Airport Master Plan Advisory Committee Agenda

Thursday, September 24, 2020 - 5:30 PM
Virtual Meeting (www.zoom.us)

Zoom Mtg ID: 988 3305 6400 Passcode: 10280119
A toll-free phone number is available by calling (608) 821-8394
at least half an hour prior to the start of the meeting.
Instructions for accessing this meeting are on next page

Posted on the City's web site at meetings.cityofmiddleton.us *revised 9/23/20 10:50 a.m.*

Call to Order

Discussion/Action Items

1) **Election of Committee Officers (chair, vice-chair)**
Unless the chairperson is appointed by the mayor, city committees elect officers following each spring election / appointment cycle.

2) **Approval of July 18, 2019, Meeting Minutes**

3) **Presentation and Discussion of the FAA-Approved Aviation Demand Forecasts (Chapter 2)**
Mead & Hunt will review the changes they made to the aviation forecasts to address comments provided by the FAA in August 2019 and June 2020. The agency has now signed off on the forecasts, which is a required step in the development of an airport master plan. Committee members are encouraged to send any technical questions via email to Mark Opitz (individually, without copying other members) by Tuesday, Sept. 22, so that project staff can prepare responses for discussion at the meeting. Previous versions of the chapter are on the project webpage, www.cityofmiddleton.us/455/Airport-Master-Plan

4) **Project Schedule and Next Steps**
Project staff envision meeting monthly through November, with the goal of completing the draft plan in early 2021. More details will be provided prior to the meeting.

5) **Public Comment**

Adjournment

It is possible that members of and possibly a quorum of members of other governmental bodies of the municipality may be in attendance at this meeting to gather information; however, no action will be taken by any governmental body at this meeting other than the governmental body specifically referenced in this notice.

Any person who has a qualifying disability as defined by the American With Disabilities Act that requires the meeting or materials at the meeting to be in an accessible location or format must contact the City Administrator at (608) 821-8350, 7426 Hubbard Ave., Middleton, WI at least 24 hours prior to the commencement of the meeting so that any necessary arrangements can be made to accommodate each request.

NOTICE OF ONLINE MEETING

Due to the public health emergency that has been declared for the COVID-19 outbreak, the State of Wisconsin is encouraging community interventions such as social distancing, replacing in-person meetings with remote communications when possible, and other precautions that can help minimize further spread of COVID-19 in our community. The City of Middleton has set this as an online meeting with remote participation to promote social distancing and help protect our community.

Governmental bodies can meet their obligation for open public meetings while practicing social distancing to help protect public health by conducting meetings via telephone conference calls as long as the public is provided with an effective way to monitor such calls.

At the request of the Common Council, this Zoom meeting will be recorded.

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Computer: First time users will need to download and run the Zoom client app (zoom.us) for your computer. It may be easiest to use a laptop computer with built-in camera and microphone, or a desktop computer with a headset or speakers/microphone. If you would like to speak during the meeting but do not have a microphone on your computer, you will need to call in with a phone.

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Join Meeting: To join the online meeting, open the Zoom app, click "Join a Meeting," and enter the **Meeting ID** and **Password** printed at the top of the agenda.

Phone: If needed, call either +1 (253) 215-8782 or +1 (301) 715-8592 and enter the **Meeting ID** and **Password** printed at the top of the agenda. These are long-distance numbers, so there may be charges depending on your calling plan.

Technical difficulties? If you experience difficulties while trying to connect to the meeting, please see the help center resources at zoom.us, or call or text the Zoom help line at: +1 (888) 799-9666 ext. 2.

Tips for Zoom Use

- If you don't have a camera, that's fine. You'll still be able to see and hear everything, and participate in discussion as appropriate. Your video participant box will just appear black (or with your static Zoom profile picture, if you upload one). In any event, your participant box will have your name in it, as you entered it. Please enter your name instead of phone number so it will be easier for others to see who's participating in the meeting. You can edit your name in the Participant Video Panel section of the screen if needed.
- When in the meeting, activate your sound and camera when ready (microphone and video camera symbols should be in the lower left portion of screen). The Zoom software includes functionality for you to test the microphone and camera to ensure they're working.

- Committee members are expected to participate in discussion freely. Participants are asked to leave their microphone muted until called on to speak. If a member of the audience would like to say something, please raise your hand and wait to be recognized by the chair.
- To raise your hand during the meeting, click on the icon labeled "Participants" at the bottom center of your screen. At the bottom of the pop-up participants window, click the button labeled "Raise Hand."
- You may see the meeting participants displayed across the top of your screen in a video panel above the host's shared screen view. If you'd prefer to show the participant video panel to the right of the shared screen, which is often a more efficient use of screen space, click the "View Options" drop-down menu at the top of the screen and check the "Side-by-side Mode" option.
- In "Side-by-side Mode" you can modify your view of the participants by choosing Gallery View (everybody) or Speaker View (active speaker only) at the top of the participant video panel. The participant panel can be enlarged or reduced by dragging the gray vertical separator to the left or right.
- **Motions**: When making or seconding a motion, Committee members are asked to state their name first so everybody will know who is speaking.
- **Votes**: Unless votes are clearly unanimous, staff will take votes by roll call.

CITY OF MIDDLETON
AIRPORT MASTER PLAN ADVISORY COMMITTEE
Thursday July 18, 2019 5:30 p.m.

MEETING MINUTES – Draft

These minutes are not final until they are formally approved at a subsequent meeting. Meeting materials are available on the City's website, and a video recording of the meeting is available at: https://www.youtube.com/watch?v=W8xHs7i69t0

MEMBERS PRESENT: Bob Bartholomew, Ray Fey, Mike Frank, Jade Hofeldt, Leif Hubbard, Julie Loeffler, Richard Morey, Kevin Munson, Deana Porter, Jim Pulvermacher (Town of Springfield Board chairman filling in for Dan Dresen), Cynthia Richson, Mark Warshauer
MEMBERS ABSENT: None
OTHERS PRESENT: Mark Opitz (City staff); Laura Morland, Chris Reis, Rob Sims, Greg Stern (Mead & Hunt staff); about 40 members of the public

Call to order

Chair Hubbard called the meeting to order at 5:30 p.m. in the Council Chambers of Middleton City Hall.

Draft minutes of June 6, 2019, meeting

Motion by Warshauer/Frank to accept the minutes as prepared. Richson requested that a note be added to the minutes (at the bottom of page 8 of the meeting packet) indicating that the advice provided by the Town of Middleton attorney had been provided in the context of the Town Board's public meeting on June 3. There was no objection to the amendment. **Amended motion carried** 11-0, with Pulvermacher abstaining as he was filling in for Dan Dresen and wasn't present at the last meeting.

Committee members said it would suffice for staff to record only the municipality of speakers effective with the minutes of today's meeting.

Discussion/Action Items

1. Review follow-up items from June 6 meeting

(6:44 - 27:56 of video recording)
Opitz summarized information that project staff have compiled in response to questions or issues raised at the June 6 meeting:

- Aircraft characteristics: See page 32 of meeting packet
- More detail about both user surveys : See pages 33-50 of meeting packet and the project website
- Staff guidance on more opportunities for public input: Project staff and the AMPAC chairperson have concluded that the current process is working quite well given that:
    - The committee is allowing public input under each agenda item
    - A project open house was held on May 9 at Kromrey
    - City and Town of Middleton staff distribute updates through their respective websites and listservs.

- Staff has updated the project schedule to add another AMPAC meeting in November
- There'll be at least one public hearing upon completion of the draft plan.
- The City is committed to working with AMPAC, officials from the Towns of Middleton and Springfield, and the author of the private survey to develop questions for a community survey that will be distributed when a draft plan is completed or nearing completion

Stern added the following comments:

- Responses from the police and fire chiefs regarding a concern about their departments' ability to respond to potential incidents at the airport if it were to grow (the statements were provided at the members' places).
- The master plan will address as part of the Alternatives Analysis the concerns raised about "congested" land use and noise.
- Mead & Hunt has received the results of a survey circulated by citizens and will take it under advisement
- He will address the question about aircraft size as part of chapter being presented tonight.

Warshauer asked whether committee members can request modifications to the chapters that are being provided. Stern responded that the documents are being presented as a "first cut" with the intent of incorporating feedback provided by the advisory committee.

Loeffler said she wanted to supplement the information provided by the fire chief. She said that a firefighter approached her at the open house and said he is concerned as to whether they would have had enough firefighters there to address the fuel spill that occurred during flood. She said she's not sure that the fire chief's message adequately conveys this alternative viewpoint.

Richson read excerpts from the City's 1998 resolution regarding the airport and spoke about how the City—after deciding not to hold an advisory referendum—was compelled through a lawsuit to hold a binding referendum in April 1999 that would have prohibited future development of the airport. She stated that the charter had "extremely confusing language" and was defeated "undoubtedly due to voter confusion at the ballot box." She also spoke about the City 2014 resolution to request that the Bureau of Aeronautics provide airport improvement money, including preparation of an airport master plan and environmental assessment.

Richson asked about the City's vision for the airport. She requested restoration of a sentence that had been deleted from an early draft of the transportation element of the City's comprehensive plan, as presented at the 4/25/16 Airport Commission meeting, and she compared it with language in the draft plan as posted 4/26/19 on the City's website (see 17:40 of video for details.) Richson requested that the committee have the opportunity to discuss the Economic Impact Study that is currently being prepared for the airport by the BOA.

Richson asked whether Matt Hofeldt is a member of the AMPAC given that the Council confirmed his appointment on 3/19/19. Opitz replied that the mayor had decided to replace Matt with Jade Hofeldt at the time the Council confirmed additional appointments to the advisory committee. Richson suggested that the record be corrected. She then spoke about conflicts of interest and "divided loyalties."

Motion by Richson/Loeffler that Rich Morey, Jade Hofeldt, and Deana Porter not be allowed to participate in votes due to a conflict of interest. Chair Hubbard **ruled the motion out of order.** Richson then requested that "conflicts of interest" be on the next meeting agenda. (See 21:53 of video for details).

2. Facility Requirements (draft)—Presentation and Discussion; Questions from the public regarding this chapter

(27:56 - 3:35:15 of video recording)
Stern began providing an overview of the presentation Mead & Hunt prepared for the meeting. He stated that this chapter focuses on the airport's primary runway as it relates to FAA guidance for determining appropriate runway length, the airport's role statewide system plan, and how the airport compares to others. He said that the chapter is guided by the desire not to change the type of aircraft that are utilizing the airport—therefore, project staff have sought to identify the runway length "tipping point" at which larger aircraft could start using the airport (also known as C29). Stern emphasized that the goal is not to go beyond that point. Next, he said that the chapter considers the feedback received from users and the public.

At this point, Richson asked about meeting schedule. Stern responded that Mead & Hunt plans to present an alternatives analysis, including an assessment of pros and cons, at a meeting in late September. Bartholomew asked whether project staff should first study information such as economic impact, public health (ground water pollution, safety), and effect of noise on people and wildlife before developing a 20-year plan. He suggested scheduling separate meetings on these topics and holding off with the alternatives analysis until all that data is available and has been reviewed. Loeffler said the committee hasn't yet addressed all the issues that people have raised concerns about. Munson spoke about two types of master plans—ones that don't involve many changes and ones that require more focus on comprehensive land use planning, airport safety compatibility zones, etc. He said that at this time he doesn't have all available information to make educated recommendations. After some additional comments, Hubbard requested that members postpone further discussion about the schedule until the next agenda item.

Stern resumed the presentation (see slides in the meeting packet). He reviewed eight steps in the FAA's runway length determination process, and Sims spoke about Middleton's classification as a large general aviation airport, how it compares with other airports, and aviation trends. Speaking about Step 8, Sims noted that a longer runway does not necessarily mean more aircraft operations because other factors (including airport facilities) also influence pilot decisions whether to use an airport.

Throughout the Mead & Hunt presentation, Committee members periodically asked questions and offered comments. Topics included the following (not necessarily an exhaustive list):

- Types of planes that operate at C29. (Loeffler said she would like the record to reflect that there is no guarantee that larger planes won't use C29.) (Stern said that the airport's redevelopment in 2003 was guided by critical aircraft criteria that reflected B-II design group standards, and he noted that the standards have changed a bit over time.)
- The economic impact of pilots who use the airport.
- Who benefits financially from potential airport expansion?
- Reasons why pilots choose to fly into Middleton.
- Reasons why the existing runway length can be limiting for some aircraft.
- Pros and cons of a 4,000 vs. 5,000 ft. runway. (Stern said this will be addressed in the alternatives analysis.)
- Factors influencing the selection of comparable airports, and why the list of airports has changed in this chapter. (Staff noted that some general aviation (GA) facilities with longer runways were designed for larger planes and therefore aren't necessarily comparable.)
- C29's airspace classification. (Sims replied that it is Class E.)

- When did BOA identify C29 to be a large GA facility? (Opitz responded about ten years ago, in conjunction with BOA updating its statewide system plan. Staff provided AMPAC members with "Table 2-5 Updated Airport Classification Evaluation Process.")
- How will the airport meet FAA criteria for the B-II design group given that C29 only has less than 500 (174) annual itinerant operations?
- Definition of commercial aircraft (see 1:41:20 of video for details).
- When instrument flight plans are filed and the ramifications to airspace operations.
- The 38,000 annual operations at C29 include flight school operations.
- C29 will never have an ILS (instrument landing system) due to lack of clear space, and it is highly unlikely ever to have a control tower. (Stern said that even if C29 were to have a 5,000 ft. runway, the lack of a control tower and ILS means that C-II and D-II aircraft wouldn't be as easily accommodated.)
- The location of the airport in relation to residential areas and schools.
- Safety of the surrounding community.

There was extensive discussion and some confusion about the two user surveys (see 2:04:10 of video for details). Richson identified a discrepancy between survey responses and the presentation, and she requested a breakdown of responses for each survey. She asked which survey results influenced the forecasts and projections. Stern apologized for the discrepancy and said he will provide revised information. Opitz agreed that any data discrepancies need to be clarified and addressed at the next meeting. Richson said she wants to see a community survey happen sooner than later.

Motion by Loeffler/Richson that there be a community survey that encompasses all the affected regions by this master plan revision and that the advisory committee consider it before anything is put down on paper—words or plans. (see 2:14:00 of video)

Morey stated that the purpose of this process is to educate and distribution information. He wondered whether it would make more sense to listen to all presentations so as to have a more informed picture before undertaking a community survey. Richson suggested doing two surveys—one now and one when the draft plan is available. Loeffler said that community input should be part of the planning process. Warshauer said it is important that the survey be professionally developed so that there isn't bias. Bartholomew asked Leslie Hayner (Town of Springfield resident and author of the private survey) to share her concerns with the user surveys. Hayner said the results were "faulty" because the surveys were not professionally developed and their distribution was limited to business and commercial users. Loeffler stated that she sees serious issues with how the user surveys were conducted. Morey said he believes the surveys met FAA criteria. Stern said the user surveys were similar to what Mead & Hunt has used for other master plans, and he emphasized that the surveys were only one part of their facility needs analysis. Loeffler suggested tapping into UW-Madison resources.

Based on the discussion, Loeffler **amended her motion** as follows: **Motion** by Loeffler/Richson that the City do a community survey now so that the results can inform the alternatives analysis and preparation of a draft plan, and then do a second community survey after a draft plan is completed but before the advisory committee votes on any recommendations.

Committee members continued to deliberate the motion and to discuss the approach to the surveys with project staff before voting on the amended motion. **Motion carried** 10-0, with Morey and Pulvermacher abstaining.

Stern said he will prepare a memo to clarify details about the two surveys. He stated that he doesn't believe that the discrepancies exist in the information submitted to FAA, which is currently reviewing the aviation forecast chapter. Stern also said it would be helpful to have consensus on the runway length that should be evaluated in the alternatives analysis so that there aren't so many variables.

Committee members continued to discuss the surveys before turning to other aspects of this chapter, but soon thereafter decided to discontinue consideration of the remainder of the presentation due to the lateness of the hour. Hubbard said that the intent of presenting an entire chapter at one meeting is because the individual elements have to fit together in order to make full sense. Speaking as chair of the Town of Springfield, Pulvermacher said he will probably hold a public forum in his community but the board will want to see more nuts and bolts of the plan before responding to it. He also asked that the City commit not to use eminent domain / condemnation to acquire land needed for any airport improvements.

Chair Hubbard invited comments from those present (see 2:54:38 of video).

Pam Krill (Town of Springfield) said she is not anti-growth, anti-business, anti-airport—she just doesn't want to see it get bigger (in terms of footprint, longer runway, etc.). She also spoke about conflicts of interest and how other bodies will rely on whatever decision / recommendation AMPAC makes.

Leslie Hayner (Town of Springfield) suggested the committee review the state's annual Airport Rates and Charges survey and recommended that the City increase fees and other charges to generate more revenue at the airport. She said that the eight nearest airports all have available hangar space and that adding a few more hangars would make airport one of only three in the state that have more than 70 hangars. She is worried that the City's existing fee structure creates artificial demand for hangar space. Morey responded that no airport in the area charges a landing fee and noted that airport revenues are more than sufficient to cover daily operations.

Kyle Larson (Town of Springfield) said that she feels the City is talking out of both sides of its mouth because every proposal has a large impact on volume and traffic at the airport. She said that the use of JetNet data to survey pilots illustrates that the City is focused on attracting more business traffic. Hofeldt commented that, because many private pilots register as an LLC, JetNet tracks both private and business aircraft.

Dan Roekle (Town of Middleton) asked that the City take into consideration the airport's proximity to schools and neighborhoods.

Joan Ziegler (Hickory Trail, Town of Springfield) asked why the City's goals / priorities for the airport are what they are. Stern responded that the goal is not to attract a larger category of aircraft than those that currently use the airport.

Kathryn Wolfe, Hickory Trail (Town of Springfield) said she has seen a huge increase in airplane traffic. She urged that an independent, comprehensive environmental assessment happen sooner in the planning process, and she said that traffic along Airport Road is already a mess.

Deb Neuman (Town of Springfield) stated she has noticed a recent increase in jets flying low over the residence where she has lived for 15 years. She said that air traffic is disrupting their semi-rural life.

Steve Ziegler (Town of Middleton) spoke about the history of the previous airport approval process and said that the City has accomplished its originally stated intent. He said that he heard the mayor at the

time state that there would not be a jet using the airport. He said that a 5,000 ft. runway would "destroy my community" and that neighbors are "absolutely scared to death" of a longer runway.

Michelle Lewis (Town of Middleton) spoke about lead emissions from small aircraft. She said that 100% of lead emissions in Dane County come from piston aircraft, and 300 billion micrograms are emitted each year by small aircraft in Dane County. She listed schools and community facilities near the airport and said that there is no safe blood level in children. She said that the effects of lead exposure cannot be corrected.

3. Next Steps and Schedule

(3:35:15 of video recording)
Motion by Bartholomew/Richson to develop a 2019-2020 meeting schedule with dates, agendas, and topics for the purpose of addressing as separate topics the following:

- 2019 economic impact report (once it's available)
- Public health issues such as ground, water, air pollution, and safety
- Effects of noise on people and wildlife, and its proposed mitigation

Opitz cautioned that Mead & Hunt may not be available for those meetings as this request may exceed their scope of services. He also said that some of these topics are generally dealt with at the project level, not as part of an airport master plan. By consensus, Committee members agreed to plan meetings for the third or fourth Thursday of each month, except for during the holiday season. Stern said that Mead & Hunt may not be the right firm to do some of these things, and he suggested postponing scheduling the next meeting until project staff have had an opportunity to discuss the meeting outcomes with the BOA. Bartholomew and Richson **withdrew their motion.**

Hubbard stated that detailed environmental analyses are more typically done at the time a sponsor considers proceeding with an action (a project). Richson said she would like to update the noise mitigation plan established by the airport in the 1980s. Hubbard said it's not clear at this point in the master planning process what to study in detail. Loeffler spoke about the need for more information—how one doesn't know which option to select unless one knows about economic impacts and negative externalities.

Adjournment

Moved by Richson/Warshauer to adjourn. **Motion carried 12-0**, and the meeting adjourned at 9:25 p.m.

Minutes prepared by City Planner & Zoning Administrator Mark Opitz. These minutes should not be considered finalized until they are formally approved at a subsequent meeting of the committee.

Summary of Aviation Forecast Development
Middleton Municipal Airport (C29) – Master Plan

Date: September 14th, 2020

To: Mark Opitz, City Planner and Zoning Administrator, City of Middleton

This document is intended to summarize the Federal Aviation Administration's (FAA's) review of the Chapter 2 Aviation Demand Forecasts developed for the Middleton Municipal Airport (C29) Master Plan. It provides a high-level summary of the comments received, and chronicles revisions made to the initial draft that subsequently led to the FAA's approval of the forecast chapter in July of 2020.

Initial Draft – October 2018

The original draft of the forecast chapter was submitted to the Wisconsin Bureau of Aeronautics (BOA) in October of 2018. The BOA reviewed the draft document and then forwarded it to the FAA (Chicago Airports District Office) for their review. Initial FAA comments were received in August of 2019.

Most of the FAA's comments were concerned with how the existing baseline activity was presented. As C29 is a non-towered airport, there are no precise counts on the overall number of annual operations. The original forecast chapter utilized data from the Terminal Area Forecasts (TAF) to show the existing number of operations at C29 and utilized information from the 5010 Airport Master Records to document the existing number of based aircraft. Through their review comments, the FAA communicated that both the TAF and the 5010 sources are no longer considered acceptable data bases to be used to represent the existing conditions. Instead, the FAA suggested that the existing traffic operations be confirmed through the review of fuel sales, logbooks, user survey data and flight plans filed to and from C29. The FAA also indicated that the existing number of based aircraft should be sourced from aircraft validated through the basedaircraft.com website, which is administered by a third-party vendor, GCR, Inc.

Other FAA comments provided in their August 2019 correspondence included the following:

- Remove the *Operations per Based Aircraft* methodology for projecting future operations as it is no longer considered applicable.
- Military and Commercial operations need to be supported with more local data.
- Include letters or surveyed data from users to support the demand for future jet operations.
- Use charts to summarize all the forecasting methods evaluated at the conclusion of each section.
- Provide additional data regarding the existing and future design critical aircraft.
- Present a stronger story with backup data and a clearer line of logic, or high and low forecasts.

Revised Draft – May 2020

To address the FAA's August 2019 comments, revision efforts were undertaken to provide greater documentation of the existing activity at C29, and to better explain the assumptions and reasoning for the preferred forecast selected. These updates were incorporated into a revised draft of the forecast chapter that was submitted to the BOA and FAA in May of 2020. The resulting changes are summarized within the bulleted list below:

- An inventory of the existing (2019) operations was conducted through outreach to the based users, through interviews with the Fixed-Base-Operators (Morey Airplane Company and Capital Flight), through a review of the FAA's Traffic Flow Management System Counts (TFMSC) database, and through a review of visitor logs and fuel sales. The results of the 2019 inventory efforts are summarized within Appendix A.
- The existing fleet mix of aircraft based at C29 was obtained from information validated in the National Based Aircraft Inventory Program (basedaircraft.com).
- The *Operations per Based Aircraft* forecasting methodology was removed as suggested.
- Greater explanation of the military helicopter operations from the nearby Truax Air National Guard base was provided. These operations occur infrequently.
- One of the biggest commercial activities occurring at C29 right now is the daily deliveries from Freight Runners Express and Pro Aire Cargo Consultants. Both companies are contracted to provide air freight deliveries for UPS, which has a delivery center located only 1.5 miles south of the Airport. The local freight operations were combined with the local charter operations to account for the overall commercial activities at C29.
- More information was provided regarding the local trends and desire for airport improvements. Since 2018, the Airport has received 36 inquiries from people interested in basing an aircraft at the Airport and this listing was provided within Appendix B. Anecdotal information provided from the original, anonymous user survey responses is referenced with a link to the on-line results provided in Appendix C. Additionally, correspondence from existing and prospective business users of C29 concerning their needs or interest in additional airport facilities is provided in Appendix D.
- A summary chart of all the forecasting methodologies developed was provided at the conclusion of each section. A summary table listing the assumptions used in developing each forecast was also included as well as an explanation for the preferred forecast selected.
- A more robust discussion on the design critical aircraft at C29 was provided. The most demanding aircraft at C29 are the turbine powered aircraft (small jets and turboprops). The size of these aircraft ranges from the high end of the B-I standards to the low end of the B-II standards. Appendix E provides a historical summary of the instrument flight rule (IFR) operations conducted at C29 by all aircraft types since 2010.
- The revised chapter was structured to present low, medium, and high forecasts to account for a broader range of future conditions and in light of the uncertainty stemming from COVID-19.

Final Approved Chapter – July 2020

Following the May 2020 resubmittal, a conference call was held in June 2020 with representatives from the FAA and the BOA to address the following additional revisions which were incorporated into the final July 2020 version of the chapter:

- For the socioeconomic forecasts, the FAA asked that the coefficients of correlation (r-squared values) be presented. The FAA generally requires an r-squared value of 0.90 or greater for a forecast of this methodology to be selected as the preferred. As C29 is a non-towered airport, the past activity has been an estimate, and has been reported the same (40,510 annual operations) since 2010. When the flat reported activity at C29 was compared to the expansive growth occurring in Dane County, no strong correlation could be shown, and the resulting r-squared values were much lower than 0.90. As such, the FAA suggested selecting the national market share methodology as the preferred forecast of future operations at C29 – both for general aviation operations and for the projected number of jet and turboprop operations. At the FAA's direction, the socioeconomic methodologies have been left in the final chapter for comparison and for use in defining the low, medium, and high ranges of projected growth.
- The final revision was regarding the preferred forecast for based aircraft. The FAA felt that the near-term growth was likely too aggressive, but generally concurred with the overall number of projected aircraft (+25) by the end of the 2039 planning horizon. The near-term growth in hangars was lowered to show a more gradual increase in the 5-year and 10-year periods.

