working Paper (FWP)*¹ and subsequent *FWP 2021 Sensitivity Analysis Memo*² update to account for impacts due to the COVID-19 health emergency. This forecast was used to project activity levels through 2028 and was submitted to the Federal Aviation Administration (FAA) for approval. The FAA approved this forecast in August of 2021. This forecast was used to develop input data representative of future conditions, which was used to prepare the noise exposure contours for the Future (2028) Baseline condition.

This appendix was prepared to provide overview of the forecast development of Future (2028) aviation characteristics and operating levels based upon the FWP, to support the requirements of the Part 150 planning process for Chicago Rockford International Airport (RFD or Airport). The year 2017 was used as the base year for forecast purposes. The key benchmark year for the forecast is 2028, which corresponds to the 5-year projection from the date of submittal, per Part 150 guidelines.

The aviation forecast provided operational totals for the following types of activity at RFD:

- Cargo (Updated based on the *2021 FWP Sensitivity Analyses Memo*)
- Commercial
- General Aviation
- Military

» B.1 Forecast Working Paper

The FWP 2021 Sensitivity Analysis Memo is presented in **Exhibit B-1, 2021 Forecast Working Paper Sensitivity Analysis**. **Table B-1, Forecast Working Paper 2028 Operations** details the number of operations per operator category and aircraft type for the calendar year 2028 represented in the update to the working paper.

¹ Development of Northwest Cargo Apron & Midfield Development Program, Forecast Summary, September 2018, Crawford Murphy & Tilly.

² Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis, July 2021, Crawford Murphy & Tilly.



EXHIBIT B-1 | 2021 FORECAST WORKING PAPER SENSITIVITY ANALYSIS



MEMORANDUM

TO: Zachary D. Oakley, AAE, ACE – Chicago Rockford International Airport
FROM: Andy Bodine, PE, CM – Crawford, Murphy & Tilly, Inc.
DATE: July 16, 2021
SUBJECT: Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis

Memo Purpose

Based on a recent FAR Part 150 Status Meeting call, RFD received direction from the FAA (Amy Hanson) that the forecasts of aeronautical operations created for the Midfield EA needed to be updated for use in the AEDT model. Amy noted the operations need to be reviewed considering COVID and new additional entrants. It is anticipated that an amalgam of 2019/2020 numbers and noting early 2021 trends be the basis of a new 2020 base year and a forecasted 2026 Sixth year.

Background

The Chicago Rockford International Airport is a non-hub commercial service airport that accommodates service by commercial airline operators, military, cargo, general aviation, and corporate needs of northern Illinois, southern Wisconsin and the Chicago Metropolitan Area. As a part of the Airport’s overall development plan, the addition of new cargo operations and carriers are anticipated that will require pertinent airside and landside facilities. In response to these needs, RFD undertook a planning and environmental clearance effort in 2018 to support the development of the Northwest Cargo Apron area and the “Midfield” which is located south of Runway 7/25 and west of Runway 1/19 on property owned by the Airport.

As described in the Memo Purpose section, the findings of the planning efforts are being evaluated following the impacts of COVID to the aviation industry. For the purposes of this sensitivity analysis, it is assumed that the original forecasts for General Aviation (GA), Commercial Service or Military operations are conservative and therefore no analysis is being completed for these sectors. A forecast of activity will be extended to 2026 using the original forecasting methods. This memo will focus on evaluation, analysis, and extension of the forecast for cargo operations. The cargo aviation sector saw a shift in supply chains as belly cargo was effectively eliminated due to the downturn in commercial service. Integrators and suppliers were forced to shift business to dedicated cargo aircraft in order to maintain existing supply chains.

Cargo Sensitivity Analysis

The 2018 Forecast Working Paper (FWP) assessed the findings of the 2013 Forecast Update and provided multiple forecast scenarios based on industry trends and historic activity. These planning levels most closely resembled a “no-build” scenario. This means that they are representative of the anticipated operations and landed weight if the airport did not build required infrastructure to accommodate interested parties. Additionally, a “user-driven build” scenario representative of the anticipated operations and landed weight if the infrastructure referenced in the Background section was ultimately constructed, was considered. Table 1 was presented in the 2018 FWP to summarize the landed weight and operations at RFD. The “user-driven build” scenario was selected as the preferred scenario.