With the above revisions incorporated, the FAA provided their approval of the forecast chapter in a letter dated July 30th, 2020. The approved forecasts will serve as a guide and framework for quantifying the facility requirements to be addressed in the following chapter of the master plan.

Respectfully submitted,

MEAD & HUNT, Inc.

Greg Stern, P.E.

cc: Josh Holbrook, Wisconsin Bureau of Aeronautics

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

Chicago Airports District Office
2300 E. Devon Avenue
Des Plaines, Illinois 60018

July 30, 2020

Mr. Mark Optiz, City Planner
City of Middleton
7426 Hubbard Avenue
Middleton, WI 53562

Middleton Municipal Airport (C29)
Middleton, WI
Approval of Forecast

Dear Mr. Opitz:

The Federal Aviation Administration (FAA) is in receipt of the proposed forecast for the Middleton Municipal Airport masterplan, as contained in the most recent update to Chapter 2 – Aviation Demand Forecast (dated July 2020).

This aviation forecast was scoped and prepared prior to the effects of the Coronavirus Disease 2019 (COVID-19) outbreak. It is uncertain if there are, or will be, impacts to this forecast. For this reason, the FAA approval of the information provided in this forecast document is limited to the reasonability of the methodologies used and analysis completed. This is not an assessment of the forecasted number of operations or enplanements. FAA approval of the forecast does not provide justification to begin construction of airport development. Further documentation of actual activity levels reaching the forecasted activity levels will be needed prior to FAA participation in funding for those types of projects.

Given the above, the FAA approves the medium-growth forecast provided in Tables 2-42 and 2-44 on pages 2-58 and 2-60, for planning purposes only, as captured below.

Table 2-42: FAA Template – Forecasted Levels and Growth Rates (Medium-Growth Scenario)

Specify base year: 2019	Medium-Growth Forecasts					Average CAGR[1]			
	2019	2024	2029	2034	2039	2024	2029	2034	2039
Operations	Base Year Level	Base Year + 5yr.	Base Year + 10yr.	Base Year + 15yr.	Base Year + 20yr.	Base Year + 5yr.	Base Year + 10yr.	Base Year + 15yr.	Base Year + 20yr.
Itinerant									
Air carrier	0	0	0	0	0				
Commuter/air taxi	358	395	436	482	532	2.00%	2.00%	2.00%	2.00%
Air Freight	420	499	592	704	836	3.50%	3.50%	3.50%	3.50%
Total Commercial Operations	778	894	1,029	1,185	1,368	2.82%	2.83%	2.85%	2.86%
General aviation	12,654	13,564	14,176	14,842	15,572	1.40%	1.14%	1.07%	1.04%
Military	2	4	4	4	4	14.87%	7.18%	4.73%	3.53%
Local									
General aviation	27,906	28,046	28,186	28,328	28,469	0.10%	0.10%	0.10%	0.10%
Military	2	6	6	6	6	24.57%	11.61%	7.60%	5.65%
Total General Aviation Ops	40,560	41,610	42,362	43,169	44,041	0.51%	0.44%	0.42%	0.41%
TOTAL OPERATIONS	41,342	42,514	43,401	44,365	45,419	0.56%	0.49%	0.47%	0.47%
Turbine Operations	908	1,201	1,357	1,492	1,622	5.76%	4.10%	3.37%	2.94%
Based Aircraft									
Single Engine (Nonjet)	86	88	93	97	99	0.46%	0.76%	0.83%	0.69%
Multi Engine (Nonjet)	8	13	15	16	17	9.99%	6.16%	4.65%	3.99%
Jet Engine	2	3	4	5	5	9.99%	6.57%	6.11%	4.69%
Helicopter	4	3	3	4	4	-4.25%	-1.51%	-0.61%	-0.32%
TOTAL BASED AIRCRAFT	100	107	115	122	125	1.42%	1.36%	1.32%	1.12%

[1] *CAGR – Compound Annual Growth Rate*

			Low Growth Forecast (LGF)	LGF to 2019 TAF (%)	Recommended Forecasts - Medium Growth: Medium Growth Forecast (MGF)	MGF to 2019 TAF (%)	High Growth Forecast (HGF)	HGF to 2019 TAF (%)
	Year	2019 TAF[1]						
Based Aircraft								
Base Yr. Level	2019	94	100	*6.4%*	100	*6.4%*	100	*6.4%*
Base Yr. + 5yr.	2024	94	103	*9.9%*	107	*14.2%*	112	*19.1%*
Base Yr. + 10yrs.	2029	94	107	*13.3%*	115	*21.8%*	124	*32.4%*
Base Yr. + 15yrs.	2034	94	110	*16.7%*	122	*29.5%*	136	*44.9%*
Base Yr. + 20yrs.	2039	94	113	*20.2%*	125	*33.0%*	148	*57.2%*
GA Operations								
Base Yr. Level	2019	38,447	40,560	*5.5%*	40,560	*5.5%*	40,560	*5.5%*
Base Yr. + 5yr.	2024	40,763	41,342	*1.4%*	41,610	*2.1%*	40,763	*0.0%*
Base Yr. + 10yrs.	2029	43,204	41,995	*-2.8%*	42,362	*-1.9%*	43,204	*0.0%*
Base Yr. + 15yrs.	2034	45,781	42,690	*-6.8%*	43,169	*-5.7%*	45,781	*0.0%*
Base Yr. + 20yrs.	2039	48,505	43,447	*-10.4%*	44,041	*-9.2%*	48,505	*0.0%*
Total Operations								
Base Yr. Level	2019	40,957	41,342	*0.9%*	41,342	*0.9%*	41,342	*0.9%*
Base Yr. + 5yr.	2024	43,273	42,166	*-2.6%*	42,514	*-1.8%*	41,724	*-3.6%*
Base Yr. + 10yrs.	2029	45,714	42,856	*-6.3%*	43,401	*-5.1%*	44,379	*-2.9%*
Base Yr. + 15yrs.	2034	48,291	43,591	*-9.7%*	44,365	*-8.1%*	47,222	*-2.2%*
Base Yr. + 20yrs.	2039	51,015	44,389	*-13.0%*	45,419	*-11.0%*	50,276	*-1.4%*

Notes: [1] 2019 FAA Terminal Area Forecast (TAF) Data Obtained January 2020

Based on the approved forecasts, the FAA also approves B-I for the existing and B-II future critical aircraft as provided in Table 2-39 on pages 2-52, for planning purposes only, as captured below.

Table 2-39: Existing and Future Design Aircraft

Design Category	Exisitng Design Aircraft	Future Design Aircraft
Runway Design Code (RDC)	B-I	B-II
Aircraft Approach Category (AAC)	B	B
Approach Speed (knots)	91 or greater, but less than 121	91 or greater, but less than 121
Design Aircraft (Jet):	Cessna Citation CJ1 (108 knots)	Cessna Citation CJ2 (114 knots)
Design Aircraft (Turboprop):	Beechcraft Airliner 99 (107 knots)	Beechcraft King Air 90 (100 knots)
Airplane Design Group (ADG)	I	II
Wingspan (feet)	< 49 feet	49 - <79 feet
Design Aircraft (Jet):	Cessna Citation CJ1 (47 feet)	Cessna Citation CJ2 (50 feet)
Design Aircraft (Turboprop):	Beechcraft Airliner 99 (46 feet)	Beechcraft King Air 90 (50 feet)
Taxiway Design Group (TDG)	TDG 1-A	TDG-2
Design Aircraft (Jet):	Cessna Citation CJ1	Cessna Citation CJ2
Design Aircraft (Turboprop):	Beechcraft Airliner 99	Beechcraft King Air 90

Source: FAA Advisory Circular 150/5300-13A; Mead & Hunt

If you have any questions, I can be reached at 847-294-8253 or at sandy.lyman@faa.gov,

Sincerely,

SANDRA ANN LYMAN
Digitally signed by SANDRA ANN LYMAN
Date: 2020.07.30 10:51:21 -05'00'

Sandra A. Lyman
Community Planner
Chicago Airports District Office

cc: Josh Holbrook, Wisconsin Bureau of Aviation
Greg Stern, Mead & Hunt

Chapter 2
Aviation Demand Forecast

This chapter contains aviation activity forecasts for the Middleton Municipal Airport – Morey Field (C29 or the Airport) over a 20-year planning horizon. Aviation demand forecasts are an important step in the master planning process. Ultimately, they form the basis for future demand-driven improvements at the Airport, provide data from which to estimate off-airport impacts such as noise and traffic, and are incorporated by reference into other studies and policy decisions. The forecasts presented in the following sections are not exact, but instead are developed to indicate a reasonable trend in future activity levels based on demand. While the years of occurrence are not expected to match the projections exactly, it is the trend or rate of growth that is significant. This chapter, which presents aviation activity forecasts through 2039, is organized as follows:

The Federal Aviation Administration (FAA) projects future aviation activity through its Terminal Area Forecast (TAF), which is compared with projections that were prepared for this Master Plan. The FAA must approve forecasts developed for airport master plans and/or federal grants. The FAA's policy, listed in Advisory Circular (AC) 150/5070-6B, Airport Master Plans, is that FAA approval of forecasts should be consistent with the TAF. Master plan forecasts for operations and based aircraft inventories are considered consistent with the TAF if they meet the following criteria:

- Forecasts must differ by less than 10 percent in the five-year forecast period and must differ by less than 15 percent in the 10-year forecast period.

If the forecast is not consistent with the TAF, differences must be resolved if the forecast data is to be used in FAA decision-making. Resolution of these differences may involve revisions to the airport sponsor's submitted forecasts, adjustments to the TAF, or both.

This chapter examines information that pertains to aviation activities and describes the projections of aviation demand at C29. The forecast analysis includes methodologies based on historical aviation trends

at the Airport, as well as other socioeconomic trends related to the Dane County area. National and regional projections documented by the FAA and state projections by the Wisconsin Bureau of Aeronautics (WisBOA) were also reviewed to support the forecast development.

The ability to accurately forecast future aviation activity levels at an airport is impacted by the amount and validity of available historical information regarding that airport. In the case of C29, a non-towered general aviation facility, it was necessary to obtain data through interviews with airport management as well as through surveys of based tenants, businesses, and other regular users. Historical information on fuel sales, logbooks, and waiting lists for hangars was reviewed. Flight plans filed for operations to or from the Airport were obtained through the FAA's Traffic Flow Management System Counts (TFMSC) database. Previous planning studies completed for the Airport were also reviewed. The projections are based on historical data through the base year 2019.

2.1. Airport Role and Classification

C29 is a public facility owned by the City of Middleton, WI. The FAA's National Plan of Integrated Airport Systems (NPIAS), submitted to Congress biannually, identifies more than 3,000 airports that are significant to national air transportation and are eligible to receive grants. The 2019-2023 NPIAS lists C29 as a "Regional" General Aviation Airport. Airports of this category support regional economies by connecting communities to regional and national markets. Regional airports are generally located in metropolitan areas and have high levels of activity with some jets and multiengine propeller aircraft. C29 meets the following Regional classification criteria:

- Is located in a metropolitan statistical area
- Has 10 or more domestic flights over 500 miles
- Has 1,000 or more annual instrument operations
- Has 1 or more based jets or 100 or more based aircraft.

In addition to federal planning, the Airport is also considered for state-level funds. The WisBOA recently updated the role of airport classifications as part of their *Wisconsin State Airport System Plan 2030 (SASP 2030)*[1]. The updated classifications are based on a combination of both aviation and non-aviation factors, which include the following performance categories:

- **Activity** – This evaluated such factors as the number and type of based aircraft, the number of annual operations, and the number of registered pilots within a 30-minute drive time.
- **Economics** – This category evaluated the gross regional product (GRP) within a 30-minute drive time and the total retail sales within a 30-minute drive time.
- **Accessibility** – This category considered the population, the number of jobs, and the overall number of square miles that fell within a 30-minute drive time of the airport.
- **Facilities** – This category rated the airports based on their physical facilities such as runway length and precision approach capabilities.

[1] Wisconsin Department of Transportation. 2015. *Wisconsin State Airport System Plan 2030.* https://wisconsindot.gov/Documents/projects/multimodal/air/sasp4-ch2.pdf

Based on weighted consideration of these performance categories, the SASP 2030 categorizes C29 as a Large General Aviation (GA) Airport, one of 14 in Wisconsin. Airports of this category typically support all GA aircraft and include daily operations of business jets.

2.2. General Aviation Trends

Projections of aviation demand presented in this chapter are informed by trends and patterns related to historical activity, fuel sales, and hangar interest. However, understanding current local changes and those within the US GA industry as a whole is also important. Local, regional, and national trends significantly affect the use of the Airport. Social and economic factors play a considerable role in aviation forecast trends as well due to the historic and projected growth for Dane County and the amount of business-related activity that occurs at the Airport.

2.2.1. Local Aviation Trends

C29 has seen minor activity fluctuations, but overall activity has remained relatively consistent over the past decade. **Table 2-1** depicts the historical values of several activity indicators, and recent trends are described within the sections that follow.

Total Annual Operations and 2019 Master Plan Inventory

Information on the total number of operations[2] conducted at the Airport was pulled from TAF data, which Table 2-1 shows as a flat historical estimate of 40,510 annual operations from 2010 to 2018. For non-towered, GA airports such as C29, the source of the TAF data comes from recurring site inspections and the Airport Master Record reporting requirements (Form 5010-1). As no tower data or counts are available for non-towered airports, the number of operations is generally an estimate based on information provided from the Airport manager or others familiar with the day-to-day activity on the field.

To obtain more detailed, documented information on the total number of annual operations, an inventory was conducted involving outreach to C29's based users and a review of the number of training hours and flights recorded by the fixed base operator (Morey Airplane Company) and the Specialized Aviation Service Operator ([SASO], Capital Flight). Information was also obtained from the FAA's TFMSC database that provides a listing of instrument flight plans filed to and from the Airport, a review of visitor logbooks, and a listing of other known freight and charter operations. Based on this inventoried data once compiled, the total annual operations for 2019 were estimated at 41,342. **Appendix A** provides more detail on the data sources, and how these operations are distributed for each user or type of operation. This number is close to the TAF values that have recently been reported (within 2.1 percent), suggesting that previous estimates were reasonable. For the purposes of this Master Plan, the 2019 inventory of annual operations (41,342) will be used as the historical baseline number for projections of future activity.

[2] An aircraft operation is defined as one takeoff or one landing. A trip to and from the Airport would count as two operations.

Table 2-1: Historic Activity Data – Middleton Municipal Airport (C29)

Year	Total Ops (TAF)[1] [2]	IFR Ops[3]	Freight Ops[4]	Jet Ops[5]	Turbo-Prop Ops[5]	Jet-A Fuel Sold[6]	100 LL Fuel Sold[6]	Based Aircraft[7]
2010	40,510	3,452	30	424	564	31,076	77,385	58
2011	40,510	3,083	92	442	396	31,783	72,660	57
2012	40,510	3,203	390	492	282	24,271	68,802	61
2013	40,510	2,997	358	332	240	21,836	78,709	68
2014	40,510	2,916	348	342	188	18,137	73,649	71
2015	40,510	3,407	370	456	410	15,868	76,467	72
2016	40,510	3,029	404	436	640	21,152	73,037	86
2017	40,510	2,849	356	416	562	29,927	74,238	86
2018	40,510	2,462	342	366	532	29,142	70,293	94
2019	**41,342** *	2,566	420	344	564	29,988	78,716	100
Average:	*40,593*	*2,996*	*311*	*405*	*438*	*25,318*	*74,396*	*75*
CAGR ('10-'19):	*0.2%*	*-3.2%*	*34.1%*	*-2.3%*	*0.0%*	*-0.4%*	*0.2%*	*6.2%*
CAGR ('15-'19):	*0.5%*	*-6.8%*	*3.2%*	*-6.8%*	*8.3%*	*17.2%*	*0.7%*	*8.6%*

Notes: CAGR = Compound Annual Growth Rate
IFR - Instrument Flight Rules
TFMSC = Traffic Flow Management System Counts database
Ops = Operations
An Aircraft Operation is defined as (one) takeoff or (one) landing.
A trip to and from the Airport would count as (two) operations.

Sources: [1] FAA Terminal Area Forecasts (TAF). For non-towered, GA Airports the TAF data originates from the State & Airport Inventory process (5010 reporting).

[2] *** Master Plan Inventory of 2019 operations from based users and other sources. See Appendix A for additional information and documentation.**

[3] Annual Instrument Flight Plans filed to/from the Airport - FAA's (TFMSC)

[4] Freight Runners & Pro Aire Cargo provide feeder service to UPS with a Beech 99 aircraft. Freight Runners operates weekdays (Tuesday - Friday). Pro Aire Cargo operates Sundays.

[5] Jet & Turboprop operations - FAA (TFMSC) database

[6] Historic fuel sales for Jet-A and 100 Low Lead - Airport Management (gallons)

[7] Based aircraft data obtained from National Based Aircraft Inventory Program. All based aircraft numbers validated in basedaircraft.com.

Instrument Flight Rule (IFR) Operations

The number of IFR flight plan operations filed to or from the Airport has averaged just under 3,000 per year and has remained relatively consistent from year to year. As shown in Table 2-1, annual IFR flight plan operations have fluctuated above and below this average over the past decade, with recent trends showing below average numbers (2017-2019).

Growth in E-Commerce, Proximity to UPS Delivery Center and Air Freight Service Providers

In the early 2000s, the e-commerce industry was just materializing with many uncertainties related to how door-to-door deliveries would be handled or embraced by integrated cargo companies. By the mid to late 2000s, advances in logistics technology such as proof-of-delivery notes and other methods for improving the security and visibility of shipments were coupled with increased mobile technology use to create an explosion in growth. Today's e-commerce merchants enjoy a highly developed and specialized market. In 2019, US consumers spent $568.92 billion on e-commerce[3], representing an increase of 14 percent from 2018 and surpassing 10 percent of total US retail sales for the first time in history.

C29 is located only 1.5 miles north of the UPS Delivery Center and serves as a convenient transportation connection for cargo shipments. Freight Runners Express / ACE and Pro Aire Cargo Consultants are Wisconsin-based companies providing air freight delivery service to C29 for UPS. Freight Runners is based at the Milwaukee Mitchell International Airport (MKE) and conducts weekday freight operations (generally Tuesday – Friday) between MKE and C29 using a Beech 99 aircraft. Pro Aire Cargo Consultants based out of Oshkosh, Wisconsin, also uses a Beech 99 aircraft to conduct a Sunday delivery to C29 carrying packages from the UPS hub in Louisville, Kentucky. As shown in Table 2-1, freight operations of this type started in 2010 and have remained consistent from year to year. Freight Runners have been conducting their operations at C29 since 2012. Between 2012 and 2015 Freight Runners utilized a Cessna 402 for their deliveries before transitioning to the Beech 99 aircraft they currently operate. Pro Aire Cargo has been conducting their Sunday deliveries for just over a year. The highest number of filed instrument freight operations to and from C29 occurred last year (2019). Local companies such as Exact Sciences rely on air-freight deliveries each week as part of their early cancer detection testing technology, and many are routed through C29 when weather and runway conditions allow.

As the growth in e-commerce continues to increase, and as many businesses continue to rely on air-freight deliveries to meet the needs of their customers, the corresponding trend of increased demand for next-day delivery service and overall air-freight operations is anticipated to continue.

Addition of a Second Airport Service Provider (Capital Flight)

Capital Flight, founded by the Hofeldt family in 2013, began operation at the Airport in 2016. Services include pilot training, aircraft maintenance, aircraft sales, and management. The City of Middleton and Airport Commission now recognize Capital Flight as a Specialized Aviation Service Operator (SASO). Generally, the FAA defines a SASO as a special fixed-based operator performing less than full services. In the case of Capital Flight, they are able to offer many of the traditional services of a full FBO. For an airport the size of C29, the emergence of a second airport service provider in addition to the Morey Airplane Company (primary fixed-base operator) suggests that the demand for pilot training and overall general aviation services in the Madison region is robust, diverse, and growing.

[3] emarketer.com - https://www.emarketer.com/content/us-ecommerce-2019

Operations of Turbine-powered Aircraft and Fuel Sale Trends

Small jets and turbo-prop aircraft have had a consistent presence at the Airport since its redevelopment in 2004. The Airport saw its highest combined level of these aircraft operations in 2016 with over 1,000 annual operations, and the numbers have remained high and well above their 10-year average. Of the two, jet activity has been the most consistent, averaging roughly 400 operations per year.

Airport management indicated the relocation of a based turbo-prop aircraft to another facility contributed to the low numbers in jet fuel sales from 2014-2015. The volume of fuel sold in 2019 (Jet-A and 100 Low Lead combined) was the highest in the past decade.

Growth in Based Aircraft and Sustained Interest in Hangar Construction / Aircraft Storage

The number of based aircraft at C29 has increased significantly since 2010 (Table 2-1). Historically, as additional space has been developed on the airfield, hangar construction has followed to meet capacity shortly thereafter. Since the construction of the last available hangar site was in 2016, no areas are available within the existing airport property for the construction of additional hangars. Since 2018, individuals interested in owning or renting a hangar have made 36 inquiries for hangar space (documented within **Appendix B)**. The most recent increases in based aircraft can be attributed to a greater number of planes being stored per hangar, but this has reached a saturation point and reflects the strong and ongoing demand.

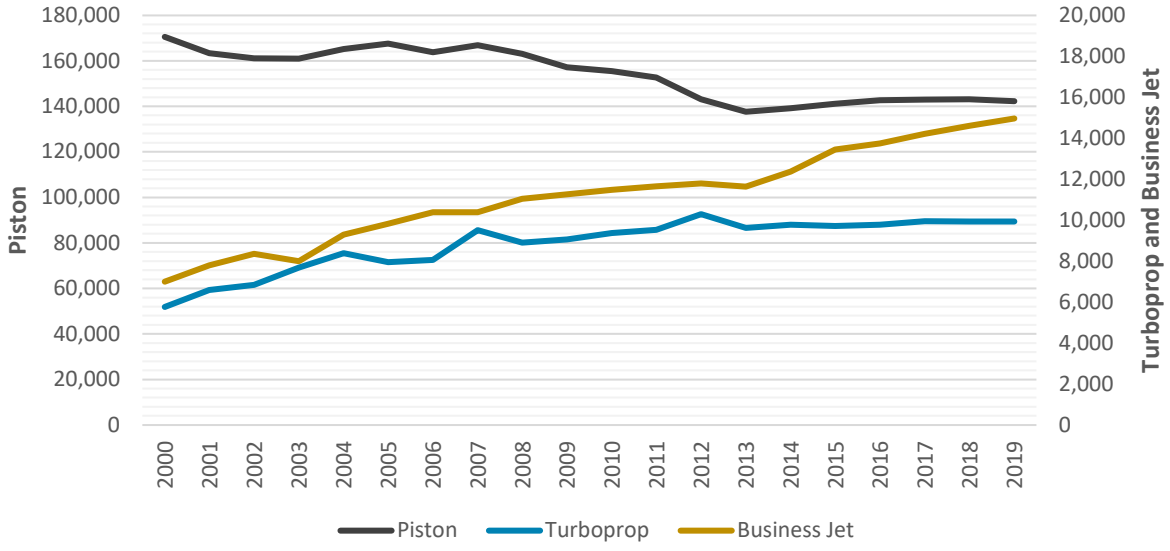
2.2.2. National Aviation Trends

National trends and industry-wide changes may also impact the Airport over the long term. Each year the FAA publishes national aviation forecasts that are prepared to meet budget and planning needs and provide information that can be used by state and local authorities, the aviation industry, and the public. The current edition of this annual forecast is FAA Aerospace Forecasts-Fiscal Years 2019-2039. The following bulleted items summarize information and national GA trends identified from the document:

- In 2018, deliveries of GA aircraft increased in both piston and turbine-powered segments. Single-engine piston deliveries of U.S. manufactured aircraft were up 3.5 percent, while the smaller category of multi-engine piston deliveries went up by 41.5 percent. Business jet deliveries were up by 17.1 percent, and turboprop deliveries were up by 8.6 percent. Overall, piston deliveries were up 5.5 percent while turbine shipments were up by 12.8 percent.
- The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow by an average rate of 2.0 percent per year over the forecast period (2019-2039), with the turbojet fleet increasing 2.2 percent per year. The growth in U.S. gross domestic product and corporate profits are catalysts for the growth in the turbine fleet.
- The long-term outlook for general aviation, driven by turbine aircraft activity, remains stable. The active GA fleet is projected to remain around its current level, with declines in fixed-wing piston aircraft being offset by increases in the turbine, experimental, and light sport fleets. Unfavorable pilot demographics, increasing cost of aircraft ownership, and new deliveries not keeping pace with retirements of the aging fleet are driving these changes.

The projected national trends reflect a longer historical transition in the makeup of GA aircraft as illustrated in **Figure 2-1** and reported by the General Aviation Manufacturer's Association.

Figure 2-1: Active General Aviation Aircraft in United States by Type (2000 – 2019)



Source: General Aviation Manufacturer's Association (GAMA) 2019 Annual Report

2.3. User Survey and Business Outreach

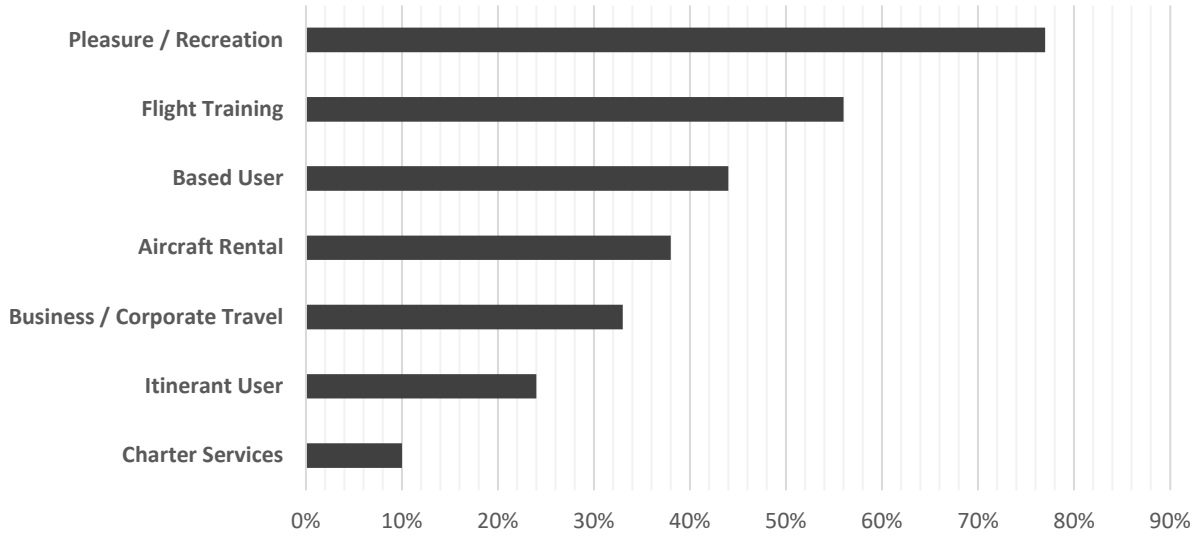
In May of 2018 an online survey was made available to existing users of C29 to gather information about the frequency and types of use. The full survey results are provided in **Appendix C**.

2.3.1. User Survey Responses – Airport Use

Survey respondents included based, local, and itinerant users. **Figure 2-2** shows the variety of activities* the Airport supports. Recreation is the most prominent use, and the Airport also supports activity for flight training and charter service. Several users stated that they visit C29 to attend community events, such as Young Eagles, and to participate in the local chapter of the Experimental Aircraft Association (EAA). Pilots also receive mechanical assistance, fueling, or other maintenance services offered at C29. Many of the survey respondents further noted that the Airport also bolsters local business.

A total of 34 respondents stated why the Airport is important to their business. C29 saves time when arriving in the area for business, and users' hangars serve sometimes as a meeting area upon arrival. C29's proximity to the City of Madison gives visitors access to the greater metro area by a convenient and uncongested route.

Figure 2-2: Airport Use



**The survey respondents could select all use types relevant to them, so totals are greater than 100 percent.*
Source: Airport User Survey – May 2018; Administered through Polco

2.3.2. User Survey Responses - Operations and Trip Length

Of the users surveyed, 68 percent stated they anticipate their operations to increase in the future, and 40 percent expect to purchase another aircraft. Existing respondents' aircraft are generally similar, normally single-engine piston aircraft, and all are less than 12,500 pounds. However, trip length varies considerably. A large portion of users conduct trips less than 250 miles, although trip lengths as great as 1,000 miles are not uncommon, and many pilots will often fly out of state. Some of the farthest destinations include Colorado, California, Florida, and other states in the southeastern U.S. Select pilots will fly internationally although this is less common. For reference, the maximum range of a C172 in still air is approximately 730

miles. This would indicate that pilots are using their aircraft to their maximum range or stopping to refuel while operating out of C29.

2.3.3. Business Outreach and Feedback on Existing and Future Use of the Airport

Several businesses make use of C29. Some of these businesses are current based tenants, some have an aircraft based at another airport but utilize C29 to access their business in Middleton or nearby, and others utilize air-taxi or charter services from the Airport. Thirty-four respondents of the 2018 User Survey identified the importance of C29 to their business, but these respondents were anonymous (see question #5 of the survey in Appendix C). In addition to the 34 anonymous responses, more specific and detailed information was provided from businesses known to operate from C29, or who have previously expressed an interest in future use of the Airport. A listing of the individual businesses that responded is provided below. The full responses from these businesses are provided in **Appendix D**.

- Epic Systems Corporation
- Hy-Cite Enterprises
- Medex, LLC
- North Central Group (NCG Hotels)
- Plastics Ingenuity
- GCG Investments, LLC
- Capital Flight

2.3.4. Conclusions from User Survey and Business Outreach Responses

User feedback states that the Airport supports a variety of activities. Recreation and flight training are the dominant uses, but C29 also serves as an important transportation link for several businesses, providing convenient access to and from the greater Madison metropolitan area and western Dane County. The majority of surveyed respondents indicated that C29 is generally meeting their needs, but these users predominately operate single-engine piston aircraft.

While lesser in number, the turbine and multi-engine aircraft (more commonly used by businesses) owners stated that their operations are sometimes restricted by inadequate runway length, limited approach capabilities during lower visibility conditions, or contaminated (snowy or icy) pavement conditions that require them to divert to or operate from the Dane County Regional Airport (MSN).

Many of the surveyed respondents identified a desire to store their aircraft at C29, either now or in the future. This feedback is consistent with the many documented hangar inquiries (see Appendix B) that have been received from the City and Airport since 2018.

Overall, the responses reflect a strong and continued interest in the many uses of C29. This feedback will be used in combination with the recent trends at C29 to develop projections of future activity over a 20-year planning horizon.

2.4. Forecasting Approach

Forecasts presented in this chapter have been developed using common industry approaches based on demand-driven growth in unconstrained conditions. That is, the levels of future activity assume there are no constraints to meeting forecasted demand. The extent to which future demand can be addressed will be covered in later chapters through evaluation of facility requirements and an analysis of alternatives. Whether demand should be met is a separate decision for the City of Middleton to make.

A number of forecasting techniques that range from subjective judgement to sophisticated modeling may be used to project aviation activity. These forecasts incorporate local, regional, and national industry trends (presented in Section 2.2) in assessing current and future demand. Socioeconomic factors, such as local population, retail sales, and personal income have also been analyzed for their effect on the levels of activity. The comparison of the relationships among these various indicators provided the initial step in the development of reasonable forecasts for future aviation demand. FAA forecast analysis, growth rate, market share methodologies, and socioeconomic methodologies have been used to develop forecasts for C29 as described in the following sections.

2.4.1. FAA Forecast Analysis

Historical and projected aviation activity is reported by the FAA in their TAF. For non-towered, general aviation airports such as C29, the source of the TAF data comes from recurring site inspections conducted by the State Bureau of Aeronautics working in coordination with airport management. Information gathered through these inspections is used to inform the Airport's Master Record reporting requirements (Form 5010-1). As no tower data or counts are available for airports of this type, the number of operations is generally an estimate based on information provided from the Airport manager or others familiar with the day-to-day activity on the field. The FAA TAF of future airport activity will be presented and compared to the results from the other forecasting methodologies.

2.4.2. Growth Rate

This methodology uses the growth rates projected by relevant planning documents and applies these growth rates to activity at C29. These growth rates are often gleaned from state or federal planning documents such as the FAA TAF, FAA Aerospace Forecast, or the State Aviation System Plan (SASP). The growth rates relevant to C29 are determined and applied to various types of aviation activity.

2.4.3. Market Share Methodology

Market share, ratio, or top-down methodologies compare local levels of activity with a larger entity. Such methodologies imply that the proportion of activity that can be assigned to the local level is a regular and predictable quantity. This method has been used extensively in the aviation industry to develop forecasts at the local level. Historical data is most commonly used to determine the share of total national traffic activity that will be captured by a particular region or airport.

2.4.4. Socioeconomic Analysis

Socioeconomic or correlation analyses examine the direct relationship between two or more sets of historical data. Local conditions examined in this chapter include population, total personal income per

capita, and total retail sales for Dane County. Historical and forecasted socioeconomic statistics for Dane County were obtained from the economic forecasting firm Woods & Poole Economics. Based upon the correlation between historical aviation activity and the socioeconomic data sets, future aviation activity projections were developed. **Table 2-2** presents historical and forecasted socioeconomic indicators for Dane County that are used throughout the remainder of this chapter.

Table 2-2: Socioeconomic Indicators – Dane County, Wisconsin

Year	Dane County Population	Dane County Total Retail Sales (mil, $2009)	Dane County Total Personal Income (mil, $2009)
Historical:			
2010	489,190	7,907	$21,258
2011	496,460	8,448	$22,317
2012	503,438	8,882	$23,048
2013	510,007	9,131	$23,673
2014	516,494	9,421	$24,349
2015	522,878	9,672	$25,860
2016	531,273	9,942	$26,486
2017	536,975	10,203	$27,159
2018	543,120	10,386	$27,896
2019	549,327	10,556	$28,583
Projected:			
2024	581,144	11,398	$32,014
2029	613,820	12,193	$35,567
2034	645,954	12,952	$38,939
2039	676,377	13,708	$42,225
CAGR (2019 - 2039)	*1.05%*	*1.31%*	*1.97%*

Sources: Woods and Poole Economics, Inc. - 2018

CAGR = Compunded Annual Growth Rate

Notes: Values for Personal Income and Retail Sales are in millions of 2009 dollars

2.5. Based Aircraft and Fleet Mix

Forecasts of based aircraft are important to consider in the master planning process as they drive many of the facility needs at an airport. The overall number and fleet mix composition determine the size and location of hangars, the dimensions and layout of connecting taxiways, and other supporting facilities.

The FAA defines a based aircraft at an airport as an aircraft that is "operational and air worthy" and that is typically based at the airport for a majority of the year. The current Airport Master Record (5010 reporting form) notes an inspection date of February 27, 2020 and identifies the following based aircraft: 80 single-engine aircraft, 7 multi-engine, 2 jets, and 3 helicopters for a total of 92. Data in the FAA's TAF shows one additional single-engine aircraft and one additional multi-engine aircraft for a total of 94 based aircraft.

Since aircraft can be in multiple locations throughout the year, the FAA has developed methods for how based aircraft are to be officially reported and validated. GCR, Inc. (GCR) is a public sector software and services firm contracted by the FAA to manage the reporting website *basedaircraft.com*. Through this website, airport owners enter the tail numbers of the aircraft based at their facility. GCR then checks the reported tail numbers against the FAA's aircraft registration database. If the registration has not been reported elsewhere, the aircraft is "validated" and included in the counts that are reported in the National Based Aircraft Inventory Program (NBAIP). This is the official reporting source recognized by the FAA.

A summary of the various 2019 based aircraft reporting sources for C29 is shown in **Table 2-3.**

Table 2-3: Based Aircraft Reporting Sources (2019) – Middleton Municipal Airport (C29)

Aircraft Type	FAA TAF[1]	Airport Master Record Reporting (Form 5010-1)[2]	NBAIP basedaircraft.com (Validated)[3]
Single Engine:	81	80	86
Multi-Engine:	8	7	8
Jet:	2	2	2
Helicopter:	3	3	4
Total:	**94**	**92**	**100**

Sources:

[1] Federal Aviation Administration - Terminal Area Forecast Data

[2] Airport Master Record Report (5010) - Data Effective Date: 02/27/2020

[3] National Based Aircraft Inventory Program (basedaircraft.com); Information provided from GCR on 03/16/2020. Tail numbers entered into basedaircraft.com are checked against the latest copy of the FAA's Aircraft Registration Database. If the registration has not been reported elsewhere, the aircraft is considered to be 'validated' and is included in the counts that are reported.

For the purposes of this planning effort, the aircraft validated within the NBAIP will be used for the current number and type of based aircraft at C29. It is recommended that the Airport work with the WisBOA and the FAA to bring the 5010 Master Record and the TAF into conformity with the latest aircraft inventories completed.

2.5.1. Historical Increases in Based Aircraft and FAA TAF

Historical TAF records show an increase from 39 to 63 aircraft following C29's redevelopment in 2004, an increase to 74 by 2012, and an increase to 86 by 2015. FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans,* requires the forecasts developed for a master plan to align with the TAF by within 10 percent in the 5-year forecast and within 15 percent in the 10-year period.

The year-to-year historical numbers from *basedaircraft.com* vary slightly from the TAF, but they both reflect the substantial growth that has transpired over the past decade. The increases in based aircraft at C29 have generally occurred as space for hangars has been made available. The addition of 24 aircraft in 2005 coincides with the redevelopment in 2004 that established the primary southwest hangar area. In 2012, a small hangar development area was constructed in the southeast that allowed construction of three additional hangars shortly thereafter. A fourth hangar site was constructed in the southeast area in 2016, which again was followed by higher based aircraft numbers. For more than a decade, as hangar space has become available, aircraft have immediately arrived to fill these spots. The 36 inquiries since 2018 (see Appendix B) suggest that this trend will continue if more hangar space is again made available.

2.5.2. Based Aircraft Forecasts – Socioeconomic Factors

This section compares historical socioeconomic data in Dane County to the number of based aircraft at C29 and projects future growth based on their correlation. Data examined under this methodology include population, retail sales, and personal income. **Table 2-4** depicts the coefficient of correlation, or r-squared values of these socioeconomic factors to based aircraft – using historical data from Year 2003 to 2019.

Table 2-4: Socioeconomic Regression Analysis Results – C29 Based Aircraft

Indepdendent Variable	Coefficient of Correlation to Based Aircraft (R-Squared)	Compounded Annual Growth Rate (2003 - 2019)
Population	0.87	1.29%
Total Retail Sales	0.85	2.09%
Total Personal Income	0.89	2.32%

Notes: All Socioeconomic values - Dane County, WI (2003-2019)

Sources: Woods & Poole Economics, Inc.

The FAA generally requires the coefficient of correlation (r-squared value) to be 0.90 or greater for a forecast of this methodology to be selected as the preferred. Of the socioeconomic factors evaluated, Total Personal Income shows the strongest correlation to the number of aircraft based at C29 and is just under the 0.90 threshold.

Population was examined assuming that as the number of people in the county increase, so will a corresponding number of pilots and based aircraft. Total retail sales and personal income were also examined as indicators of economic activity. The assumption for these scenarios being that as the economy increases so would the financial ability of corporations and the public to invest in an aircraft for business or

recreational use. Based on these factors and assumptions, the forecasts prepared using these methodologies are presented in **Table 2-5**, **Table 2-6**, and **Table 2-7**.

Table 2-5: Based Aircraft Forecast – Socioeconomic Methodology (Population)

Year	Based Aircraft (C29)	Population (Dane County, WI)	Aircraft Per Capita
Historical:			
2014	72	516,494	0.00014
2015	86	522,878	0.00016
2016	87	531,273	0.00016
2017	94	536,975	0.00018
2018	94	543,120	0.00017
2019	100	549,327	0.00018
Projected:			
2024	106	581,144	0.00018
2029	112	613,820	0.00018
2034	118	645,954	0.00018
2039	123	676,377	0.00018
CAGR (2019 - 2039)	*1.05%*	*1.05%*	

Sources: Historical Based Aircraft (2014-2018) based on FAA TAF data
2019 Based Aircraft number from National Based Aircraft Inventory Program
Historical & Projected Population Data for Dane County, WI - Woods & Poole

Table 2-6: Based Aircraft Forecast – Socioeconomic Methodology (Retail Sales)

Year	Based Aircraft (C29)	Total Retail Sales (Dane County, WI)	Aircraft Per $1mil in Sales
Historical:			
2014	72	9,421	0.00764
2015	86	9,672	0.00889
2016	87	9,942	0.00875
2017	94	10,203	0.00921
2018	94	10,386	0.00905
2019	100	10,556	0.00947
Projected:			
2024	108	11,398	0.00947
2029	116	12,193	0.00947
2034	123	12,952	0.00947
2039	130	13,708	0.00947
CAGR (2019 - 2039)	*1.31%*	*1.31%*	

Note: Total Retail Sales in millions of 2009 dollars
Sources: Historical Based Aircraft (2014-2018) based on FAA TAF data
2019 Based Aircraft number from National Based Aircraft Inventory Program
Historical & Projected Retail Sales Data for Dane County, WI - Woods & Poole

Table 2-7: Based Aircraft Forecast – Socioeconomic Methodology (Personal Income)

Year	Based Aircraft (C29)	Total Personal Income (Dane County, WI)	Aircraft Per $1mil in Income
Historical:			
2014	72	24,349	0.00296
2015	86	25,860	0.00333
2016	87	26,486	0.00328
2017	94	27,159	0.00346
2018	94	27,896	0.00337
2019	100	28,583	0.00350
Projected:			
2024	112	32,014	0.00350
2029	124	35,567	0.00350
2034	136	38,939	0.00350
2039	148	42,225	0.00350
CAGR (2019 - 2039)	*1.97%*	*1.97%*	

Note: Total Personal Income in millions of 2009 dollars

Sources: Historical Based Aircraft (2014-2018) based on FAA TAF data
2019 Based Aircraft number from National Based Aircraft Inventory Program
Historical & Projected Income Data for Dane County, WI - Woods & Poole

In considering these socioeconomic factors, the number of based aircraft is projected to increase by an additional 23 aircraft (considering population growth), by an additional 30 aircraft (considering total retail sales), or by an additional 48 aircraft (considering personal income growth) over the 20-year planning horizon through 2039.

2.5.3. Based Aircraft Forecasts – Market Share Methodology

Market share methodologies in this section compare local based aircraft at C29 to the total number of active aircraft in the Great Lakes Region (regional market) and in the U.S. as a whole (national market). The assumption for these forecasting scenarios being that as the number of active aircraft within these larger market segments change, the Airport's relational portion of these markets would continue, and the number of based aircraft at C29 would increase or decrease accordingly. As illustrated in **Table 2-8** and **Table 2-9**, C29's market share in 2019 represented 0.35739 percent of the total active aircraft in the Great Lakes Region, and .05883 percent of the total active aircraft in the U.S. Applying these market share ratios to the regional and national growth, the number of aircraft at the Airport is forecast to grow by an additional 13 aircraft (considering a continued share of the regional market) or by an additional 17 aircraft (considering a continued share of the national market).

Table 2-8: Based Aircraft Forecast – Market Share Methodology (Regional)

Year	Based Aircraft (C29)	Based Aircraft (Great Lakes Region)	Regional Market Share
Historical:			
2014	72	27,565	0.26120%
2015	86	27,020	0.31828%
2016	87	28,385	0.30650%
2017	94	27,558	0.34110%
2018	94	27,804	0.33808%
2019	100	27,981	0.35739%
Projected:			
2024	103	28,910	0.35739%
2029	107	29,803	0.35739%
2034	110	30,691	0.35739%
2039	113	31,615	0.35739%
CAGR (2019 - 2039)	*0.61%*	*0.61%*	

Sources: Historical Based Aircraft (2014-2018) based on FAA TAF data
2019 Based Aircraft number from National Based Aircraft Inventory Program
Historic and Projected Based Aircraft (Great Lakes Region) - FAA Terminal Area Forecast Summary 2018 - 2045 (Table S-11)

Table 2-9: Based Aircraft Forecast – Market Share Methodology (National)

Year	Based Aircraft (C29)	Based Aircraft (National)	National Market Share
Historical:			
2014	72	170,313	0.04228%
2015	86	163,959	0.05245%
2016	87	173,860	0.05004%
2017	94	167,140	0.05624%
2018	94	168,615	0.05575%
2019	100	169,988	0.05883%
Projected:			
2024	104	177,194	0.05883%
2029	108	184,218	0.05883%
2034	113	191,531	0.05883%
2039	117	199,289	0.05883%
CAGR (2019 - 2039)	*0.80%*	*0.80%*	

Sources: Historical Based Aircraft (2014-2018) based on FAA TAF data
2019 Based Aircraft number from National Based Aircraft Inventory Program
Historic and Projected Based Aircraft (National) - FAA Terminal Area Forecast Summary 2018 - 2045 (Table S-11)

2.5.4. Based Aircraft Forecast – Local Demand and Regional Market-Share

This forecast method attempts to incorporate a combination of factors that include the historical growth trends, a listing of individuals who have expressed an interest for storing an aircraft at C29, and the ongoing regional market growth to predict the future based aircraft numbers at C29. Since 2018, the Airport has received 36 inquiries from people interested in basing an aircraft at the airport (Appendix B). This method assumes that there would be an additional number of based aircraft (in addition to the regional market share growth) as the demand identified in Appendix B becomes accommodated over time. While it cannot be assumed that all the individuals on the inquiry list would act on their interest, this forecast estimates that one-third (12) would follow through and have an aircraft based at the airport within the 15-year (2034) development horizon.

In addition to the growth that would be experienced from the local demand (hangar inquiry list), this method forecasts that demand and growth will continue but follow a more measured and steady trajectory consistent with C29's share of the regional market as presented in the previous section. In consideration of both the local demand and the regional market growth, this forecast predicts an additional 25 aircraft would be based at C29 over the 20-year planning horizon (2039). This is reflected in **Table 2-10** below.

Table 2-10 Based Aircraft Forecast – Local Demand and Regional Market-Share

Projected Based Aircraft Near-Term Demand & Regional Market Share Methodology			
Year	**Based Aircraft (C29)**	**Based Aircraft (Regional)**	**Regional Market Share**
Historical:			
2014	72	27,565	0.26120%
2015	86	27,020	0.31828%
2016	87	28,385	0.30650%
2017	94	27,558	0.34110%
2018	94	27,804	0.33808%
2019	100	27,981	0.35739%
Projected:			
2024	107 (see Note 1)	28,910	0.35739%
2029	115 (see Note 2)	29,803	0.35739%
2034	122 (see Note 3)	30,691	0.35739%
2039	125 (see Note 4)	31,615	0.35739%
CAGR (2019 - 2039)	*1.12%*	*0.61%*	

Sources: Historical Based Aircraft (2014-2018) based on FAA TAF data
2019 Based Aircraft number from National Based Aircraft Inventory Program
Historic and Projected Based Aircraft (Great Lakes Region) - FAA Terminal Area Forecast Summary 2018 - 2045

Note 1: 107 based aircraft represents +4 (from hangar inquiry list) and +3 (regional growth) from 2019 baseline (100)

Note 2: 115 based aircraft represents +8 (from hangar inquiry list) and +7 (regional growth) from 2019 baseline (100)

Note 3: 122 based aircraft represents +12 (from hangar inquiry list) and +10 (regional growth) from 2019 baseline (100)

Note 4: 125 based aircraft represents +12 (from hangar inquiry list) and +13 (regional growth) from 2019 baseline (100)

2.5.5. Based Aircraft Forecast Summary

A comparison of the methodologies used to forecast based aircraft at C29 is presented in **Table 2-11**. The table further summarizes the assumptions used in developing each forecast method and the reasoning behind the preferred forecast selected.

Table 2-11 Projected Based Aircraft – Summary of Methodologies and Preferred Forecast

Methodologies:	Assumptions	Preferred Forecast	Reasoning for Preferred Forecast Selected:
Socio-Economic (Population)	As the local population increases, so will a corresponding number of pilots and based aircraft.		
Socio-Economic (Retail Sales)	Retails Sales as an indicator of the local economic conditions and the ability to invest in an aircraft		
Socio-Economic (Income)	Income as an indicator of the local economic conditions and the ability to invest in an aircraft		
Market-Share (Regional)	C29's share of the market will continue and change with regional growth projections		
Market-Share (National)	C29's share of the market will continue and change with national growth projections		
Local Demand and Market Share (Regional)	One-third of individuals on local hangar inquiry list will follow through and base an aircraft at C29 by 2034. Regional growth will also continue.	**X**	Addresses the local demand (inquiry list) in combination with continued regional market-share growth over the full 2039 planning horizon.

The socioeconomic methodologies were used to evaluate local trends occurring within Dane County. Dane County has consistently led Wisconsin in population growth, more than double any other county. Since 2010, Madison, Verona, and Sun Prairie have been the three fastest-growing places in the state. Additionally, Dane County ranks as the third highest in the state for per-capita income. As such, projections tied to these indicators reflected higher estimates of based aircraft. The socioeconomic-personal income methodology was identified as the high forecast, projecting an additional 48 aircraft to be based at the airport by the 2039.

The market-share forecasts considered the increase in based aircraft at C29 as a continued proportion of overall growth, both regionally (Great Lakes Region) and at the national level. Of the market-share methodologies, the regional market-share was selected as a more accurate indicator of future growth for the Middleton area given its geographic proximity as opposed to the broader national market. The regional forecast showed a slightly more conservative growth rate (0.61 percent) than the national (0.80 percent).