14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Memorandum – Page 2

Table 1: 2018 FWP Landed Weight and Operations Summary

| | HISTORIC | | | | FORECAST | | | |
|--------------------------------|----------|-------|---------|--------|-----------|--------|-----------|--------|
| | 2016 | | 2017 | | 2018 | | 2023 | |
| | Tonnage | Ops. | Tonnage | Ops. | Tonnage | Ops. | Tonnage | Ops. |
| Average | 461,478 | 6,757 | 690,827 | 10,065 | 1,068,551 | 15,774 | 1,318,915 | 19,470 |
| User-Driven | 461,478 | 6,757 | 690,827 | 10,065 | 1,068,551 | 15,774 | 1,731,925 | 25,296 |
| Manufacturer's Forecast | 461,478 | 6,757 | 690,827 | 10,065 | 718,460 | 10,468 | 840,497 | 12,276 |

Note: In the 2018 FWP, 2018 tonnage and operations were projected based on January through September data.

Source: FAA Cargo Enplanement Data, RFD Airport Activity Statistics, CMT Analysis

Updated IFR flight data has been downloaded and analyzed in order to understand current operational trends and how they may differentiate from previous forecasting efforts. A summary of the differences can be seen in the **Table 2** below.

Table 2: IFR Data Comparison

| | HISTORIC | | | | FORECAST | | | | |
|---------------------------------------|----------|--------|--------|--------|----------|--------|--------|--------|--------|
| | 2018 | 2019 | 2020 | 2021* | 2022 | 2023 | 2024 | 2025 | 2026 |
| Annual Cargo Operations | 15,545 | 17,259 | 20,091 | 20,493 | - | - | - | - | - |
| 2018 FWP Forecasted Operations | 15,774 | 16,452 | 17,160 | 19,872 | 22,584 | 25,296 | 26,384 | 27,518 | 28,702 |
| Δ | -229 | 807 | 2,931 | 621 | - | - | - | - | - |

Source: FAA Cargo Enplanement Data, RFD Airport Activity Statistics, TRAQpak (1/1/2018 through 5/31/2021), CMT Analysis

As shown in the table above, there was a significant jump in cargo operations in 2020. This can be explained through shifts in cargo transport during the COVID-19 pandemic. Many cargo routes that previously relied on belly cargo delivery were forced to modify delivery through the use of dedicated freighters. This resulted in significantly higher operations in 2020 than originally anticipated, but based on 2021 trends, it appears operational levels are beginning to balance. Following a period of projected significant growth in years 2022 and 2023 following the construction of the midfield area and other associated improvements, the forecasted growth rate for cargo operations in 2024, 2025, and 2026 returns to a modest 4.3% CAGR.

To verify whether or not the aircraft share and fleet mix are still aligned with the original forecast assumptions, cargo aircraft operations were analyzed for 2020 and 2021. A comparison of the 2018 FWP aircraft share and current fleet mix and share was completed and is shown below in **Table 3**. As shown in the table, the fleet mix and aircraft share is trending in line with the 2018 FWP projections for 2023. There were some aircraft that experienced a larger or unnatural upward trend in 2020 due to modified delivery methods as mentioned above. It should be noted there was a significantly higher share of Boeing 737 operations in 2019 and 2020 than anticipated. These operations were carried out by Southern Air, Inc., a subsidiary of Atlas Air. It has been determined that these 737 operations ceased in March of 2021 and their share is not expected to increase in the future as operators have turned back to the Boeing 767 variant. Overall, the projected fleet mix and aircraft share in 2021 are very similar to those originally projected for 2023 as part of the 2018 FWP.