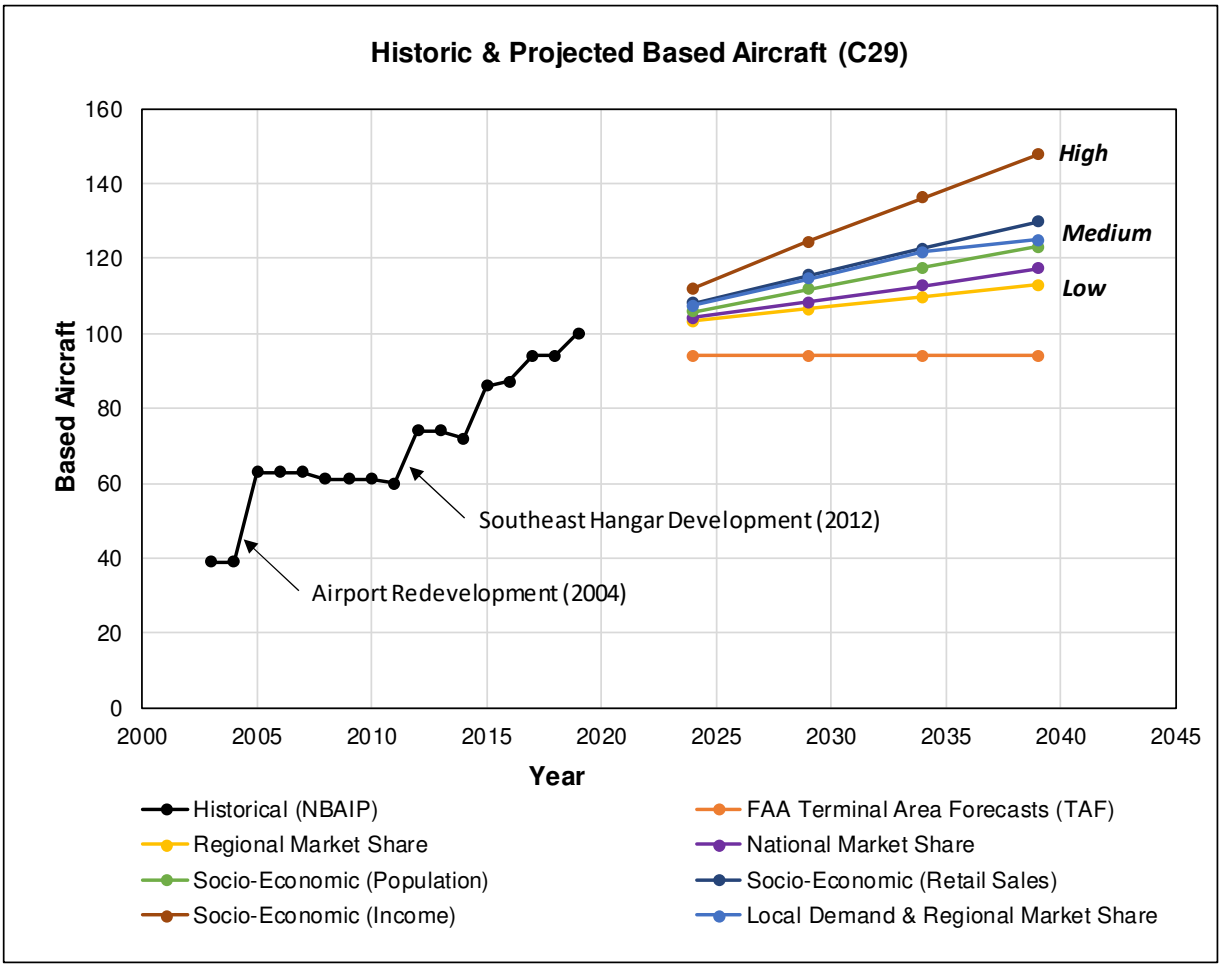
This regional methodology was identified as the low forecast, projecting an additional 13 aircraft to be based at the airport over the 20-year planning horizon.

While the socioeconomic and market-share methodologies established reasonable ranges of growth, they did not account for the listing of individuals (Appendix B) who have previously expressed an interest in basing an aircraft at C29. Therefore, an additional forecast was developed to consider how based aircraft would change if the previously identified local demand were met in combination with market-share growth that is also anticipated to continue. As this forecast considered both the local demand conditions and the growth in based aircraft regionally, it was selected as the preferred forecast of future based aircraft and falls in the middle of the high and low ranges. This forecast predicts an additional 25 aircraft would be based at C29 over the 20-year planning horizon (2039).

A comparison of the projected numbers of based aircraft under each of the forecasting methodologies described is presented in **Table 2-12**. All the methodologies project increasing numbers of based aircraft through the planning period with low, medium and high forecast values identified.

Table 2-12 Historic & Projected Based Aircraft Summary

Year	Historic (NBAIP)[1]	FAA (TAF)[2]	Socio-Economic Population	Socio-Economic Retail Sales	*High Growth* Socio-Economic Personal Income	*Low Growth* Regional Market Share	National Market Share	*Medium Growth* Local Demand & Regional Market Share
Historical:								
2014	71	72						
2015	72	86						
2016	86	87						
2017	94	94						
2018	94	94						
2019	100	94						
Projected:								
2024		94	106	108	112	103	104	107
2029		94	112	116	124	107	108	115
2034		94	118	123	136	110	113	122
2039		94	123	130	148	113	117	125
CAGR (2019 - 2039)		*0.00%*	*1.05%*	*1.31%*	*1.97%*	*0.61%*	*0.80%*	*1.12%*



Sources: [1] Historical Based Aircraft obtained from National Based Aircraft Inventory Program (validated in basedaircraft.com)
[2] FAA Terminal Area Forecasts (TAF)

2.5.6. Based Aircraft Fleet Mix

Historical based aircraft by type and projected fleet mix at C29 is presented in **Table 2-13**. In 2019, single engine aircraft comprised 86 percent of the local fleet, multi-engine aircraft, 8 percent, jet aircraft, 2 percent, and helicopters, 4 percent.

The FAA Aerospace Forecast 2019-2039 projects that turboprop and jet aircraft will see a higher growth rate than that of piston aircraft through 2039. This is supported by the historic trends in active GA aircraft types in the United States since Year 2000 as presented earlier on Figure 2-1. While fixed-wing piston aircraft comprise the largest segment of the overall active GA fleet, their numbers have consistently been on the decline for the past two decades. This has been driven largely by unfavorable pilot demographics, increasing cost of aircraft ownership, and new aircraft deliveries not keeping pace with retirements of the aging fleet.

Under the low-growth scenario, reduction of single-engine piston aircraft at C29 is projected to decrease from 86 percent to 82 percent of the overall aircraft fleet based on the historic trends illustrated in Figure 2-1 and the FAA Aerospace forecasts. For the medium- and high-growth scenarios, it is anticipated that this transition will occur at a greater extent as the overall number of based aircraft increase.

From the previous section, medium growth in based aircraft was identified as the preferred forecast, projecting an additional 25 aircraft at C29 by 2039. Under this scenario, single-engine aircraft are forecasted to makeup a lesser percentage of the overall fleet (transitioning from 86 percent to 79 percent) , while the multi-engine and jet aircraft are forecasted to comprise a higher percentage (transitioning from 8 percent to 14 percent, and from 2 percent to 4 percent, respectively). This trend is further supported by responses from businesses who identified a desire to make greater use of jet and turboprop aircraft at C29 (Appendix D).

Table 2-13: Based Aircraft Fleet Mix Forecasts

	Single Engine		Multi-Engine		Jet		Helicopter		
Year	#	%	#	%	#	%	#	%	Total
Historical Fleet Mix:									
2019	86	86.0%	8	8.0%	2	2.0%	4	4.0%	100
Projected Fleet Mix (Low Growth):									
2024	88	85.0%	9	9.0%	2	2.0%	4	4.0%	103
2029	89	84.0%	11	10.0%	3	2.5%	4	3.5%	107
2034	91	83.0%	12	10.5%	3	3.0%	4	3.5%	110
2039	93	82.0%	13	11.5%	3	3.0%	4	3.5%	113
CAGR (2019-2039)	0.37%		2.45%		2.67%		-0.06%		0.61%
Projected Fleet Mix (Medium Growth):									
2024	88	82.0%	13	12.0%	3	3.0%	3	3.0%	107
2029	93	81.0%	15	12.7%	4	3.3%	3	3.0%	115
2034	97	80.0%	16	13.0%	5	4.0%	4	3.0%	122
2039	99	79.0%	17	14.0%	5	4.0%	4	3.0%	125
CAGR (2019-2039)	0.69%		3.99%		4.69%		-0.32%		1.12%
Projected Fleet Mix (High Growth):									
2024	94	84.0%	11	10.0%	3	3.0%	4	3.0%	112
2029	102	82.0%	14	11.5%	4	3.5%	4	3.0%	124
2034	108	79.0%	19	14.0%	5	4.0%	4	3.0%	136
2039	112	76.0%	26	17.5%	6	4.0%	4	2.5%	148
CAGR (2019-2039)	1.34%		6.04%		5.57%		-0.40%		1.97%

Notes: CAGR = Compounded Annual Growth Rate

Sources: 2019 Historical Based Aircraft Numbers - National Based Aircraft Inventory Program (all validated)

2.6. General Aviation Operations

GA operations are those aircraft operations that are not categorized as commercial or military. GA makes up the vast majority of operations at C29, and, given there is not a control tower (or other source) to provide a count of the overall operations, this section will outline the outreach and inventory efforts undertaken to most accurately estimate the number of existing (2019) operations. Using the inventoried 2019 operations as the baseline, this section then presents various forecasting scenarios for how future GA operations will change over the 20-year planning horizon.

2.6.1. Existing Airport Activity – 2019 Inventory

To obtain more detailed and documented information on the total number of existing operations, an inventory was conducted involving outreach to the based users as well as a review of the training hours and flights recorded by the Fixed Base Operator (Morey Airplane Company) and the Specialized Aviation Service Operator (Capital Flight). Information was also obtained from the FAA's TFMSC database that provides a listing of instrument flight plans filed to and from C29, a review of visitor logbooks, and other

known freight and charter operations. Based on the compilation of this inventoried data, the total annual operations for 2019 were estimated at 41,342. Appendix A provides more detail on the sources of this information, and how these operations are distributed for each user or type of operation. When the operations for freight, charter, and military are subtracted, the estimated number of General Aviation Operations for 2019 is 40,560. The breakout of this inventoried total is presented in **Table 2-14** and includes source notes for each type.

Table 2-14: Existing General Aviation Operations – 2019 Inventory

Airport User	2019 Operations
Morey Airplane Company (1)	24,098
Capital-Flight (2)	5,712
Based Users - Respondents (3)	5,716
Based Users - Non-Respondents (4)	4,224 *
Transient / Visitor Traffic (5)	810
Total:	**40,560**

Sources:

(1) Morey Airplane Company reported 3,614.7 training hours flown in 2019, distributed as follows:
- 1,204.9 hours of Touch-and-Go Operations @ 12 ops/hour = 14,459 operations
- 1,204.9 hours of Landing & Back-Taxi Operations @ 6 ops/hour = 7,229 operations
- 1,204.9 hours of Air Work Operations @ 2 ops/hour = 2,410 operations

(2) Capital Flight reported 5,712 operations in 2019, distributed as follows:
- 881 dispatched flights @ 2 operations/flight = 1,764 operations
- From their fleet of 4 aircraft: 10 pattern operations/day X 365 days = 3,650 operations
- Personal Operations conducted in their Piper Cub & Husky = 300 operations

(3) Owners representing 42 of the based aicraft provided their 2019 operations - see Appendix A

(4) The average 2019 operations reported from based user respondents: 136 operations
The average annual operations reported from 2018 user survey: 121 operations
The median 2019 operations reported from the based user respondents: 96 operations

* Median annual ops (96) were applied to the (44) non-respondents: (96) x (44) = 4,224 operations

(5) 810 operations based on review of visitor log books and correspondence with Airport Manager

This 2019 inventory of GA operations outlined in Table 2-14 is higher than the TAF values that have recently been reported (38,000), but is close (within 6.3 percent), suggesting that previous estimates were reasonable. For the purposes of this Master Plan, the 2019 inventory of GA operations (40,560) will be used as the historical baseline number for projections of future activity.

2.6.2. Existing Airport Activity – FAA Statistical Modeling Estimate

As another means to estimate activity at C29, the section considers the results from statistical modeling.

In 2001 a report was prepared for the Statistics and Forecast Branch of the FAA entitled *Model for Estimating General Aviation Operations at Non-Towered Airports Using Towered and Non-towered Airport Data*. This report examined airport operations in relation to their socioeconomic surroundings. One of the equations developed for this report, Equation 13, derived the best-fitting equation for a joint set of 232 towered and non-towered GA airports. The equation utilizes information from small towered GA airports to

model activity of small non-towered GA airports. The full equation can be seen below, and each variable is outlined in **Table 2-15**.

$$Annual\ Operations\colon\ -571 + (355 * BA) - (0.46 * BA2) - (40{,}510 * \%in100mi) + (3{,}795\ VITFSnum) + (0.001 * Pop100) - (8{,}587\ WACAORAK) + \left(24{,}102 * \frac{Pop25}{Pop100}\right) + (13{,}674 * TOWDUM)$$

Table 2-15: Estimate of Existing Activity – FAA Statistical Modeling Equation

Equation Component / Variable	Definition	Value for C29	Coefficient	Equation Component Sub-Total
				-571
BA	Based Aircraft	100	355	35,500
$BA^{\wedge 2}$	Based Aircraft squared	10,000	-0.46	-4,600
% in 100 miles	Percentage of based aircraft at C29 (100) among based aircraft within 100 miles (1,247)	0.0802	-40,510	-3,249
$VITSF_{num}$	Number of FAR141 certified pilot schools	0	3,795	0
Pop_{25}	Population within 25 miles	575,586		
Pop_{100}	Population within 100 miles	6,133,393	0.0010	6,133
Pop_{25} / Pop_{100}	Ratio of Populations within 25 and 100 miles	0.0938	24,102	2,262
WACAORAK	If Airport is in the State of Washington, California, Oregaon or Alaska = 1. Otherwise = 0	0	-8,587	0
TOWDUM	If Towered Airport = 1 If Non-Towered Airport = 0	0	13,674	0
			Total Statistical Estimate of Operations at C29:	**35,476**

Sources: *'Model for Estimating General Aviation Operations at Non-Towered Airports Using Towered and Non-towered Airport Data'* - report prepared for FAA - Statistics and Forecast Branch Office of Aviation Policy and Plan - GRA, Inc. July 2001; Population and Aircraft from GIS data and mapping

Using the statistical modeling equation developed for the FAA, 35,476 operations are estimated to occur at C29 annually. This value is less than the 2019 inventory (40,560) but is within 12.5 percent, and further supports the use of the inventoried data as the baseline value from which forecasts of future GA activity will be analyzed.

2.6.3. General Aviation Operations Forecast

Since the Airport's redevelopment in 2004, activity at C29 has seen periodic fluctuations but has remained generally consistent. Table 2-1 (presented earlier in the chapter) illustrated historic levels of activity for a variety of measurable, documented indicators such as: the annual number of filed instrument flight plans, the annual number of turbine powered aircraft, and the annual volumes of fuel sold. All three of these indicators show that activity from year to year over the past decade has stayed very close to the 10-year averages. This section outlines projections of future GA activity using both socioeconomic and market-share methodologies.

2.6.3.1. General Aviation Operations Forecast - Socioeconomic Factors

The projected trends in local socioeconomic indicators were used to forecast future GA operations at the Airport. These include population, retail sales, and personal income. Dane County has consistently led Wisconsin in population growth, more than double any other county. Since 2010, Madison, Verona, and Sun Prairie have been the three fastest-growing communities in the state. Additionally, Dane County ranks as the third highest in the state for per-capita income. **Table 2-16** depicts the coefficient of correlation, or r-squared values of these socioeconomic factors to GA operations – using historical data from Year 2003 to 2019.

Table 2-16: Socioeconomic Regression Analysis Results – C29 GA Operations

Indepdendent Variable	Coefficient of Correlation to GA Operations (R-Squared)	Compounded Annual Growth Rate (2003 - 2019)
Population	0.22	1.29%
Total Retail Sales	0.32	2.09%
Total Personal Income	0.20	2.32%

Notes: All Socioeconomic values - Dane County, WI (2003-2019)

Sources: Woods & Poole Economics, Inc.

The FAA generally requires the coefficient of correlation (r-squared value) to be 0.90 or greater for a forecast of this methodology to be selected as the preferred. None of the local socioeconomic factors showed a strong correlation to the historic number of GA operations at C29. However, as C29 is a non-towered airport, there are no counts of activity from which to determine an accurate correlation.

While no strong correlation can be shown between the local socioeconomic indicators and GA operations at C29, the consistently strong growth in Dane County warrants some consideration in the planning process and forecasts utilizing these indicators were developed for comparison to other methodologies. The ratio of GA operations per variable, including population, retail sales, and personal income were determined and then applied to future socioeconomic activity levels to determine GA operations growth. These tables can be seen in **Table 2-17** through **Table 2-19**.

Table 2-17: GA Operations Forecast – Socioeconomic Methodology (Population)

Year	Population (Dane County, WI)	Operations per Capita	Total GA Ops (C29)
2015	522,878	0.07267	38,000
2016	531,273	0.07153	38,000
2017	536,975	0.07077	38,000
2018	543,120	0.06997	38,000
2019	549,327	0.07384	40,560
Projected:			
2024	581,144	0.07384	42,909
2029	613,820	0.07384	45,322
2034	645,954	0.07384	47,695
2039	676,377	0.07384	49,941
CAGR (2019 - 2039)	*1.05%*		*1.05%*

Sources:

Historic Operations (2015 - 2018) - FAA Terminal Area Forecasts (TAF)

Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data

Historical & Projected Population Data for Dane County, WI - Woods & Poole

Table 2-18: GA Operations Forecast – Socioeconomic Methodology (Retail Sales)

Year	Retail Sales (Dane County, WI)	Operations per $1mil in Sales	Total GA Ops (C29)
2015	9,672	3.92896	38,000
2016	9,942	3.82201	38,000
2017	10,203	3.72441	38,000
2018	10,386	3.65883	38,000
2019	10,556	3.84241	40,560
Projected:			
2024	11,398	3.84241	43,795
2029	12,193	3.84241	46,850
2034	12,952	3.84241	49,765
2039	13,708	3.84241	52,671
CAGR (2019 - 2039)	*1.31%*		*1.31%*

Notes: Total Retail Sales in millions of 2009 dollars

Sources:

Historic Operations (2015 - 2018) - FAA Terminal Area Forecasts (TAF)

Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data

Historical & Projected Retail Sales Data for Dane County, WI - Woods & Poole

Table 2-19: GA Operations Forecast – Socioeconomic Methodology (Personal Income)

Year	Total Personal Income (Dane County, WI)	Operations per $1mil in Income	Total GA Ops (C29)
2015	25,860	1.46947	38,000
2016	26,486	1.43472	38,000
2017	27,159	1.39919	38,000
2018	27,896	1.36221	38,000
2019	28,583	1.41900	40,560
Projected:			
2024	32,014	1.41900	45,428
2029	35,567	1.41900	50,470
2034	38,939	1.41900	55,254
2039	42,225	1.41900	59,918
CAGR (2019 - 2039)	*1.97%*		*1.97%*

Notes: Total Personal Income in millions of 2009 dollars

Sources:

Historic Operations (2015 - 2018) - FAA Terminal Area Forecasts (TAF)

Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data

Historical & Projected Income Data for Dane County, WI - Woods & Poole

2.6.3.2. General Aviation Operations Forecast - Market Share Methodology

The market share methodology compares local GA activity with a larger entity. As illustrated in **Table 2-20** and **Table 2-21**, C29's market share of GA operations in 2019 represented 0.368 percent of the GA operations conducted within the Great Lakes Region and 0.05891 percent of the GA operations conducted within the United States overall. Applying these market share ratios to the growth projected within the FAA's TAF, annual GA activity at C29 is projected to increase from 40,560 operations in 2019 to 43,447 operations by 2039 assuming C29's continued share of the regional market as shown in **Table 2-20**. Annual GA activity is projected to increase to 44,041 operations by 2039 assuming C29's continued share of the national market as illustrated in **Table 2-21**.

Table 2-20: GA Operations Forecast – Market Share Methodology (Regional)

Year	GA Itinerant Ops (Great Lakes)	GA Local Ops (Great Lakes)	Total GA Ops (Great Lakes)	Market Share	Total GA Ops (C29)
2015	4,714,230	6,206,661	10,920,891	0.34796%	38,000
2016	4,794,452	6,150,771	10,945,223	0.34718%	38,000
2017	4,767,262	6,174,474	10,941,736	0.34729%	38,000
2018	4,761,073	6,188,666	10,949,739	0.34704%	38,000
2019	4,760,042	6,261,639	11,021,681	0.36800%	40,560
Projected:					
2024	4,831,662	6,402,411	11,234,073	0.36800%	41,342
2029	4,900,672	6,510,834	11,411,506	0.36800%	41,995
2034	4,973,959	6,626,576	11,600,535	0.36800%	42,690
2039	5,053,516	6,752,602	11,806,118	0.36800%	43,447
CAGR (2019 - 2039)			*0.34%*		*0.34%*

Sources:

Historic Operations (2015 - 2018) - FAA Terminal Area Forecasts (TAF)

Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data

Historic & Projected Regional GA Operations - FAA Terminal Area Forecasts (TAF)

Table 2-21: GA Operations Forecast – Market Share Methodology (National)

Year	GA Itinerant Ops (U.S.)	GA Local Ops (U.S.)	Total GA Ops (U.S.)	Market Share	Total GA Ops (C29)
2015	32,338,529	35,780,200	68,118,729	0.05578%	38,000
2016	31,982,812	35,403,858	67,386,670	0.05639%	38,000
2017	31,782,234	35,426,905	67,209,139	0.05654%	38,000
2018	32,026,688	35,904,605	67,931,293	0.05594%	38,000
2019	32,164,213	36,690,160	68,854,373	0.05891%	40,560
Projected:					
2024	32,830,063	37,807,023	70,637,086	0.05891%	41,610
2029	33,397,219	38,516,328	71,913,547	0.05891%	42,362
2034	34,005,454	39,278,180	73,283,634	0.05891%	43,169
2039	34,662,411	40,101,892	74,764,303	0.05891%	44,041
CAGR (2019 - 2039)			*0.41%*		*0.41%*

Sources:

Historic Operations (2015 - 2018) - FAA Terminal Area Forecasts (TAF)

Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data

Historic & Projected National GA Operations - FAA Terminal Area Forecasts (TAF)

2.6.4. General Aviation (GA) Operations Forecasts Summary

A comparison of the methodologies used in forecasting GA Operations at C29 is presented in **Table 2-22**. The table further summarizes the assumptions used in developing each forecast method and the reasoning behind the preferred forecast selected.

Table 2-22 Projected GA Operations – Summary of Methodologies and Preferred Forecast

Methodologies:	Assumptions	Preferred Forecast	Reasoning for Preferred Forecast Selected:
Socio-Economic (Population)	Dane County is the fastest growing County in WI. Assumes GA Operations will increase on pace with population growth.		
Socio-Economic (Retail Sales)	Retails Sales as an indicator of the local economic conditions and the financial ability to own and operate an aircraft for both business and recreational uses.		
Socio-Economic (Income)	Dane County ranks 3rd in WI for per-capita income. Assumes GA Operations will increase on pace with projected income growth.		
Market-Share (Regional)	C29's percentage of GA Operations in the Great Lakes Region will continue. Future GA Operations at C29 will change proportionally with regional growth.		
Market-Share (National)	C29's percentage of overall GA Operations at the national level will continue. Future GA Operations at C29 will change proportionally with national growth.	**X**	No strong correlation could be shown between Dane County's growth and GA operations at C29. As such, the FAA and WisBOA have approved this methodology as the preferred.

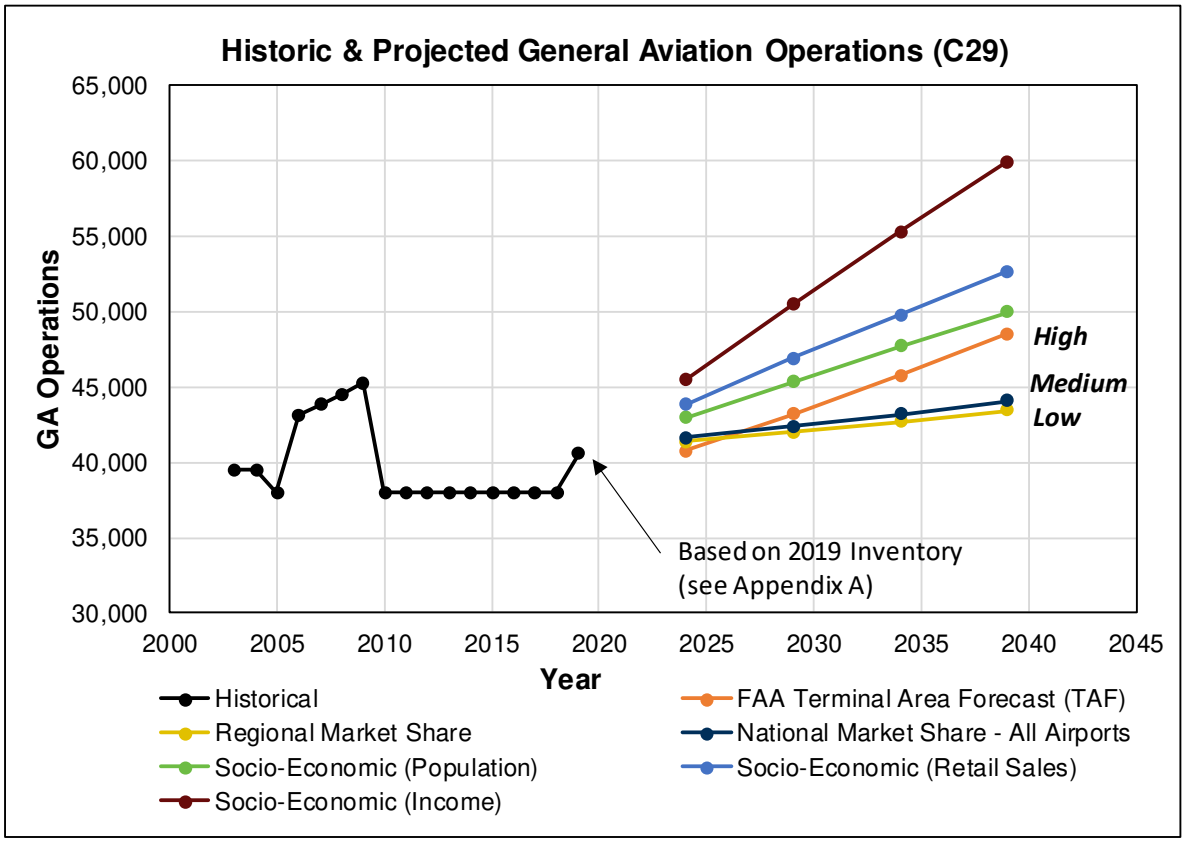
Forecasts for GA operations considered socioeconomic factors and C29's share of the regional and national markets. Given the pace of growth in Dane County, the forecasts connected to the local socioeconomic factors project higher levels of activity. Area businesses have expressed a desire to make greater use of C29 as documented from the User Survey responses in Appendix C and through letters or correspondence from individual businesses provided in Appendix D. Many of the user survey respondents and area businesses also identified a desire to base their aircraft at C29. If realized, increased business use and higher numbers of based aircraft both would have a direct increase to GA operations. The socioeconomic retail sales forecast is the most closely connected to local economic factors, future business use of the airport, and the overall conditions that support the ownership and operation of aircraft in the area. However, in the absence of historical operational counts at non-towered airports like C29, no strong correlation could be made between the historic GA operations and the local socioeconomic trends occurring in Dane County.

Through coordination with the FAA and the WisBOA, the national market-share methodology was selected as the preferred forecast of future GA operations at C29. Both the regional and national market share projections are under the FAA's TAF for C29. The regional market-share was identified as the low forecast projecting an increase from 40,560 in 2019 to 43,447 in 2039. The national-market share was identified as the mid-range forecast and projects GA operations to increase to 44,041 by 2039. The FAA's TAF was identified as the high forecast, showing 48,505 GA operations at C29 by 2039.

A comparison of the projected numbers of GA operations under each of the forecasting methodologies described is presented in **Table 2-23**. All the methodologies project increasing numbers of GA operations through the planning period with low, medium, and high forecast values identified.

Table 2-23: Historic and Projected General Aviation Operations Summary

		High Growth				*Low Growth*	*Medium Growth*
Year	Historic	FAA (TAF)	Socio-Economic Population	Socio-Economic Retail Sales	Socio-Economic Personal Income	Regional Market Share	National Market Share (All)
2015	38,000						
2016	38,000						
2017	38,000						
2018	38,000						
2019	40,560						
Projected:							
2024		40,763	42,909	43,795	45,428	41,342	41,610
2029		43,204	45,322	46,850	50,470	41,995	42,362
2034		45,781	47,695	49,765	55,254	42,690	43,169
2039		48,505	49,941	52,671	59,918	43,447	44,041
CAGR (2019 - 2039)		*0.90%*	*1.05%*	*1.31%*	*1.97%*	*0.34%*	*0.41%*



Sources:

Historic Operations (2015 - 2018) - FAA Terminal Area Forecasts (TAF)
Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data
Historical & Projected Socio-Economic Data for Dane County, WI - Woods & Poole
Historic & Projected Towered GA Operations - FAA Aerospace Forecasts 2019 - 2039 (Table 32)

2.6.5. General Aviation Operations – Local vs. Itinerant

As part of the projections developed for GA operations, a breakdown of the percentage that can be anticipated by local and itinerant aircraft movements was also prepared. As defined by the FAA Air Traffic Activity Data System, local operations are those performed by aircraft that remain in the local traffic pattern, execute touch-and-go or simulated instrument approaches, or otherwise involve an operation from the airport to a designated practice area within a 20-mile radius of the airport. Itinerant operations are those performed by an aircraft, either under Instrument Flight Rules (IFR) or Visual Flight Rules (VFR), that land from (or depart to) an airport outside the area of C29 (i.e. greater than 20 miles).

Training operations make up the largest share of the GA operations at C29. Using the inventoried operations data from Appendix A, local operations accounted for 69 percent of the overall GA operations. With two flight training businesses already on the airfield (Morey Airplane Company and Capital Flight), few increases in local training operations are anticipated. Additionally, unfavorable demographic trends in recreational aviation include an increasing average age of pilots and the increasing cost to own, operate, and house an aircraft. As such, local operations are forecasted to makeup a smaller share of the overall total of GA operations as illustrated in **Table 2-24**. The percentage of itinerant operations is anticipated to be even greater under the higher forecast scenarios as business and commercial operations are anticipated to make up a greater share of the overall activity.

Table 2-24: Local vs. Itinerant General Aviation Operations Forecast

Year	Total GA Operations	Itinerant GA		Local GA	
		Ops	%	Ops	%
Historical:					
2019	40,560	12,654	31%	27,906	69%
Projected Local vs. Itinerant (Low Growth):					
2024	41,342	13,296	32%	28,046	68%
2029	41,995	13,808	33%	28,186	67%
2034	42,690	14,363	34%	28,328	66%
2039	43,447	14,977	34%	28,469	66%
CAGR ('19 - '39)	*0.34%*	*0.85%*		*0.10%*	
Projected Local vs. Itinerant (Medium Growth):					
2024	41,610	13,564	33%	28,046	67%
2029	42,362	14,176	33%	28,186	67%
2034	43,169	14,842	34%	28,328	66%
2039	44,041	15,572	35%	28,469	65%
CAGR ('19 - '39)	*0.41%*	*1.04%*		*0.10%*	
Projected Local vs. Itinerant (High Growth):					
2024	40,763	12,577	31%	28,186	69%
2029	43,204	14,735	34%	28,469	66%
2034	45,781	17,026	37%	28,755	63%
2039	48,505	19,461	40%	29,044	60%
CAGR ('19 - '39)	*0.90%*	*2.18%*		*0.20%*	

Sources:
Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data

2.7. Military Operations

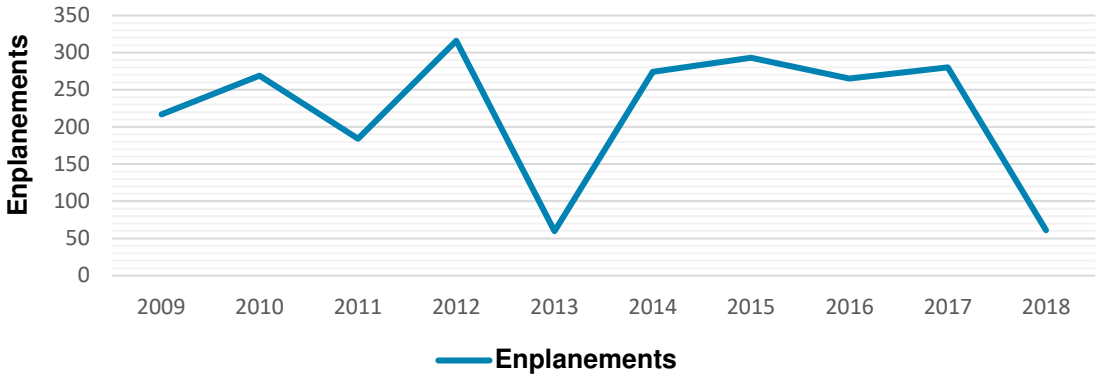
Military operations have historically made up a small portion of total operations at C29. The few military operations that do occur are generally made by small aircraft, although Blackhawk helicopters (from the nearby Truax Air National Guard base at the Dane County Regional Airport) have been known to operate at C29 on some occasions. Military operations are driven more by national security policy decisions and the local mission requirements of nearby military units rather than economic factors or local conditions. The 2019 TAF projects 10 annual military operations at C29 for the duration of the planning period. A review of historic military operations reported in the FAA's TFMSC database confirms a long trend of 10 or fewer annual military operations. As such, the TAF is identified as the preferred forecast for future military operations.

2.8. Commercial Operations

Commercial operations presented in this section are those comprising charter service (commuter/air-taxi) and operations involving the distribution of cargo or freight. These operations currently represent approximately 2 percent of the total annual operations at C29.

Because of its prime location proximal to the Madison metropolitan area and western Dane County, C29 sees regular charter operations and as many as 300 annual enplaned passengers each year as illustrated in **Figure 2-3**. Given its limited runway length and approach procedure capabilities, diversions to the nearby Dane County Regional Airport are often necessary during poor weather conditions – likely the main cause of the fluctuating number of enplanements shown. As an example, Epic noted that about 30 percent of their scheduled Morey trips per year are relocated to Wisconsin Aviation or Dane County Regional Airport due to the inability to fly out of Morey during inclement weather.

Figure 2-3: Annual Enplaned Passengers – Middleton Municipal Airport



Source: Air Carrier Activity Information System (ACAIS)

C29 is also in convenient proximity to the Middleton UPS Delivery Center – located only 1.5 miles south. Since 2012, Freight Runners Express has provided air freight service for UPS making deliveries between C29 and the Milwaukee Mitchell International Airport (MKE) with a Beech 99 aircraft four times a week (Tuesday through Friday). Over the past year, Pro Aire Cargo Consultants has also been providing air freight service for UPS, making Sunday deliveries from their hub facility in Louisville, Kentucky. Pro Aire Cargo Consultants also utilize a Beech 99 aircraft for these trips. Air freight deliveries of this type saw their highest annual operations at C29 last year. The number of historic and projected commercial operations (commuter/air-taxi and freight) are illustrated in **Table 2-25**.

Table 2-25: Commercial Operations Forecasts

Year	Air Carrier	Enplanements	Commuter Air-Taxi	Air Freight	Total Commercial Operations	*Commercial Ops as (% of Total)*
Historical:						
2015	0	293	154	370	524	*1.29%*
2016	0	265	112	404	516	*1.27%*
2017	0	280	212	356	568	*1.40%*
2018	0	61	156	342	498	*1.23%*
2019	0	**	358 *	420	778	*1.88%*
Average (since 2015):		*225*	*198*	*378*	*577*	
Projected Commercial Operations (Low Growth)						
2024	0	234	373	441	**814**	
2029	0	243	388	464	**852**	
2034	0	253	403	488	**891**	
2039	0	264	420	512	**932**	
CAGR (2019-2039)		*0.80%*	*0.80%*	*1.00%*	*0.91%*	
Projected Commercial Operations (Medium Growth)						
2024	0	248	395	499	**894**	
2029	0	274	436	592	**1,029**	
2034	0	302	482	704	**1,185**	
2039	0	334	532	836	**1,368**	
CAGR (2019-2039)		*2.00%*	*2.00%*	*3.50%*	*2.86%*	
Projected Commercial Operations (High Growth)						
2024	0	261	415	536	**951**	
2029	0	302	481	684	**1,165**	
2034	0	350	558	873	**1,431**	
2039	0	406	647	1,114	**1,761**	
CAGR (2019-2039)		*3.00%*	*3.00%*	*5.00%*	*4.17%*	

Sources:
Historic Operations (2015 - 2018) - FAA TFMSC User Class Data
* Historic Operations (2019) - FAA TFMSC User Class Data + 240 Ops reported from Morey Airplane Co.
Historic Enplanements - Air Carrier Activity Information System (ACAIS)
** 2019 Enplanement data not available at time of forecasts - preliminary ACAIS data available July 2020
FAA 2019-2039 Aerospace Projections for GA & Air-Taxi Activity (0.8%)

Within their Aerospace Forecasts 2019-2039, the FAA projects a growth rate of 0.8 percent in total active GA and air taxi fleet. Under a low growth scenario, the future charter and air taxi operations are anticipated to build from 2015-2019 averages, with a growth rate consistent with the FAA Aerospace Forecasts (0.8 percent). Freight deliveries are projected to increase at a similarly modest rate. Under these conditions, overall commercial operations at C29 are projected to increase at a compounded annual growth rate (CAGR) of 0.91 percent and total 932 operations by 2039.

The medium and high forecast scenarios assume that commercial operations will grow at rates more consistent with local economic trends and that greater use of commuter/air taxi service will be seen with greater business use of C29. Freight operations are also projected to advance at rates higher than those identified in the FAA Aerospace Forecasts due to the proximity of the Middleton UPS delivery center, continued increases in e-commerce, and growing demand for same-day and next-day deliveries. Under medium growth, commercial operations are projected to increase at a 2.86 percent CAGR and reach 1,368 operations by 2039. High growth projections assume even greater increases with a 4.17 percent CAGR and 1,761 commercial operations over the 20-year horizon.

While the local conditions at C29 are anticipated to yield growth rates in commercial operations that are higher than those projected within the FAA's Aerospace Forecasts, the nearby Dane County Regional Airport is anticipated to continue as the primary source of commercial aviation activity in the area. As such, the high growth scenario of commercial operations at C29 is less likely to occur, and the medium growth forecast was selected as the preferred estimate of future commercial activity for C29.

2.9. Jet and Turboprop Operations

This section analyzes jet and turboprop operations separately as these turbine-powered aircraft generally have the greatest airfield facility requirements and are more commonly connected to the charter and business aviation activity at C29. An inventoried breakout of each jet and turboprop aircraft will be presented by type to illustrate their operational levels at C29 over the past decade. Lastly, information received from existing based tenants and businesses who regularly use these aircraft will be referenced to help inform forecasts of their future operation.

2.9.1. Historic Jet and Turboprop Operations

The history of jet and turboprop aircraft for Middleton Municipal Airport was obtained from the FAA's TFMSC database. The FAA provides a data stream of information that details the position and flight plans of aircraft in the United States, including arrival and departure destinations for aircraft having filed an IFR flight plan. This database also allows jet and turboprop aircraft to be queried separately. It is assumed that the majority of these turbine-powered aircraft file an IFR flight plan, and that the totals are representative of roughly 95 percent of the actual jet and turboprop operations conducted at C29. On some occasions, when the aircraft is on final approach, and the airport is in sight, the pilot may elect to cancel their IFR flight plan before landing, and the operation is not accounted for in the TFMSC database. Knowing this, both the arrivals and departures for each aircraft type were reviewed, and the higher value of the two was doubled in determining the annual operations for each aircraft. **Figure 2-4** illustrates the 10-year history of IFR jet and turboprop operations conducted at C29.

Figure 2-4: Historic Operations of Turbine-Powered Aircraft – (C29)

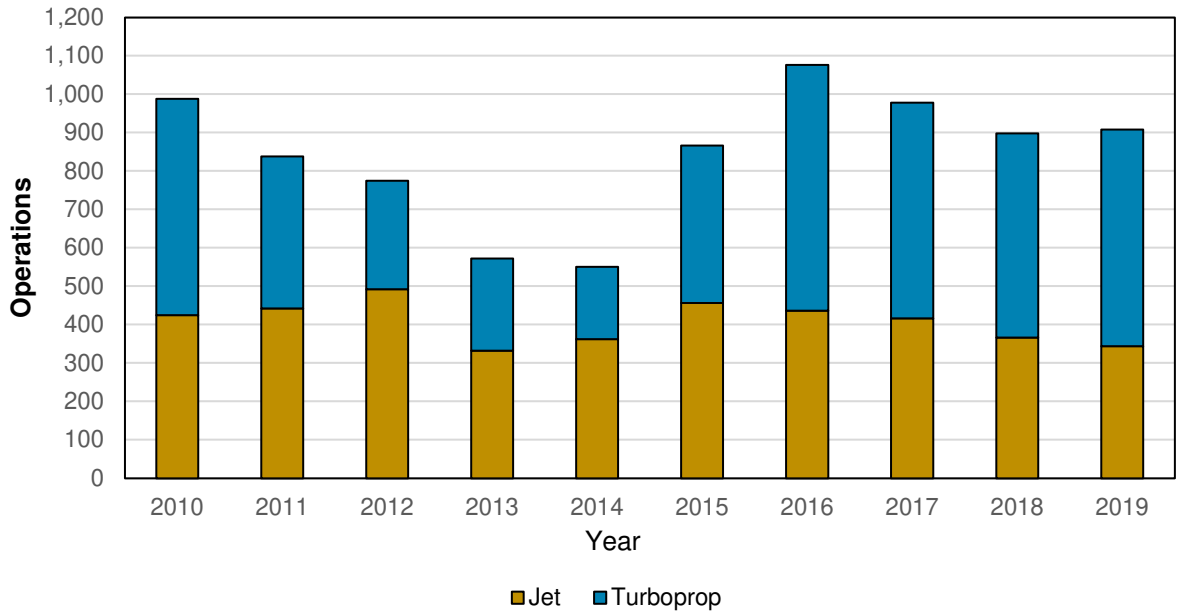


Table 2-26 provides a more detailed inventory of jet and turboprop operations at C29 since 2010, sorted by the individual aircraft, its runway design code grouping, and the number of operations each year.

Table 2-26: Historic Annual Operations of Jet and Turboprop Aircraft (C29)

Aircaft	Type	Design Code	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
DA20 - Diamond DA 20	Jet	A - I						2				
EA50 - Eclipse 500	Jet	A - I	26	24	26	36		14	12	8	2	
EVOT - Lancair Evolution Turbine	Turboprop	A - I						12				
MU2 - Mitsubishi Marquise/Solitaire	Turboprop	A - I	2									
P46T - Piper Malibu Meridian	Turboprop	A - I	70	4	2	4	2	2	12	18	4	2
TBM7 - Socata TBM-7	Turboprop	A - I	64	72	26	16	20	8	16	28	8	2
TBM8 - Socata TBM-850	Turboprop	A - I		8	12	16	8	6	12	22	18	22
TBM9 - Socata TBM	Turboprop	A - I							4	8	16	38
A-I Jet & Turbine Total:			162	108	66	72	30	44	56	84	48	64
PC12 - Pilatus PC-12	Turbine	A - II	44	70	52	38	36	42	34	20	16	14
A-II Jet & Turbine Total:			44	70	52	38	36	42	34	20	16	14
BE40 - Raytheon/Beech Beechjet 400/	Jet	B - I	24	34	10	4		6		4		
C25M - Cessna Citation M2	Jet	B - I									8	
C500 - Cessna 500/Citation I	Jet	B - I			2					2		
C501 - Cessna I/SP	Jet	B - I	6	8	22	6	8	14	22	16		4
C510 - Cessna Citation Mustang	Jet	B - I	4	156	200	88	152	122	114	112	92	108
C525 - Cessna CitationJet/CJ1	Jet	B - I	52	42	84	78	66	164	130	128	150	114
E50P - Embraer Phenom 100	Jet	B - I					4	2	2			
HDJT - HONDA HA-420 HondaJet	Jet	B - I									4	
PRM1 - Raytheon Premier 1/390 Prem	Jet	B - I	2							6	2	2
BE10 - Beech King Air 100 A/B	Turboprop	B - I	2	2				6	10	6		
BE99 - Beech Airliner 99	Turboprop	B - I	18	20	36	4	6	182	398	352	340	420
C425 - Cessna 425 Corsair	Turboprop	B - I							2		24	18
P180 - Piaggio P-180 Avanti	Turboprop	B - I	2	2	2		6					
PAY1 - Piper Cheyenne 1	Turboprop	B - I						4		8	2	
PAY2 - Piper Cheyenne 2	Turboprop	B - I	2		2			2				
PAY3 - Piper PA-42-720 Cheyenne 3	Turboprop	B - I						4	2			
PAY4 - Piper Cheyenne 400	Turboprop	B - I				4						
TEX2 - Raytheon Texan 2	Turboprop	B - I			10			2	2			
B-I Jet & Turbine Total:			112	264	368	184	242	508	682	634	622	666
C25A - Cessna Citation CJ2	Jet	B - II	122	52	62	18	38	70	50	50	26	16
C25B - Cessna Citation CJ3	Jet	B - II	18	8	4	12	8	18	8	38	50	70
C25C - Cessna Citation CJ4	Jet	B - II			2					4		
C550 - Cessna Citation II/Bravo	Jet	B - II	20	14	12	48	14	4	10			2
C551 - Cessna Citation II/SP	Jet	B - II				2				12		
C560 - Cessna Citation V/Ultra/Encore	Jet	B - II	10	8	14	8	10	8	14	4	20	14
C56X - Cessna Excel/XLS	Jet	B - II	106	74	32	6	8	4	4	10	6	4
C650 - Cessna III/VI/VII	Jet	B - II	14									
C680 - Cessna Citation Sovereign	Jet	B - II		4					2		2	2
C68A - Cessna Citation Latitude	Jet	B - II										2
E55P - Embraer Phenom 300	Jet	B - II			2				2		2	4
B190 - Beech 1900/C-12J	Turboprop	B - II					2	2				
B350 - Beech Super King Air 350	Turboprop	B - II	6	6	2		6	10	18	26	32	10
BE20 - Beech 200 Super King	Turboprop	B - II	138	74	82	94	58	72	84	46	46	24
BE30 - Raytheon 300 Super King Air	Turboprop	B - II	4	8	8	2		2	10		2	6
BE9L - Beech King Air 90	Turboprop	B - II	164	88	18	18	18	14	12		10	8
BE9T - Beech F90 King Air	Turboprop	B - II	8	4			2		6	14		
C208 - Cessna 208 Caravan	Turboprop	B - II	12	8	2	6	6	14	6			
C441 - Cessna Conquest	Turboprop	B - II	26	30	28	36	16	26	12	14	14	
SW4 - Swearingen Merlin 4/4A Metro2	Turboprop	B - II	2			2	2					
B-II Jet & Turbine Total:			650	378	268	252	188	244	238	218	210	162
LJ31 - Bombardier Learjet 31/A/B	Jet	C - I	12	8	14	14	12	8	38	10		
LJ40 - Learjet 40; Gates Learjet	Jet	C - I	4	2	4	4	4					2
LJ45 - Bombardier Learjet 45	Jet	C - I			2	4	6	4				
C-I Jet & Turbine Total:			16	10	20	22	22	12	38	10	0	2
CL60 - Bombardier Challenger 600/601	Jet	C - II					2	2				
E145 - Embraer ERJ-145	Jet	C - II		4								
G150 - Gulfstream G150	Jet	C - II									2	
H25B - BAe HS 125/700-800/Hawker 8	Jet	C - II		2			4	2	2			
C-II Jet & Turbine Total:			0	6	0	0	6	4	2	0	2	0
LJ35 - Bombardier Learjet 35/36	Jet	D - I	4	2		4	6	12	26	12		
D-I Jet & Turbine Total:			4	2	0	4	6	12	26	12	0	0
Annual Jet Totals:			424	442	492	332	342	456	436	416	366	344
Annual Turbo-Prop Totals:			564	396	282	240	188	410	640	562	532	564
C29 Annual IFR Jet & Turboprop Operations:			**988**	**838**	**774**	**572**	**530**	**866**	**1,076**	**978**	**898**	**908**

The FAA Aerospace Forecast Fiscal Years 2019-2039 projects a positive outlook for the future of turbine aircraft operations and business and corporate aviation activity, stating, "Hours flown by turbine aircraft (including rotorcraft) are forecast to increase 2.4 percent yearly over the forecast period. Jet aircraft are expected to account for most of the increase, with hours flown increasing at an average annual rate of 3.1 percent from 2017 to 2039. The large increases in jet hours result mainly from the increasing size of the business jet fleet."

In considering the past turbine-powered aircraft activity at C29, the overall numbers have fluctuated somewhat, but have generally remained consistent, with a combined 10-year average of 843 operations. Of the two aircraft types, jet operations have been the more consistent averaging 405 operations per year. The turboprop operations have varied more (ranging from a 10-year high of 640 operations in 2016, to a 10-year low of 188 operations in 2014).

Using the past operational data and user feedback provided in Appendix C and Appendix D, both socioeconomic and market-share methodologies were used to project future operations of jet and turboprop operations at C29.

2.9.2. Forecasted Turbine Operations – Socioeconomic Factors

Socioeconomic indicators (population, retail sales, personal income) for Dane County were examined to project future jet and turboprop operations at C29. **Table 2-27** depicts the coefficient of correlation, or r-squared values of these socioeconomic factors to turbine powered aircraft operations at C29, using historical data from Year 2010 to 2019.

Table 2-27: Socioeconomic Regression Analysis Results – C29 Jet & and Turboprop Operations

Indepdendent Variable	Coefficient of Correlation to Jet and Turboprop Operations (R-Squared)	Compounded Annual Growth Rate (2010 - 2019)
Population	0.07	1.30%
Total Retail Sales	0.04	3.26%
Total Personal Income	0.10	3.34%

Notes: All Socioeconomic values - Dane County, WI (2010-2019)

Sources: Woods & Poole Economics, Inc.

The FAA generally requires the coefficient of correlation (r-squared value) to be 0.90 or greater for a forecast of this methodology to be selected as the preferred. None of the local socioeconomic factors showed a strong correlation to the historic number of jet and turboprop operations at C29. This could in part be a result of the limitations of the existing airfield. As documented with Appendix C and Appendix D, several business users identified instances of needing to divert to Dane County Regional due to insufficient approach capability or contaminated (wet, icy) pavement conditions at C29.

While no strong correlation can be shown between the local socioeconomic indicators and the jet and turboprop operations at C29, the consistently strong growth in Dane County warrants some consideration in the planning process, and forecasts utilizing these indicators were developed for comparison to other

methodologies. Forecasts were developed based upon the historic and projected correlation between turbine-powered aircraft and socioeconomic data. For these methodologies, ratios of turbine operations to socioeconomic indicators are anticipated to return from their recent lows and match their 5-year historic averages by 2024. Over the longer 20-year horizon, the ratios of turbine operations to socioeconomic indicators are project to increase and match those seen in 2010. As illustrated in **Tables 2-28** through **Table 2-30**, jet and turboprop activity is projected to increase from 908 operations in 2019 to 1,366 operations in 2039 using the population variable. Utilizing a similar methodology, but with a different socioeconomic variable, operations of jet and turboprop aircraft are projected to increase to 1,713 operations by 2039 when considering projected growth in retail sales. Lastly, jet and turboprop operations are projected to increase to 1,963 operations by 2039 using indicators for personal income growth.