14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Memorandum – Page 3

Table 3: Updated Cargo Fleet Mix

| | FWP | | HISTORIC | | | | FORECAST |
|-------------------|-------|-------|----------|-------|-------|-------|----------|
| | 2018 | 2023 | 2018 | 2019 | 2020 | 2021 | 2026 |
| Widebody | | | | | | | |
| Airbus 300 | 16.4% | 24.4% | 22.2% | 19.5% | 20.6% | 22.3% | 25.3% |
| Boeing 747-400 | N/A | N/A | 0.0% | 0.1% | 0.2% | 1.0% | 1.0% |
| Boeing 767-200 | 11.7% | 0.0% | 8.2% | 5.7% | 4.8% | 5.5% | 0.0% |
| Boeing 767-300 | 26.3% | 30.2% | 25.2% | 30.4% | 28.8% | 34.8% | 42.5% |
| MD-11 | 0.0% | 4.7% | 0.3% | 2.5% | 2.2% | 2.3% | 0.0% |
| Boeing 747-800F | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% |
| Narrowbody | | | | | | | |
| Boeing 757-200 | 45.5% | 29.1% | 44.1% | 34.2% | 28.3% | 26.1% | 23.0% |
| Boeing 737-800 | 0.0% | 7.0% | 0.0% | 7.7% | 15.2% | 7.8% | 3.0% |

Source: TRAQpak (1/1/2018 through 5/31/2021), CMT Analysis

Table 4: Annual Operations Forecast Through 2026

| Annual Operations | HISTORIC | | FORECAST | | | |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 2016 | 2017 | 2018 | 2023 | 2025 | 2026 |
| Air Carrier | 2,141 | 2,162 | 2,451 | 3,659 | 4,019 | 4,211 |
| Air Cargo | 6,757 | 10,065 | 15,774 | 25,296 | 27,528 | 28,702 |
| General Aviation | 23,503 | 25,565 | 25,642 | 26,029 | 26,185 | 26,264 |
| Military | 1,986 | 1,670 | 1,670 | 1,670 | 1,670 | 1,670 |
| Total Operations | 34,387 | 39,462 | 45,537 | 56,654 | 59,402 | 60,847 |
| Cargo Landed Weight (Tons) | 461,478 | 690,827 | 1,068,551 | 1,731,925 | 2,184,762 | 2,279,048 |
| Passenger Enplanements | 101,780 | 112,036 | 117,405 | 176,745 | 194,090 | 203,390 |
| Based Aircraft | 114 | 115 | 116 | 120 | 120 | 120 |

Source: FAA Cargo Enplanement Data, RFD Airport Activity Statistics, TRAQpak (1/1/2018 through 5/31/2021), CMT Analysis

Conclusions

Based on the analysis completed above, operational levels at RFD are within the original recommended forecast scenario for 2023. Modest growth in 2024, 2025, and 2026 in the amount of 4.3% CAGR for Cargo Operations in addition to carrying forward previous forecast methodologies for GA, Commercial, and Military categories represent a total of 4.8% growth forecasted from 2023 to 2026.

Upon Airport approval, updated operational levels for each aircraft type will be provided to Landrum & Brown to update the noise model for a forecasted out-year of 2026.

Sincerely,

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14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