Table 2-28: Forecasted Turbine Operations – Socioeconomic Methodology (Population)

Year	IFR Jet Operations	IFR Turbo-Prop Operations	IFR Jet & Turbo-Prop Operations	Dane County Population	C29 Jet & Turbo-Prop Operations per Capita
Historical:					
2010	424	564	988	489,190	0.00202
2011	442	396	838	496,460	0.00169
2012	492	282	774	503,438	0.00154
2013	332	240	572	510,007	0.00112
2014	362	188	550	516,494	0.00106
2015	456	410	866	522,878	0.00166
2016	436	640	1,076	531,273	0.00203
2017	416	562	978	536,975	0.00182
2018	366	532	898	543,120	0.00165
2019	344	564	908	549,327	0.00165
Average ('15-'19)	*404*	*542*	*945*	*536,715*	*0.00176*
CAGR ('15 - '19)	*-6.80%*	*8.30%*	*1.19%*	*1.24%*	
Projected:					
2024	410	614	1,024	581,144	0.00176
2029	510	624	1,134	613,820	0.00185
2034	593	656	1,249	645,954	0.00193
2039	683	683	1,366	676,377	0.00202
CAGR ('19-'39)	*3.49%*	*0.96%*	*2.06%*	*1.05%*	

Sources: Historical Operations: FAA Traffic Flow Management System Counts (TFMSC)
Population Data for Dane County, WI - Woods & Poole

Table 2-29: Forecasted Turbine Operations – Socioeconomic Methodology (Retail Sales)

Year	IFR Jet Operations	IFR Turbo-Prop Operations	IFR Jet & Turbo-Prop Operations	Dane County Retail Sales (in millions)	C29 Jet & Turbo-Prop Operations per $1M in Retail Sales
Historical:					
2010	424	564	988	7,907	0.12495
2011	442	396	838	8,448	0.09920
2012	492	282	774	8,882	0.08714
2013	332	240	572	9,131	0.06264
2014	362	188	550	9,421	0.05838
2015	456	410	866	9,672	0.08954
2016	436	640	1,076	9,942	0.10822
2017	416	562	978	10,203	0.09585
2018	366	532	898	10,386	0.08646
2019	344	564	908	10,556	0.08602
Average ('15-'19)	*404*	*542*	*945*	*10,152*	*0.09322*
CAGR ('15 - '19)	*-6.80%*	*8.30%*	*1.19%*	*2.21%*	
Projected:					
2024	425	638	1,063	11,398	0.09322
2029	570	696	1,266	12,193	0.10380
2034	704	778	1,481	12,952	0.11437
2039	856	856	1,713	13,708	0.12495
CAGR ('19-'39)	*4.67%*	*2.11%*	*3.22%*	*1.31%*	

Sources: Historical Operations: FAA Traffic Flow Management System Counts (TFMSC)
Retail Sales Data for Dane County, WI - Woods & Poole (2009 Dollars)

Table 2-30: Forecasted Turbine Operations – Socioeconomic Methodology (Income)

Year	IFR Jet Operations	IFR Turbo-Prop Operations	IFR Jet & Turbo-Prop Operations	Dane County Total Personal Income (in millions)	C29 Jet & Turbo-Prop Operations per $1M in Personal Income
Historical:					
2010	424	564	988	21,258	0.04648
2011	442	396	838	22,317	0.03755
2012	492	282	774	23,048	0.03358
2013	332	240	572	23,673	0.02416
2014	362	188	550	24,349	0.02259
2015	456	410	866	25,860	0.03349
2016	436	640	1,076	26,486	0.04063
2017	416	562	978	27,159	0.03601
2018	366	532	898	27,896	0.03219
2019	344	564	908	28,583	0.03177
Average ('15-'19)	*404*	*542*	*945*	*27,197*	*0.03482*
CAGR ('15 - '19)	*-6.80%*	*8.30%*	*1.19%*	*2.54%*	
Projected:					
2024	446	669	1,115	32,014	0.03482
2029	619	757	1,377	35,567	0.03870
2034	788	871	1,658	38,939	0.04259
2039	981	981	1,963	42,225	0.04648
CAGR ('19-'39)	*5.38%*	*2.81%*	*3.93%*	*1.97%*	

Sources: Historical Operations: FAA Traffic Flow Management System Counts (TFMSC)
Personal Income Data for Dane County, WI - Woods & Poole (2009 Dollars)

2.9.3. Forecasted Turbine Operations – Market Share Methodology

The market-share methodology was used to compare local jet and turboprop operations to the national number of GA turbine hours flown, as well as the national volume of GA jet fuel sold annually. As illustrated in **Table 2-31**, the airport averaged 0.14010 turbine operations for every thousand hours of national GA turbine time recorded over the past 5 years (from 2015 to 2019). **Table 2-32** further illustrates that the airport averaged 0.68104 turbine operations for every million gallons of jet fuel sold nationally from 2015 to 2019. For these methodologies, the market-share ratios are projected to return from their recent lulls to match their 5-year averages by 2024. Over the 20-year horizon, the share of the national markets is projected to return to the past highs seen near 2010.

Projecting the ratio of local operations to the national forecasts for GA turbine hours flow, the number of jet and turboprop operations at C29 is projected to increase from 908 operations in 2019 to 2,015 operations in 2039.

Applying the ratio of local operations to the national forecasts for GA Jet-A fuel sales, the number of jet and turboprop operations is projected to increase from 908 operations in 2019 to 1,622 operations by 2039.

Table 2-31: Forecasted Turbine Operations – Market-Share (National GA Turbine Hours)

Year	IFR Turbo Jet Operations	IFR Turbo Prop Operations	IFR Jet & Turbo-Prop Operations	National GA Turbine Hours Flown (thousands)	C29 Jet & Turbo-Prop Operations per National GA Jet Hour Flown
Historical:					
2010	424	564	988	5,700	0.17333
2011	442	396	838	5,870	0.14276
2012	492	282	774	6,151	0.12583
2013	332	240	572	6,076	0.09414
2014	362	188	550	6,494	0.08469
2015	456	410	866	6,375	0.13584
2016	436	640	1,076	6,554	0.16417
2017	416	562	978	6,690	0.14619
2018	366	532	898	6,966	0.12891
2019	344	564	908	7,241	0.12540
Average ('15-'19)	*404*	*542*	*945*	*6,765*	*0.14010*
CAGR ('15 - '19)	*-6.80%*	*8.30%*	*1.19%*	*3.24%*	
Projected:					
2024	475	712	1,187	8,469	0.14010
2029	648	792	1,440	9,523	0.15118
2034	812	898	1,710	10,537	0.16226
2039	1,007	1,007	2,015	11,623	0.17333
CAGR ('19-'39)	*5.52%*	*2.94%*	*4.07%*	*2.39%*	

Sources: Historical Operations: FAA Traffic Flow Management System Counts (TFMSC)
National GA Jet Hours Flown: FAA Aerospace Forecasts 2019 - 2039 (Table 29)

Table 2-32: Forecasted Turbine Operations – Market-Share (National GA Jet-A Fuel Sales)

Year	IFR Jet Operations	IFR Turbo-Prop Operations	IFR Jet & Turbo-Prop Operations	National GA Jet Fuel Consumption (millions of gallons)	C29 Jet & Turbo-Prop Operations per National GA Jet-A Fuel Sold
Historical:					
2010	424	564	988	1,310	0.75420
2011	442	396	838	1,320	0.63490
2012	492	282	774	1,286	0.60187
2013	332	240	572	1,134	0.50441
2014	362	188	550	1,334	0.41229
2015	456	410	866	1,254	0.69059
2016	436	640	1,076	1,324	0.81269
2017	416	562	978	1,402	0.69757
2018	366	532	898	1,471	0.61047
2019	344	564	908	1,529	0.59385
Average ('15-'19)	*404*	*542*	*945*	*1,396*	*0.68104*
CAGR ('15 - '19)	*-6.80%*	*8.30%*	*1.19%*	*5.08%*	
Projected:					
2024	481	721	1,201	1,764	0.68104
2029	611	746	1,357	1,924	0.70542
2034	709	784	1,492	2,045	0.72981
2039	811	811	1,622	2,151	0.75420
CAGR ('19-'39)	*4.38%*	*1.83%*	*2.94%*	*1.72%*	

Sources: Historical Operations: FAA Traffic Flow Management System Counts (TFMSC)
National GA Jet Fuel Use- FAA Aerospace Forecasts 2019 - 2039 (Table 31)

2.9.4. Forecasted Turbine Operations – Summary

A comparison of the methodologies used in forecasting jet and turboprop operations at C29 is presented in **Table 2-33**. The table further summarizes the assumptions used in developing each forecast method and the reasoning behind the preferred forecast selected.

Table 2-33 Forecasted Turbine Operations – Summary of Methodologies and Preferred Forecast

Methodologies:	Assumptions	Preferred Forecast	Reasoning for Preferred Forecast Selected:
Socio-Economic (Population)	Dane County is the fastest growing County in WI. Assumes operations-per-capita of turbine-powered aircraft will reach previous levels seen as recently as 2016 over the 20-year planning horizon.		
Socio-Economic (Retail Sales)	Retail Sales are an indicator of the local econmic conditions and the financial ability of corporations to utilize aircraft for business travel. Turbine Operations per retail sales are anticipated to return to their 5-year average (0.09322) by Year 2024. Over the 20-year horizon, the number of turbine operations per retail sales is anticipated to return to previous highs seen in Year 2010 (0.12495).		
Socio-Economic (Income)	Dane County ranks 3rd in WI for per-capita income. Assumes Turbine Aircraft Operations will increase on pace with projected income growth.		
Market-Share (National GA Turbine Hours)	C29's percentage of overall GA turbine operations at the national level will continue. Future Turbine Operations at C29 will change proportionally with national forecasted activity.		
Market-Share (National GA Jet Fuel Sales)	C29's percentage of overall GA Jet fuel use at the national level will continue. Future Turbine Operations at C29 will change proportionally with national forecasts of jet fuel sales.	**X**	Jet fuel sales have been an accurate indicator of turbine aircraft activity at C29. The results of this methodology fall in the middle of the overall range and align closely with FAA's Aerospace Forecasts

The number of jet and turboprop operations are expected to increase as C29 will be more able to accommodate the interest expressed from businesses for additional charter and air taxi operations or greater use of their own privately owned, turbine-powered aircraft. Additionally, the based aircraft forecasts project the number of jets at C29 to increase from 2 to 5 over the 20-year planning horizon. The projected increases in jet and turboprop aircraft based at C29 will directly contribute to this future operational growth.

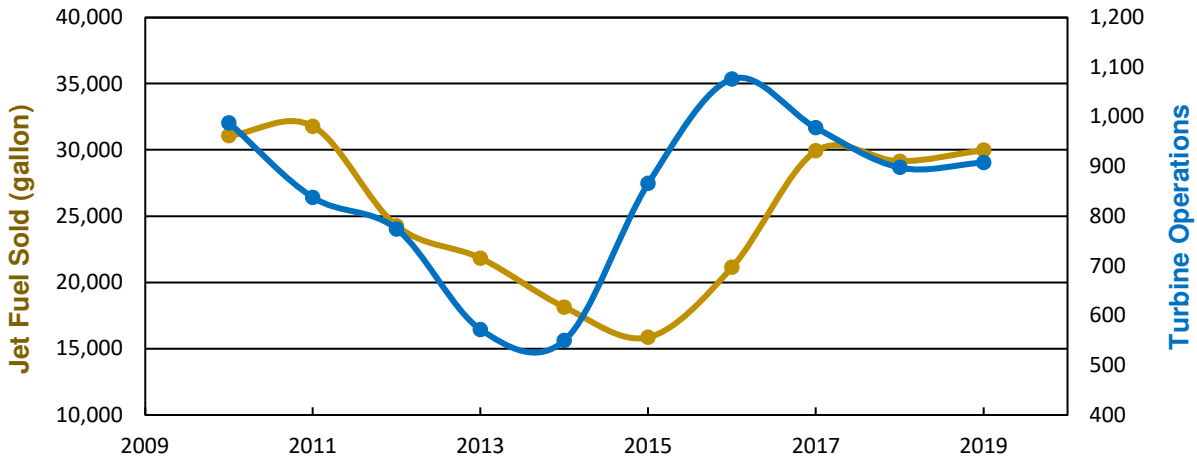
All the methodologies project varying increases in turbine-powered aircraft usage, with compounded annual growth rates ranging from 2.06 percent to 4.07 percent. This range matches closely with the national growth

rate projected for GA turbine operations nationally within the FAA's Aerospace Forecasts (between 2.4 percent and 3.1 percent).

While the local economic activity is anticipated to have a large influence on the demand for business jet and turbo-prop aircraft operations at C29, a strong historical correlation could not be demonstrated when comparing these two data sets over the past decade. As such, the FAA recommended utilizing the market-share methodologies for projecting the future levels of jet and turboprop activity at C29. The results from the socio-economic methodologies were included for comparison and to help identify a broader range of potential activity levels for these aircraft types. Of all the forecasts developed for turbine aircraft operations, the socio-economic (population variable) methodology identified the smallest growth over the 20-year planning horizon, with annual operations projected to increase from 908 in year 2019 to 1,366 in year 2039. The socio-economic (population variable) methodology was not selected as the preferred forecast but was utilized to identify the low range of future turbine aircraft operations, with a 2.06 percent CAGR.

For the purposes of this master plan, the market-share of national jet fuel use was selected as the preferred forecast method for jet and turboprop operations at C29. This method's projections fall in the middle range of all the forecasts, and the volume of jet fuel sold at C29 has traditionally been an accurate indicator of turbine-powered aircraft activity at C29 as illustrated in **Figure 2-5**. This methodology projects jet and turboprop activity at C29 to increase from 908 operations in 2019 to 1,622 operations by year 2039, representing a 2.94 percent CAGR.

Figure 2-5: Historic Jet Fuel Sold vs. Annual Turbine Aircraft Operations – C29

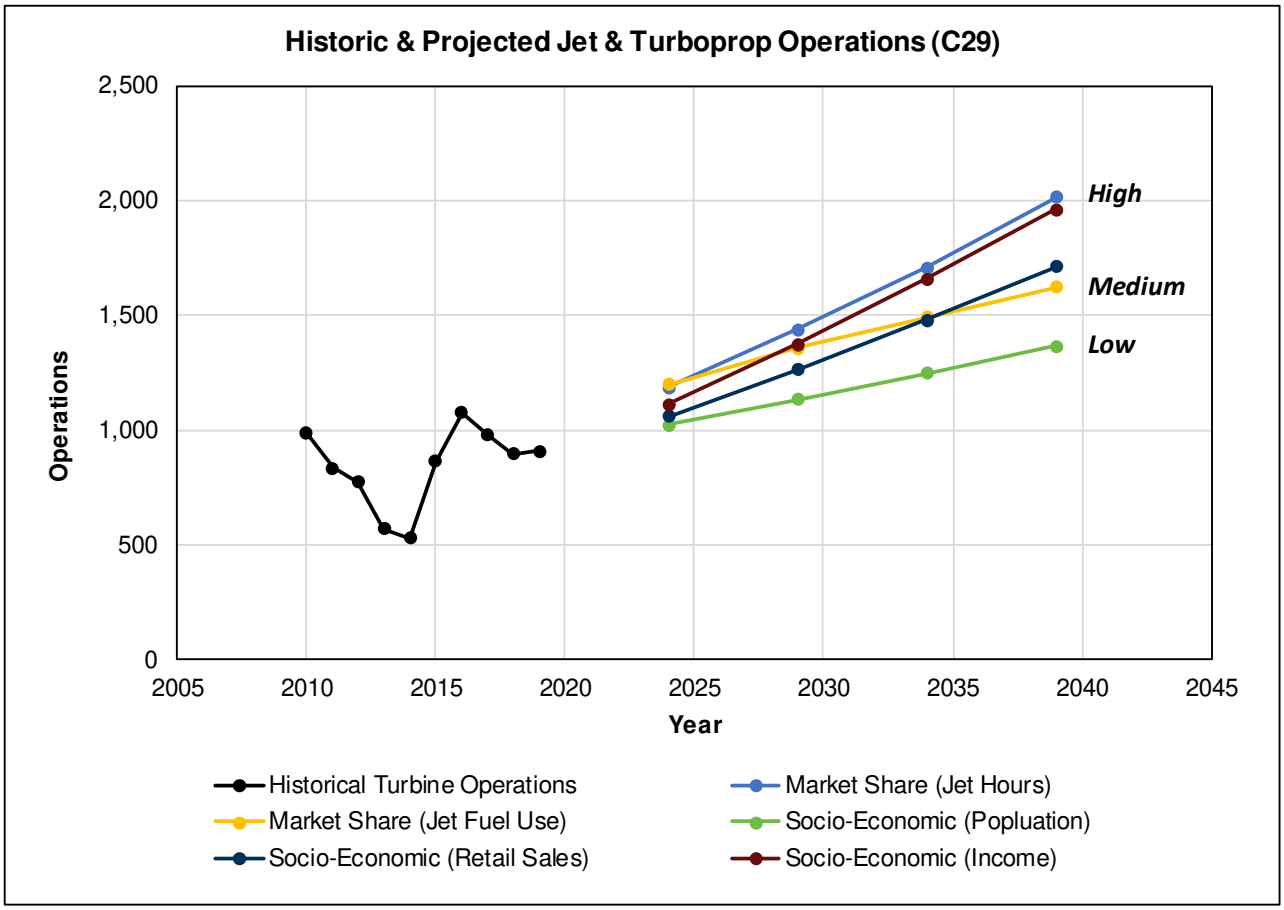


To identify the high range of future turbine aircraft activity at C29, the market-share of national jet hours flown was utilized. This methodology projects jet and turboprop activity to increase from 908 operations in year 2019 to 2,015 operations in year 2039, representing a CAGR of 4.07 percent.

A comparison of projected jet and turboprop operations using the methodologies described in this section is illustrated in **Table 2-34**.

Table 2-34: Turbine Aircraft Operations – Forecast Summary

		Low Growth			*High Growth*	*Medium Growth*
Year	Historical Turbine Operations	Socio-Economic (Popluation)	Socio-Economic (Retail Sales)	Socio-Economic (Income)	Market Share (Jet Hours)	Market Share (Jet Fuel Use)
2015	866					
2016	1,076					
2017	978					
2018	898					
2019	908					
Average ('15-'19)	*945*					
CAGR ('15 - '19)	*1.19%*					
CAGR ('10-'19)	*-0.93%*					
Projected:						
2024		1,024	1,063	1,115	1,187	1,201
2029		1,134	1,266	1,377	1,440	1,357
2034		1,249	1,481	1,658	1,710	1,492
2039		1,366	1,713	1,963	2,015	1,622
CAGR ('19-'39)		2.06%	3.22%	3.93%	4.07%	2.94%



Sources:

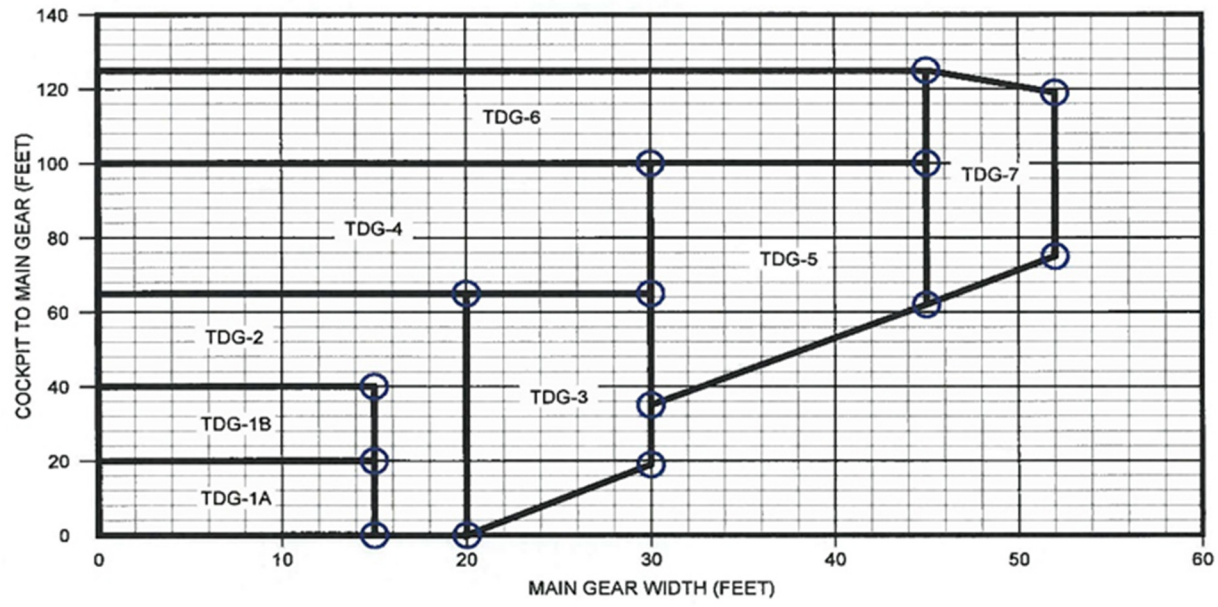
Historic Turbine Aircraft Operations (2010 - 2019) - FAA Traffic Flow Management System Counts
Historical & Projected Socio-Economic Data for Dane County, WI - Woods & Poole
Historic & Projected National GA Jet & Turbo-Prop Data - FAA Aerospace Forecasts 2019-2039 (Table 29 & 31)

2.10. Design Critical Aircraft

It is important to determine the most demanding aircraft operating at an airport, referred to as the design aircraft, as these aircraft directly influence airfield geometric design standards and safety criteria. The design aircraft classification is composed of three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). The first component, depicted by a letter, is the AAC and relates to the approach speed of the aircraft. The second component, depicted by a roman numeral, is the ADG and relates to either the wingspan or tail height. The TDG signifies the standards to which taxiways are to be built based upon the wheel configuration dimensions of the most demanding aircraft. FAA standard definitions for aircraft approach categories and design groups are summarized within **Table 2-35**.

Table 2-35: Aircraft Approach Category and Design Group Definitions

Aircraft Approach Category (AAC)	Approach Speed (knots)	
A	Less than 91 knots	
B	91 or greater, but less than 121	
C	121 or greater, but less than 141	
D	141 or greater, but less than 166	
E	166 or greater	
Airplane Design Group (ADG)	**Wingspan (feet)**	**Tail Height (feet)**
I	<49	<20
II	49 - <79	20 - <30
III	79 - <118	30 - <45
IV	118 - <171	45 - <60
V	171 - <214	60 - <66
VI	214 - <262	66 - <80
Taxiway Design Groups (TDG)		



Source: FAA Advisory Circular 150/5300-13A, Airport Design - Change 1

The most demanding aircraft that currently use C29 are the turbine-powered aircraft that consist of small business jets and turboprop aircraft. Aircraft of these type were presented earlier in Table 2-26.

Jets that regularly operate at C29 include the Cessna Citation Mustang and the Cessna Citation Jet (CJ1), which are both based at the airport. These two based jets each conduct between 100 and 150 operations each year. A range of other Cessna Citation jet models also operate at C29 on a more varied basis. Some of the larger business jets are within the ADG II category and include the Cessna Citation CJ2, CJ3, Bravo, Encore, Excel, Sovereign, Latitude, and the Embraer Phenom 300.

Turboprop aircraft are similar to jets in that they are both powered by a turbine engine that runs on jet fuel. However, turboprop aircraft use the turbine to drive a propeller to generate thrust. The most frequently seen turboprops at C29 include the Socata TBM, the Pilatus PC-12, and various models of the Beechcraft King Air. The PC-12 and King Air models are within the ADG II category.

2.10.1. Design Aircraft by Approach Category and Design Group

Table 2-36 summarizes the number of historic turbine operations at C29 by AAC and by ADG.

In considering the future percentages of AAC A through D aircraft, AAC B aircraft are still anticipated to remain the dominant users, and the percentages for this category are generally assumed to remain unchanged over the 20-year planning horizon. Future turbine operations (by AAC) were calculated by using the average 5-year percentages for each category and applying them consistently to the forecast for overall turbine operations presented in the previous section.

In determining the critical ADG component, Table 2-36 illustrates that ADG II aircraft have only made up a quarter of the turbine operations in recent years. However, ADG II aircraft operations are projected to increase from a quarter to roughly a third of the overall turbine aircraft operations over the 20-year design horizon. This projected transition is evidenced by the fact that C29 has witnessed higher activity of ADG II aircraft in the past. In 2010, C29 saw 696 operations by aircraft of this category. The forecasted change to a greater percentage of ADG II aircraft is additionally based on the business users who expressed a desire to relocate their operation to C29 or otherwise make greater use of the airport with these type of aircraft (see Appendix D). Future increases in air-taxi and freight operations and the forecasted increase in based jet and multi-engine aircraft also support the projected return to an increased percentage of ADG II aircraft over time. As shown in Table 2-36, the annual number of ADG II aircraft operations is projected to increase from 241 operations (the annual average during 2015-2019) to an annual total of 535 by 2039.

Table 2-36: Historic and Projected Turbine Operations by AAC & ADG

Aircraft Approach Category (AAC)	Historic				Projected (by AAC)							
	Turbine Ops (2019)		Turbine Ops (Avg. '15-'19)		Turbine Ops (2024)		Turbine Ops (2029)		Turbine Ops (2034)		Turbine Ops (2039)	
	Ops	% of Total	Ops	% of Total	Ops	% of Total	Ops	% of Total	Ops	% of Total	Ops	% of Total
A	78	8.6%	84	8.9%	107	8.9%	117	8.9%	128	8.9%	139	8.9%
B	828	91.2%	837	88.5%	1,064	88.5%	1,238	88.5%	1,361	88.5%	1,479	88.5%
C	2	0.2%	14	1.5%	18	1.5%	3	1.5%	3	1.5%	4	1.5%
D	0	0.0%	10	1.1%	13	1.1%	0	1.1%	0	1.1%	0	1.1%
Total Turbine Ops:	908		945		1,201		1,357		1,492		1,622	

Airplane Design Group (ADG)	Historic				Projected (by ADG)							
	Turbine Ops (2019)		Turbine Ops (Avg. '15-'19)		Turbine Ops (2024)		Turbine Ops (2029)		Turbine Ops (2034)		Turbine Ops (2039)	
	Ops	% of Total	Ops	% of Total	Ops	% of Total	Ops	% of Total	Ops	% of Total	Ops	% of Total
I	732	80.6%	704	74.5%	872	72.6%	960	70.7%	1,028	68.9%	1,087	67.0%
II	176	19.4%	241	25.5%	329	27.4%	397	29.3%	465	31.1%	**535**	33.0%
Total Turbine Ops:	908		945		1,201		1,357		1,492		1,622	

Sources: Historic IFR Turbine Operations ('15 - '19) - FAA Traffic Flow Management System Counts (TFMSC)
Projections of Turbine Opeations ('24 - '39) - Mead & Hunt, Inc. - National Market Share (Jet Fuel Sales)

Note: Percentage of Projected Turbine Ops by Approach Category based on Year '15 - '19 Averages. Percentage of Projected Turbine Ops for Design Group based on expanded airfield, increased based aircraft, and information provided from business users provided within Appendix D.

2.10.2. Design Aircraft – Summary

The FAA generally recommends that the most demanding aircraft, or family of aircraft, that conduct 500 itinerant operations to be considered the design aircraft. The design aircraft is a composite representing a collection of aircraft classified by three parameters: AAC, ADG and TDG. A listing of all aircraft having filed a flight plan operation to or from C29 since 2010 is provided in **Appendix E** and includes the corresponding data on the AAC, the ADG, and the TDG for each aircraft.

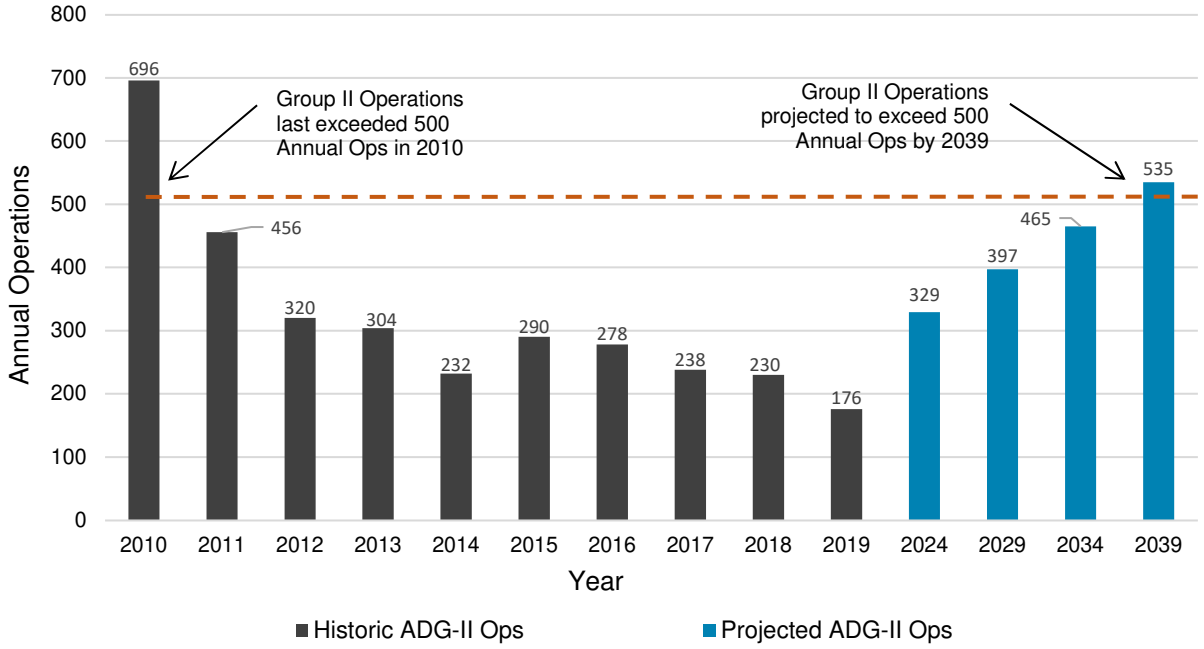
Aircraft Approach Category (AAC)

From a review of the historic operational data, aircraft with approach speeds greater than 91 knots but less than 121 knots (Category B) have exceeded 1,000 annual operations at C29 each year since 2010. AAC B is forecasted to continue as the appropriate component of the design aircraft.

Airplane Design Group (ADG)

Aircraft with wingspans greater than 49 feet but less than 79 feet (ADG II) last exceeded 500 annual operations at C29 in 2010 but have not eclipsed this threshold in recent years. However, operations of ADG II aircraft are projected to increase over the 20-year planning horizon. Forecasts of future ADG II activity were presented in the previous section, and a summary illustration is provided in **Figure 2-6**.

Figure 2-6: Historic and Projected Operations of Design Group II Aircraft



While annual operations of ADG II aircraft have not surpassed the 500+ threshold since 2010, several aircraft that consistently use C29 have wingspans that are just under 49 feet wide. These include the Cessna CJ1, based at the airport (wingspan of 47 feet), and the Beech Airliner 99 (wingspan of 46 feet), operated by Freight Runners Express and Pro Aire Cargo Consultants who both conduct freight forwarding operations for UPS five times a week.

In considering what category to define as the existing and future ADG component, the largest and most consistent operators are summarized in **Table 2-37**. The aircraft are listed in descending order of width (wingspan), with the cumulative (accrued) annual operations provided to show at what point 500 annual operations were eclipsed.

In 2010, 500 annual operations of B-II aircraft were surpassed at the width of the Beech King Air 90, which has a wingspan of 50 feet. In considering recent activity, the annual averages from 2015 to 2019 were considered as well as information from 2019. Using the more current activity data, the 500 annual operation threshold is eclipsed at the width of the Beech Airliner 99, which has a wingspan of 46 feet.

Table 2-37: Largest Regular-Use Aircraft at C29 (Sorted by decreasing Wingspan)

Aircraft Characteristics						Annual Operations[1] Year 2010		Annual Operations[1] ('15 - '19) Avg.		Annual Operations[1] Year 2019	
				Wingspan							
Aircraft	Type	TDG[2]	AAC[3]	ADG[4]	(ft)	Ops/ each	Accrued Total	Ops/ each	Accrued Total	Ops/ each	Accrued Total
B350 - Beech Super King Air 350	Turbo	2	B	II	58	6	6	19	19	10	10
BE20 - Beech 200 Super King	Turbo	2	B	II	58	138	144	54	73	24	34
BE30 - Raytheon 300 Super King	Turbo	2	B	II	58	4	148	4	77	6	40
C56X - Cessna Excel/XLS	Jet	1B	B	II	56	106	254	6	83	4	44
BE9T - Beech F90 King Air	Turbo	1A	B	II	55	8	262	2	85	0	44
PC12 - Pilatus PC-12	Turbo	1A	A	II	53	44	306	25	110	14	58
C25B - Cessna Citation CJ3 [(a)]	Jet	2	B	II	53	18	**324**	37	147	70	128
C550 - Cessna Citation II/Bravo	Jet	2	B	II	52	20	344	5	152	2	130
C560 - Cessna Citation V/Ultra	Jet	2	B	II	52	10	354	12	164	14	144
C208 - Cessna 208 Caravan	Turbo	1A	B	II	52	12	366	4	168	0	144
BE9L - Beech King Air 90 [(b)]	Turbo	2	B	II	50	164	**530**	11	179	8	152
C25A - Cessna Citation CJ2	Jet	2	B	II	50	122	652	42	221	16	168
C441 - Cessna Conquest	Turbo	1A	B	II	49	26	678	13	234	0	168
C501 - Cessna I/SP	Jet	2	B	I	47	6	684	11	246	4	172
C525 - Cessna CitationJet/CJ1	Jet	1A	B	I	47	52	736	137	**383**	114	**286**
BE99 - Beech Airliner 99 [(c)]	Turbo	1A	B	I	46	18	754	338	**721**	420	**706**

Notes on Aircraft:

(a) An existing tenant expressed a desire to relocate their CJ3 from MSN to C29. (+250 annual ops - see Appendix D)

(b) 500+ operations of B-II aircraft were last seen in Year 2010 by aircaft like the Beech King Air 90 or larger.

(c) Recent B-II operations have been under 500 annually, but the Beech Airliner 99 and Cessna CJ1 are near ADG-II wingspans

Definitions:

[1] An operation is defined as one takeoff or one landing. A trip to and from the airport would count as two (2) operations

[2] TDG: Taxiway Design Group (determined by the wheel configuration of the aircraft)

[3] AAC: Aircraft Approach Category (approach speed of the aircraft). Category A: < 91 knots. Category B: 91 to 121 knots.

[4] ADG: Airplane Design Group (based on wingspan). ADG-I aircraft are less than 49' wide. ADG-II aircraft are 49' to 79' wide.

Sources:

Number of Annual IFR Operations - FAA's Traffic Flow Management System Counts (TFMSC);

Approach Categories and Design Group from FAA Aircraft Database - https://www.faa.gov/airports/engineering/aircraft_char_database/

As shown in **Table 2-36** and **Table 2-37** above, the most demanding design group of aircraft that makes regular use of C29 and surpasses the regular use threshold of 500 operations per year have wingspans 46 feet wide or larger. This corresponds to an ADG I designation; however, it is recommended that C29 still plan and protect for ADG II requirements as part of their future facility planning. While activity of ADG II aircraft has been down in recent years, C29 has still averaged roughly 240 annual operations since 2015. It is anticipated that ADG II aircraft will continue consistent, repeated use of the Airport and will once again exceed 500 operations over the 20-year planning horizon as business and air freight operations increase.

Overall, the aircraft at C29 are currently on the higher end of the ADG-I category and are anticipated to shift to be on the lower end of the ADG-II category over the 20-year planning horizon. While this transition results in a higher design group category, the actual change in aircraft size will be modest and incremental.

Taxiway Design Group (TDG)

The TDG for an aircraft is determined by the dimensions of its wheels. The width of the main wheel gear is factored with its distance to the cockpit. These two dimensions are entered into the chart presented earlier in Table 2-35 to determine which TDG category applies for each aircraft. The value of the TDG is significant as it determines the appropriate width of taxiways and the dimensions of turning movement transitions. As illustrated on **Table 2-38**, TDG values at C29 range from 1-A to 2. Aircraft with wheel configurations in the TDG 1-A category account for the majority of operations at C29. However, many of the larger and more demanding aircraft (Jets and Turboprops), have wheel configurations that fall within the TDG-2 category. In 2010, TDG 2 aircraft came very close to surpassing the regular use threshold of 500 annual operations. Aircraft of this type include many of the Cessna Citation jets (CJ1, CJ2, CJ3, Bravo, Encore) and many of the Beechcraft King Air turboprops. These aircraft all still operate consistently at C29, but not in the same numbers as previously seen in 2010. While the existing activity levels at C29 currently correspond to a TDG 1-A classification, it is recommended that the Airport plan and protect for TDG 2 standards as operations of these aircraft are projected to increase over the course of the 20-year planning horizon.

Table 2-38: Taxiway Design Group Categories and Corresponding Annual Operations

Taxiway Design Group (TDG)	Annual Operations (Year 2010)	Annual Operations (Year '15-'19 Avg.)
2	492	200
1-B	142	34
1-A	2,506	2,305

Note: An operation is defined as one takeoff or one landing. A trip to and from the airport would count as two (2) operations

Source: Annual IFR Operations - FAA's Traffic Flow Management System Counts

Source: FAA Aircraft Characteristics Database - https://www.faa.gov/airports/engineering/aircraft_char_database/

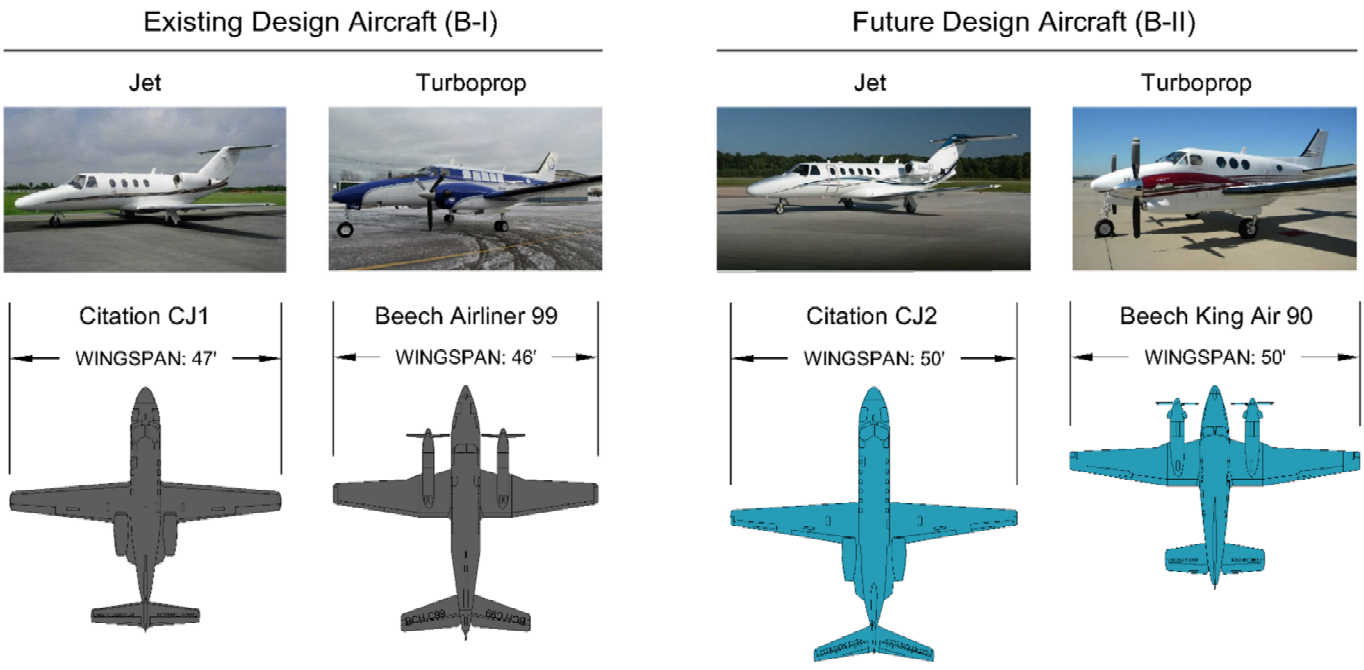
The existing and future design aircraft are summarized in **Table 2-39**. The existing design aircraft is a B-I and TDG 1-A aircraft, such as the Beech Airliner 99 (turboprop) and the Cessna CJ1 (jet). The future design

aircraft is a B-II and TDG 2 aircraft such as the Beechcraft King Air 90 (turboprop) or the Cessna Citation CJ2 (jet).

Table 2-39: Existing and Future Design Aircraft

Design Category	Exisitng Design Aircraft	Future Design Aircraft
Runway Design Code (RDC)	B-I	B-II
Aircraft Approach Category (AAC)	B	B
Approach Speed (knots)	91 or greater, but less than 121	91 or greater, but less than 121
Design Aircraft (Jet):	Cessna Citation CJ1 (108 knots)	Cessna Citation CJ2 (114 knots)
Design Aircraft (Turboprop):	Beechcraft Airliner 99 (107 knots)	Beechcraft King Air 90 (100 knots)
Airplane Design Group (ADG)	I	II
Wingspan (feet)	< 49 feet	49 - <79 feet
Design Aircraft (Jet):	Cessna Citation CJ1 (47 feet)	Cessna Citation CJ2 (50 feet)
Design Aircraft (Turboprop):	Beechcraft Airliner 99 (46 feet)	Beechcraft King Air 90 (50 feet)
Taxiway Design Group (TDG)	TDG 1-A	TDG-2
Design Aircraft (Jet):	Cessna Citation CJ1	Cessna Citation CJ2
Design Aircraft (Turboprop):	Beechcraft Airliner 99	Beechcraft King Air 90

Source: FAA Advisory Circular 150/5300-13A; Mead & Hunt



2.11. Forecast Summary and TAF Comparison

Activity at the Middleton Municipal Airport (C29) has been consistent and stable over the past decade with trends showing modest increases in several indicators like fuel sales, based aircraft, air-freight deliveries, and the annual operations of turbine-powered aircraft (small jets and turbo-props).

As the airport does not have a control tower, data/counts on the overall year-to-year activity are not available. However, other reporting sources were inventoried to provide the best estimate of the total annual operations conducted in 2019. These included a review of flight plans filed under IFR conditions, e-mailed responses from based tenants regarding their number of operations in 2019, and information provided from Morey Airplane Company (FBO) and Capital Flight (SASO) regarding their hours flown for flight training, charter service, and maintenance. Through this inventory, 41,342 operations were estimated to have occurred at C29 last year. While this number is slightly higher than what has been previously reported as part of the reoccurring inspections between the Airport and WisBOA (40,510), it is within 2.1 percent, and suggests that the existing activity generally falls in this range.

In 2016, C29 saw the startup of a new based company, Capital Flight, who now operate as a Specialized Aviation Service Operator (SASO), providing many of the traditional services of an FBO, with the exception of fuel sales. The presence of another FBO-like facility suggests that interest in general aviation within the Madison and Dane County area is robust. C29 sold its highest volume of fuel in 2019. The demand for additional aircraft storage has also been ongoing and strong. Despite the last hangar being constructed in 2016, C29 saw its number of based aircraft increase from 86 to 100 since that time, with greater numbers of aircraft being stored in the existing hangars and no spaces currently available. C29 has a list of 36 people who have inquired about the possibility of storing an aircraft there since 2018.

While recreation and flight training are a large portion of the activity, C29 also serves as an important transportation link for business. The growth in e-commerce over the past decade has brought on an increase in air delivery by companies like Freight Runners Express and Pro Aire Cargo Consultants who collectively conduct operations to and from C29 for UPS five times a week and who saw their highest annual number of operations at C29 in 2019. From outreach to a few area companies known to operate at C29, there is a desire to make greater use of the airport.

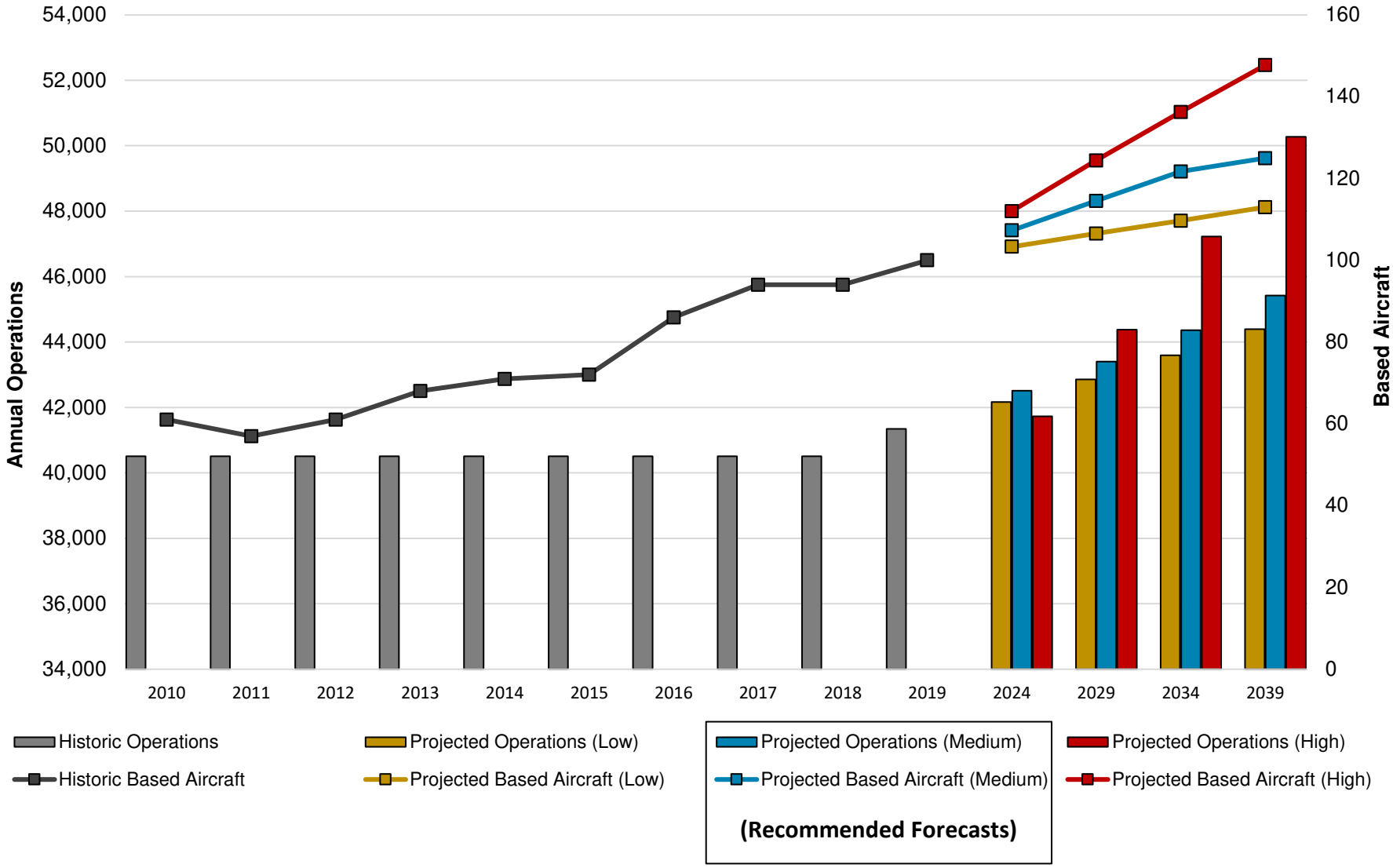
As stated earlier in Section 2.4, the forecasts presented in this chapter were developed based on demand and assumed no constraints to future growth. Recent trends in aviation activity were considered with projected socio-economic indicators and feedback from area businesses to develop low-, medium- and high-growth forecast scenarios. The extent to which the forecasted demand can feasibly be met will be evaluated in later chapters of the master plan through the identification of facility requirements and through an evaluation of alternatives. A summary and comparison of aviation activity forecasted under each of these growth conditions is provided in **Table 2-40** and illustrated within **Figure 2-7**. In consideration of the range of forecasted activity evaluated, the medium-growth scenario was identified as the recommended forecast for each category of aviation activity. This selection was based on consideration of local conditions and growth assumptions that are more fully detailed and summarized within the previous sections of this chapter. The medium growth forecasts are recommended for quantifying the 20-year facility requirements within the following chapter of the master plan.

Table 2-40: Projections Summary – Low, Medium and High-Growth Forecasts

Year	Commercial Operations	General Aviation Operations	Military Operations	Total Operations	Jet & Turboprop Operations	Based Aircraft
Historical:						
2010	2,500	38,000	10	40,510	988	61
2011	2,500	38,000	10	40,510	838	57
2012	2,500	38,000	10	40,510	774	61
2013	2,500	38,000	10	40,510	572	68
2014	2,500	38,000	10	40,510	530	71
2015	2,500	38,000	10	40,510	866	72
2016	2,500	38,000	10	40,510	1,076	86
2017	2,500	38,000	10	40,510	978	94
2018	2,500	38,000	10	40,510	898	94
2019	778	40,560	4	41,342	908	100
Low-Growth Projections:						
2024	**814**	**41,342**	**10**	**42,166**	**1,024**	**103**
2029	**852**	**41,995**	**10**	**42,856**	**1,134**	**107**
2034	**891**	**42,690**	**10**	**43,591**	**1,249**	**110**
2039	**932**	**43,447**	**10**	**44,389**	**1,366**	**113**
CAGR ('19-'39):	*0.91%*	*0.34%*	*4.69%*	*0.36%*	*2.06%*	*0.61%*
Medium-Growth Projections:						
2024	**894**	**41,610**	**10**	**42,514**	**1,201**	**107**
2029	**1,029**	**42,362**	**10**	**43,401**	**1,357**	**115**
2034	**1,185**	**43,169**	**10**	**44,365**	**1,492**	**122**
2039	**1,368**	**44,041**	**10**	**45,419**	**1,622**	**125**
CAGR ('19-'39):	*2.86%*	*0.41%*	*4.69%*	*0.47%*	*2.94%*	*1.12%*
High-Growth Projections:						
2024	**951**	**40,763**	**10**	**41,724**	**1,187**	**112**
2029	**1,165**	**43,204**	**10**	**44,379**	**1,440**	**124**
2034	**1,431**	**45,781**	**10**	**47,222**	**1,710**	**136**
2039	**1,761**	**48,505**	**10**	**50,276**	**2,015**	**148**
CAGR ('19-'39):	*4.17%*	*0.90%*	*4.69%*	*0.98%*	*4.07%*	*1.97%*

Sources:
Historic GA, Commercial & Military Operations (2003 - 2018) - FAA Terminal Area Forecasts (TAF)
Historic Operations (2019) Based on Outreach to Tenants, FBOs and IFR data
Historic Turbine Aircraft Operations (2010 - 2019) - FAA Traffic Flow Management System Counts

Figure 2-7: Summary of Projected Operations and Based Aircraft: Low, Medium and High-Growth Forecasts



A summary of the CAGR projections of the low-, medium- and high-growth forecasts is presented in specific FAA-required tabular format in **Table 2-41** through **Table 2-43**, respectively.

As noted in earlier sections, forecasts that differ from the FAA's Terminal Area Forecast (TAF) by more than 10 percent in the five-year period, and by more than 15 percent in the 10-year period are considered inconsistent with the TAF. Any substantial differences between the forecasts presented in this chapter and the TAF must be resolved before moving onto subsequent sections of the master plan. **Table 2-44** presents forecasted levels of activity against the TAF for C29, considering the low-, medium-, and high-growth forecasting scenarios.

In considering the recommended medium growth forecast, Table 2-44 illustrates that the based aircraft projections are outside of 10 percent in the five-year period and outside 15 percent in the 10-year period when compared to the current 2019 FAA TAF projection. Recent inventory updates and entries into the National Base Aircraft Inventory Program (NBAIP) are not reflected in the current TAF forecast. Additionally, the TAF projections show no change in based aircraft at all over the 20-year planning horizon. The FAA TAF projection of based aircraft at C29 should be revised to reflect the recent inventory updates completed by the Airport, which have been validated with the NBAIP. If the TAF were updated to reflect the current validated number of based aircraft (100), the forecast projections would be within the allowable tolerances. It is also recommended that the TAF projections be adjusted to consider the local demand and number of hangar inquiries the Airport has received since 2018 as documented in Appendix B.