TABLE B-1 | FORECAST WORKING PAPER 2028 OPERATIONS

| Equipment Type | Day/Night Split | 2028 Operations |
|---|-----------------|-----------------|
| CARGO | | |
| Airbus 300 | 43.5/56.5 | 7899 |
| Boeing 767-300 | 46.4/53.6 | 13270 |
| Boeing 747-800F | 28.4/71.6 | 1624 |
| Boeing 737-800BCF | 72.0/28.0 | 937 |
| Boeing 757-200 | 30.3/69.7 | 3591 |
| Boeing 757-200 | 72.0/28.0 | 3591 |
| Boeing 747-400 | 87.7/12.3 | 312 |
| Cargo Subtotal | | 31223 |
| GENERAL AVIATION | | |
| C172 - Cessna Skyhawk 172/Cutlass | 98.5/1.5 | 3156 |
| H25B - BAe HS 125/700-800/Hawker 800 | 89.8/10.2 | 1736 |
| SR22 - Cirrus SR 22 | 97.7/2.3 | 1596 |
| BE58 - Beech 58 | 96.4/3.6 | 1549 |
| PRM1 - Raytheon Premier 1/390 Premier 1 | 96.6/3.4 | 1353 |
| BE20 - Beech 200 Super King | 95.0/5.0 | 1316 |
| P28A - Piper Cherokee | 100/0 | 1279 |
| EA50 - Eclipse 500 | 98.5/1.5 | 1251 |
| BE33 - Beech Bonanza 33 | 98.4/1.6 | 1139 |
| LJ40 - Learjet 40; Gates Learjet | 97.3/2.7 | 1055 |
| C25B - Cessna Citation CJ3 | 91.1/8.9 | 943 |
| BE35 - Beech Bonanza 35 | 100/0 | 924 |
| C182 - Cessna Skylane 182 | 94.3/5.7 | 821 |
| BE9L - Beech King Air 90 | 97.3/2.7 | 700 |
| B350 - Beech Super King Air 350 | 94.6/5.4 | 690 |
| CL30 - Bombardier Challenger 300 | 97.1/2.9 | 644 |
| PA24 - Piper PA-24 | 93.1/6.9 | 541 |
| C525 - Cessna CitationJet/CJ1 | 94.5/5.5 | 514 |
| PA30 - Piper PA-30 | 100/0 | 503 |
| C441 - Cessna Conquest | 92.3/7.7 | 485 |
| PA46 - Piper Malibu | 76.5/23.5 | 476 |
| BE40 - Raytheon/Beech Beechjet 400/T-1 | 93.6/6.4 | 439 |
| C56X - Cessna Excel/XLS | 95.6/4.4 | 420 |
| LJ45 - Bombardier Learjet 45 | 92.7/7.3 | 393 |
| C550 - Cessna Citation II/Bravo | 100/0 | 298 |
| PA32 - Piper Cherokee Six | 93.5/6.5 | 289 |
| C560 - Cessna Citation V/Ultra/Encore | 96.4/3.6 | 261 |
| M20P - Mooney M-20C Ranger | 92.3/7.7 | 243 |
| C680 - Cessna Citation Sovereign | 95.7/4.3 | 214 |



14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

| Equipment Type | Day/Night Split | 2028 Operations |
|----------------------------------|-----------------|-----------------|
| PA31 - Piper Navajo PA-31 | 100/0 | 214 |
| E55P - Embraer Phenom 300 | 63.6/36.4 | 205 |
| E145 - Embraer ERJ-145 | 86.7/13.3 | 140 |
| C750 - Cessna Citation X | 85.7/14.3 | 131 |
| B190 - Beech 1900/C-12J | 92.9/7.1 | 131 |
| GLF5 - Gulfstream V/G500 | 92.9/7.1 | 131 |
| P46T - Piper Malibu Meridian | 100/0 | 131 |
| C206 - Cessna 206 Stationair | 41.7/58.3 | 112 |
| General Aviation Subtotal | | 26421 |
| COMMERCIAL | | |
| Airbus 319 | 80.0/20.0 | 28 |
| Airbus 320 | 94.8/5.2 | 4361 |
| Boeing 737-700 | 100.0/0.0 | 46 |
| Boeing 737-800 | 85.4/14.6 | 128 |
| Boeing 757-300 | 100.0/0.0 | 23 |
| Commercial Subtotal | | 4585 |
| MILITARY | | |
| Messerschmitt MJ-90 | 100/0 | 258 |
| Northrop T-38 Talon | 100/0 | 231 |
| Boeing KC-135 Stratotanker | 100/0 | 180 |
| Raytheon Texan 2 | 100/0 | 141 |
| Sikorsky SH-60 Seahawk | 100/0 | 141 |
| Mitsubishi Regional Jet 90 | 100/0 | 128 |
| Lockheed 130 Hercules | 100/0 | 116 |
| Embraer 190 | 100/0 | 103 |
| Swearingen Merlin 4 | 100/0 | 90 |
| Bombardier Q-400 | 100/0 | 77 |
| Beechjet 400 | 100/0 | 77 |
| Bombardier Learjet 35 | 100/0 | 77 |
| Boeing E-6 Mercury | 100/0 | 51 |
| Military Subtotal | | 1670 |
| Grand Total | | 63899 |