In considering the recommended medium growth forecast for operations, Table 2-44 illustrates that the projections of both Total and General Aviation operations are within the allowable tolerances of the FAA TAF projections for all segments of the 20-year planning horizon.

Table 2-41: FAA Template – Forecasted Levels and Growth Rates (Low-Growth Scenario)

Specify base year: 2019		Low-Growth Forecasts				Average CAGR[1]			
	2019	2024	2029	2034	2039	2024	2029	2034	2039
Operations	Base Year Level	Base Year + 5yr.	Base Year + 10yr.	Base Year + 15yr.	Base Year + 20yr.	Base Year + 5yr.	Base Year + 10yr.	Base Year + 15yr.	Base Year + 20yr.
Itinerant									
Air carrier	0	0	0	0	0				
Commuter/air taxi	358	373	388	403	420	0.80%	0.80%	0.80%	0.80%
Air Freight	420	441	464	488	512	1.00%	1.00%	1.00%	1.00%
Total Commercial Operations	778	814	852	891	932	0.91%	0.91%	0.91%	0.91%
General aviation	12,654	13,296	13,808	14,363	14,977	0.99%	0.88%	0.85%	0.85%
Military	2	4	4	4	4	14.87%	7.18%	4.73%	3.53%
Local									
General aviation	27,906	28,046	28,186	28,328	28,469	0.10%	0.10%	0.10%	0.10%
Military	2	6	6	6	6	24.57%	11.61%	7.60%	5.65%
Total General Aviation Ops	40,560	41,342	41,995	42,690	43,447	0.38%	0.35%	0.34%	0.34%
TOTAL OPERATIONS	41,342	42,166	42,856	43,591	44,389	0.40%	0.36%	0.35%	0.36%
Turbine Operations	908	1,024	1,134	1,249	1,366	2.43%	2.25%	2.15%	2.06%
Based Aircraft									
Single Engine (Nonjet)	86	88	89	91	93	0.42%	0.40%	0.38%	0.37%
Multi Engine (Nonjet)	8	9	11	12	13	3.05%	2.90%	2.46%	2.45%
Jet Engine	2	2	3	3	3	0.66%	2.90%	3.38%	2.67%
Helicopter	4	4	4	4	4	0.66%	-0.70%	-0.27%	-0.06%
TOTAL BASED AIRCRAFT	100	103	107	110	113	0.66%	0.63%	0.62%	0.61%

[1] *CAGR = Compound Annual Growth Rate*

Table 2-42: FAA Template – Forecasted Levels and Growth Rates (Medium-Growth Scenario)

Specify base year: 2019		Medium-Growth Forecasts				Average CAGR[1]			
	2019	2024	2029	2034	2039	2024	2029	2034	2039
Operations	**Base Year Level**	**Base Year + 5yr.**	**Base Year + 10yr.**	**Base Year + 15yr.**	**Base Year + 20yr.**	**Base Year + 5yr.**	**Base Year + 10yr.**	**Base Year + 15yr.**	**Base Year + 20yr.**
Itinerant									
Air carrier	0	0	0	0	0				
Commuter/air taxi	358	395	436	482	532	2.00%	2.00%	2.00%	2.00%
Air Freight	420	499	592	704	836	3.50%	3.50%	3.50%	3.50%
Total Commercial Operations	778	894	1,029	1,185	1,368	2.82%	2.83%	2.85%	2.86%
General aviation	12,654	13,564	14,176	14,842	15,572	1.40%	1.14%	1.07%	1.04%
Military	2	4	4	4	4	14.87%	7.18%	4.73%	3.53%
Local									
General aviation	27,906	28,046	28,186	28,328	28,469	0.10%	0.10%	0.10%	0.10%
Military	2	6	6	6	6	24.57%	11.61%	7.60%	5.65%
Total General Aviation Ops	40,560	41,610	42,362	43,169	44,041	0.51%	0.44%	0.42%	0.41%
TOTAL OPERATIONS	41,342	42,514	43,401	44,365	45,419	0.56%	0.49%	0.47%	0.47%
Turbine Operations	908	1,201	1,357	1,492	1,622	5.76%	4.10%	3.37%	2.94%
Based Aircraft									
Single Engine (Nonjet)	86	88	93	97	99	0.46%	0.76%	0.83%	0.69%
Multi Engine (Nonjet)	8	13	15	16	17	9.99%	6.16%	4.65%	3.99%
Jet Engine	2	3	4	5	5	9.99%	6.57%	6.11%	4.69%
Helicopter	4	3	3	4	4	-4.25%	-1.51%	-0.61%	-0.32%
TOTAL BASED AIRCRAFT	100	107	115	122	125	1.42%	1.36%	1.32%	1.12%

[1]*CAGR = Compound Annual Growth Rate*

Table 2-43: FAA Template – Forecasted Levels and Growth Rates (High-Growth Scenario)

Specify base year: 2019		High-Growth Forecasts				Average CAGR[1]			
	2019	2024	2029	2034	2039	2024	2029	2034	2039
Operations	**Base Year Level**	**Base Year + 5yr.**	**Base Year + 10yr.**	**Base Year + 15yr.**	**Base Year + 20yr.**	**Base Year + 5yr.**	**Base Year + 10yr.**	**Base Year + 15yr.**	**Base Year + 20yr.**
Itinerant									
Air carrier	0	0	0	0	0				
Commuter/air taxi	358	415	481	558	647	3.00%	3.00%	3.00%	3.00%
Air Freight	420	536	684	873	1,114	5.00%	5.00%	5.00%	5.00%
Total Commercial Operations	778	951	1,165	1,431	1,761	4.10%	4.12%	4.15%	4.17%
General aviation	12,654	12,577	14,735	17,026	19,461	-0.12%	1.53%	2.00%	2.18%
Military	2	4	4	4	4	14.87%	7.18%	4.73%	3.53%
Local									
General aviation	27,906	28,186	28,469	28,755	29,044	0.20%	0.20%	0.20%	0.20%
Military	2	6	6	6	6	24.57%	11.61%	7.60%	5.65%
Total General Aviation Ops	40,560	40,763	43,204	45,781	48,505	0.10%	0.63%	0.81%	0.90%
TOTAL OPERATIONS	41,342	41,724	44,379	47,222	50,276	0.18%	0.71%	0.89%	0.98%
Turbine Operations	908	1,187	1,440	1,710	2,015	5.50%	4.72%	4.31%	4.07%
Based Aircraft									
Single Engine (Nonjet)	86	94	102	108	112	1.81%	1.72%	1.51%	1.34%
Multi Engine (Nonjet)	8	11	14	19	26	6.96%	5.99%	5.96%	6.04%
Jet Engine	2	3	4	5	6	10.93%	8.09%	6.91%	5.57%
Helicopter	4	4	4	4	4	0.00%	-0.69%	0.14%	-0.40%
TOTAL BASED AIRCRAFT	100	112	124	136	148	2.29%	2.21%	2.08%	1.97%

[1] *CAGR = Compound Annual Growth Rate*

Table 2-44: FAA Template – Comparison of Airport Forecasts to FAA TAF

					Recommended Forecasts - Medium Growth			
	Year	2019 TAF[1]	Low Growth Forecast (LGF)	LGF to 2019 TAF (%)	Medium Growth Forecast (MGF)	MGF to 2019 TAF (%)	High Growth Forecast (HGF)	HGF to 2019 TAF (%)
Based Aircraft								
Base Yr. Level	2019	94	100	*6.4%*	100	*6.4%*	100	*6.4%*
Base Yr. + 5yr.	2024	94	103	*9.9%*	107	*14.2%*	112	*19.1%*
Base Yr. + 10yrs.	2029	94	107	*13.3%*	115	*21.8%*	124	*32.4%*
Base Yr. + 15yrs.	2034	94	110	*16.7%*	122	*29.5%*	136	*44.9%*
Base Yr. + 20yrs.	2039	94	113	*20.2%*	125	*33.0%*	148	*57.2%*
GA Operations								
Base Yr. Level	2019	38,447	40,560	*5.5%*	40,560	*5.5%*	40,560	*5.5%*
Base Yr. + 5yr.	2024	40,763	41,342	*1.4%*	41,610	*2.1%*	40,763	*0.0%*
Base Yr. + 10yrs.	2029	43,204	41,995	*-2.8%*	42,362	*-1.9%*	43,204	*0.0%*
Base Yr. + 15yrs.	2034	45,781	42,690	*-6.8%*	43,169	*-5.7%*	45,781	*0.0%*
Base Yr. + 20yrs.	2039	48,505	43,447	*-10.4%*	44,041	*-9.2%*	48,505	*0.0%*
Total Operations								
Base Yr. Level	2019	40,957	41,342	*0.9%*	41,342	*0.9%*	41,342	*0.9%*
Base Yr. + 5yr.	2024	43,273	42,166	*-2.6%*	42,514	*-1.8%*	41,724	*-3.6%*
Base Yr. + 10yrs.	2029	45,714	42,856	*-6.3%*	43,401	*-5.1%*	44,379	*-2.9%*
Base Yr. + 15yrs.	2034	48,291	43,591	*-9.7%*	44,365	*-8.1%*	47,222	*-2.2%*
Base Yr. + 20yrs.	2039	51,015	44,389	*-13.0%*	45,419	*-11.0%*	50,276	*-1.4%*

Notes: [1] 2019 FAA Terminal Area Forecast (TAF) Data Obtained January 2020

Appendix A – Inventory of Year 2019 Operations

Appendix A: Year 2019 Based Aircraft & Operations Inventory

Middleton Municipal Airport - Morey Field (C29)

Color Legend:

= Morey Airplane Company (FBO)
= Capital Flight (SASO)
= Based Aircraft (2019 Operations provided)
= Based Aircraft (2019 Operations estimated)

Based Aircraft #	N-#	Make/Model	Engine Type	Owner	Date Added to National Based Inventory	Owner Provided 2019 Ops Data?	City from FAA Registration	2019 Operations
1	N1040F	Cessna 185	Single	Everson, Mike	7/16/2019	No	BELLEVILLE WI	96
2	N114JM	Scout - Amercian Champi	Single	C29 Taildragger	7/11/2019	No	MIDDLETON WI	96
3	N1249C	CIRRUS SR20	Single	DANE AVIATORS LLC	12/13/2011	No	MIDDLETON WI	96
4	N1251S	Cessna 182	Single	PT Air	7/16/2019	No	MADISON WI	96
5	N1271G	Cessna C310Q	Multi	Richard Schmidt	6/15/2017	Yes	VERONA WI	60
6	N127CE	Tecnam P2008	Single	Walt Goodman	6/15/2017	Yes	MADISON WI	292
7	N12AC	VANS RV-8	Single	CARROLL, ALAN	12/13/2011	No	MC FARLAND W	96
8	N1324Q	COLUMBIA LC41-550FG	Single	TECHNOFLIGHT (Prof. van	12/13/2011	Yes	VERONA WI	55
9	N1452W	Columbia 400	Single	TOT Aviation LLC - Ahmed	7/16/2019	Yes	MADISON WI	150
10	N150DR	BEECH F33A	Single	VAN DEN HEUVEL, MICHA	12/13/2011	Yes	MIDDLETON WI	62
11	N156RA	American Champion Citat	Single	Bruce Case	6/15/2017	Yes	VERONA WI	260
12	N157DF	Cessna 172L	Single	Gepner, Jeff	7/17/2019	No	MADISON WI	96
13	N17082	Beech Stagerwing	Single	Scaletta, Sam	7/16/2019	No	MIDDLETON WI	96
14	N1765Q	CESSNA 150	Single	AIRPLAY LLC	5/14/2007	No	SUN PRAIRIE W	96
15	N17MH	CESSNA 340-A	Multi	GREG WILLIAMS	5/14/2007	No	VERONA WI	96
16	N18MR	CESSNA 340-A	Multi	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	232
17	N190CE	Cirrus SR20	Single	CAPITAL FLIGHT (LEASIN	7/16/2019	Yes	MADISON WI	1,353
18	N2010B	LUSCOMBE	Single	WEIDEMANN, WENDELL S	12/13/2011	Yes	ADDISON AL	132
19	N205KD	Mooney M20T	Single	Kuhn, Marcus	7/16/2019	Yes	MADISON WI	125
20	N215G	Vans BV-9	Single	Neidinger, Todd	7/16/2019	No	MADISON WI	96
21	N222HY	Aviat Husky	Single	JOE MCDONOUGH	5/14/2007	No	MIDDLETON WI	96
22	N23115	PIPER J3-CUB	Single	SAM SCALETTA	5/14/2007	No	MIDDLETON WI	96
23	N234JR	Bell	Helicopter	John Hallick - Air Enterprise	6/15/2017	Yes	BLACK EARTH V	26
24	N2376V	CESSNA 182S	Single	PEYROT, ERIC	7/23/2015	Yes	SUMMERLAND I	70
25	N2390P	PIPER PA-22-150	Single	LUBBEN, THOMAS	12/14/2011	Yes	MADISON WI	70
26	N242KA	Cessna C340	Multi	Wheels Up Aviation	7/11/2019	No	MOUNT HOREB	96
27	N2437F	Cessna 180	Single	Kuersten, Scott	7/16/2019	No	MIDDLETON WI	96
28	N24V	Kitfox Model 5	Single	Scott Weidemann	7/11/2019	Yes	MADISON WI	134
29	N25850	CUB	Single	MOREY, RICHARD	7/23/2015	Yes	MIDDLETON WI	96
30	N25ME	SIAI-MARCHETTI SF260	Single	FALCON SQUADRON INC	12/13/2011	No	WILMINGTON D	96
31	N264JG	BEECHCRAFT BONANZA	Single	SAM SCALETTA	5/14/2007	No	MIDDLETON WI	96
32	N281WY	Aviat Husky	Single	Schmidt, Keven (Now has 3	7/16/2019	Yes	Single Engine	100
33	N283WY	Aviat Husky	Single	CAPITAL FLIGHT (LEASIN	7/16/2019	Yes	MADISON WI	1,503
34	N288WT	Cirrus SR22	Single	Noel Development Group	7/11/2019	No	MADISON WI	96
35	N299CW	CESSNA 525	Jet	JBI HOLDING LLC - Todd E	12/13/2011	Yes	MADISON WI	88
36	N2ED	Stolp Aeroduster	Single	Roger Stuckey	6/15/2017	Yes	MADISON WI	46
37	N3013Z	PIPER WARRIOR II	Single	ZAKOS, DEAN	7/23/2015	Yes	MIDDLETON WI	140
38	N30275	Cessna 177A	Single	Doug Tomlinson	6/15/2017	No	WAUNAKEE WI	96
39	N3081E	CESSNA T-182	Single	WILLIAMS GREGORY B	5/14/2007	No	VERONA WI	96
40	N3238R	Robinson R44	Helicopter	Sublime Aerials LLC	7/16/2019	No	MADISON WI	96
41	N323BS	ACROSPORT 2	Single	BOB DAVIS	5/14/2007	No	WAUNAKEE WI	96
42	N33234	PIPER J3-CVB	Single	STIER, PETER A	5/14/2007	No	BELLEVILLE WI	96
43	N344DD	Cirrus SR20	Single	CAPITAL FLIGHT (LEASIN	7/16/2019	Yes	MADISON WI	1,353
44	N344SR	Cessna 182N	Single	Scott Cabot	6/15/2017	Yes	MIDDLETON WI	50
45	N3477E	CESSNA 172-N	Single	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	5,055
46	N352SH	Aerostar Yak 52	Single	Love, Mike	7/16/2019	No	MAZOMANIE WI	96

Appendix A: Year 2019 Based Aircraft & Operations Inventory

Middleton Municipal Airport - Morey Field (C29)

Color Legend:

= Morey Airplane Company (FBO)
= Capital Flight (SASO)
= Based Aircraft (2019 Operations provided)
= Based Aircraft (2019 Operations estimated)

Based Aircraft #	N-#	Make/Model	Engine Type	Owner	Date Added to National Based Inventory	Owner Provided 2019 Ops Data?	City from FAA Registration	2019 Operations
47	N3530Z	Cessna T182	Single	Middleton Aviaiton Associat	7/11/2019	Yes	MADISON WI	300
48	N37SL	Aviat A-1B	Single	Ross Wilke	12/7/2015	No	MANITOWISH W	96
49	N416CM	CITATION MUSTANG	Jet	LEMON, RICK	7/23/2015	Yes	MIDDLETON WI	316
50	N425GC	Cessna 425	Multi	Resiak LLC - Gary Bunz	7/16/2019	Yes	MADISON WI	500
51	N4287A	Cessna 340	Multi	Oak Tree Ventures LLC - Ja	7/16/2019	Yes	MADISON WI	85
52	N4338Z	Piper PA-18 SUPER CUB	Single	BROST, ARIN	7/23/2015	Yes	DE FOREST WI	104
53	N438ER	CESSNA 172S	Single	MOREY AIRPLANE CO INC	12/13/2011	Yes	MIDDLETON WI	3,275
54	N439ER	CESSNA 172S	Single	PLUMB, JANET	12/13/2011	No	VERONA WI	96
55	N43JW	Aviat Husky	Single	Woodford, Jack	7/16/2019	Yes	MADISON WI	464
56	N43LL	Aviat Husky	Single	Glasair III Investors - Dave	7/16/2019	Yes	MIDDLETON WI	55
57	N4609S	Cessna 182RG	Single	Mark Warshauer	6/12/2008	Yes	MIDDLETON WI	34
58	N4679Y	CESSNA T210N	Single	L W ALLEN INC - Paul Fah	12/13/2011	Yes	OREGON WI	66
59	N475TD	RV10	Single	SCHWARTZ, DAVID	7/23/2015	No	MIDDLETON WI	96
60	N4777H	CESSNA 152	Single	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	1,745
61	N480MM	Engstrom 480B	Helicopter	Aviation LLC - Tim Cornett	10/15/2019	Yes	MADISON WI	50
62	N4868A	CESSNA 310-R	Multi	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	8
63	N4879D	CESSNA 172-N	Single	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	4,165
64	N5056L	Lake Amphibian	Single	Lemon, Rick	7/16/2019	No	MIDDLETON WI	96
65	N505SM	Piper Super Cub	Single	Brian Natoli	6/15/2017	No	MADISON WI	96
66	N50793	Cessna 150J	Single	Weidemann, Wendell S	7/16/2019	Yes	MADISON WI	134
67	N525LL	GLASAIR III	Single	GLASAIR INVESTORS III L	12/13/2011	Yes	MIDDLETON WI	50
68	N52828	Cessna 177RG	Single	Marc Jacobson	12/7/2015	Yes	FITCHBURG WI	80
69	N52938	Mooney M20K	Single	Beck, Justin	7/16/2019	No	MADISON WI	96
70	N5303T	Cessna 172SP	Single	MOREY AIRPLANE CO INC	6/12/2008	Yes	MIDDLETON WI	3,130
71	N5393G	Beech Baron G58	Multi	Adventure Ag Holding LLC	7/16/2019	No	CROSS PLAINS	96
72	N577PJ	JP1 - Piper Super Cub?	Single	Jeff Plantz	12/7/2015	Yes	MADISON WI	84
73	N608FR	Cirrus SR20	Single	Frazer, Matt	7/16/2019	No	WAUNAKEE WI	96
74	N6334W	CESSNA 182T	Single	COLWELL, KEVIN	7/23/2015	Yes	MIDDLETON WI	276
75	N6629F	PIPER CHEROKEE 6	Single	PETER LUEBKE	5/14/2007	No	MADISON WI	96
76	N669SR	CESSNA 182N	Single	CABOT, SCOTT	7/23/2015	Yes	CROSS PLAINS	50
77	N6830K	Cirrus SR22	Single	Rocket Airways - Brian Pom	7/16/2019	Yes	VERONA WI	200
78	N68V	PIPER PA-28-180	Single	CALDARARU, ANDREI	12/14/2011	No	MADISON WI	96
79	N70739	CESSNA 152	Single	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	2,469
80	N7111S	CESSNA 182-P	Single	HUTSON, PAUL & LARSON	5/14/2007	Yes	VERONA WI	96
81	N7139D	Cessna 182	Single	Benjamin, Ralph	7/16/2019	No	FITCHBURG WI	96
82	N726PD	Cirrus SR22	Single	CAPITAL FLIGHT (LEASIN	7/16/2019	Yes	VERONA WI	1,353
83	N74424	Bellanca 14-13-2	Single	Landucci, Williams	7/16/2019	Yes	MIDDLETON WI	96
84	N756KC	CESSNA U206G	Single	SCALETTA ENTERPRISES	12/13/2011	No	MIDDLETON WI	96
85	N75706	CESSNA 152	Single	MOREY AIRPLANE CO INC	5/14/2007	Yes	MIDDLETON WI	4,259
86	N7610H	Piper Super Cub PA-18	Single	One Zero Hotel LLC - Jeff F	7/23/2015	Yes	Single Engine	198
87	N7DL	CESSNA 182M	Single	WUBBEN, RYAN	7/23/2015	No	NEENAH WI	96
88	N801LL	ZEINETH CH-801	Single	LARRY LANDUCCI	5/14/2007	Yes	VERONA WI	118
89	N8041M	PIPER PA-32R-301T	Single	SAZ PROPERTIES LLC	5/14/2007	No	MOORESTOWN	96
90	N820V	BEECHCRAFT BONANZA	Single	MILLS, BILL	7/23/2015	Yes	FITCHBURG WI	50
91	N8299A	CESSNA 170B	Single	MOSKOL, FREDRIC - Jame	12/13/2011	Yes	OREGON WI	200
92	N868LE	Cirrus SR22	Single	Norris Lane LLC	7/16/2019	No	MADISON WI	96

Appendix A: Year 2019 Based Aircraft & Operations Inventory

Middleton Municipal Airport - Morey Field (C29)

Color Legend:

= Morey Airplane Company (FBO)
= Capital Flight (SASO)
= Based Aircraft (2019 Operations provided)
= Based Aircraft (2019 Operations estimated)

Based Aircraft #	N-#	Make/Model	Engine Type	Owner	Date Added to National Based Inventory	Owner Provided 2019 Ops Data?	City from FAA Registration	2019 Operations
93	N875LB	Vans RV8	Single	Dombrowski, Greg	1/23/2020	Yes	VERONA WI	200
94	N876FM	Cirrus SR22	Single	No Fear Services	7/16/2019	No	MADISON WI	96
95	N8897P	PIPER PA-24-250	Single	FEY RAY D	5/14/2007	No	MIDDLETON WI	96
96	N890MB	Cessna 182T	Single	Air Enterprises LLC - John H	7/16/2019	Yes	BLACK EARTH W	50
97	N92012	Piper J3 Cub	Single	Capital Flight (Hofeldt's pers	7/16/2019	No	WAUNAKEE WI	150
98	N9566Q	Beech V35	Single	Moskol, Fred & Jake	7/16/2019	No	MADISON WI	96
99	N970PG	American Champion Citab	Single	Susan Schwaab	11/27/2019	No	MADISON WI	96
100	N976SH	Robinson R22	Helicopter	Beck, Justin	7/16/2019	No	WAUNAKEE WI	96

Notes: Based aircraft inventory last confirmed - 10/15/2019 by Airport Manager (Richard Morey);

An 'Operation' is defined as one takeoff or one landing. A trip involving (1) arrival and (1) departure to/from the Airport would count as (2) operations.

96 Annual Operations was the median value of annual operations from the 42 based aircraft owners who provided data on their 2019 operations.

96 Annual Operations (median) were assigned to the 45 based aircraft whose owners did not provide a response regarding their 2019 operations.

Souces: Data on based aircraft from National Based Aircraft Inventory Program via basedaircraft.com; 2019 Operations from based user e-mails & outreach

2019 Operations Inventory - by User Category	2019 Operations
Morey Airplane Company FBO (9 Based Aircraft - Data from Rich Morey):	24,338
Capital Flight SASO (3 Cirrus SR, Husky & Cub - Data from Matt & Jade Hofeldt):	5,712
42 Based Aircraft Respondents (Data provided via e-mail correspondence):	5,716
+ 44 based aircraft (utilized median ops from respondents @ 96 ops/year):	4,224
Freight Runners & Pro-Air Cargo Beech 99 - (from FAA TFMSC Database):	420
Charter / Air-Taxi (from FAA TFMSC Database):	118
Military (from FAA TFMSC Database):	4
Estimate of Non-Based Itinerant Ops (Based on Visitor Log-Books & Morey):	810
Total Inventoried Estimate of 2019 Operations at C29:	**41,342**

Appendix B – Hangar Inquiries (2018 – February 2020)

Appendix B: Hangar Inquiries (2018 - February 2020)

Middleton Municipal Airport (C29)

Inquiry #	Date of Inquiry	Last Name	First Name	Phone Number	Aircraft / Hangar Size	Rent or Own
1	1/2/2018	Wiest,	John	608-345-3877	gyro plane	Rent
2	1/9/2018	Palmer,	Breandon	917-697-8665		Own or Rent
3	3/5/2018	Ederer,	Johnny	608-434-0066	60' x 60'	Own/Build
4	3/13/2018	Kuhn,	Joe	608-279-5125		Rent
5	3/19/2018	VanArtsen,	Stan	608-692-6852		Own or Rent
6	4/12/2018	Pomeroy,	Brian	717-579-5478	Bonanza single	Own or Rent
7	4/18/2018	Wentland,	Mike	608-547-1155	Cherokee	
8	5/1/2018	Wittman,	Shawn	608-208-4629	C150	Own or Rent
9	8/6/2018	Marx,	Phillip	608-228-6089	Colt tripacer	Ret
10	8/6/2018	Sweet,	Eric	815-540-3130	C182	Rent
11	9/12/2018	Runde,	Fred	563-539-4757	Lance Air	Share hangar
12	9/22/2018	Sanden,	Marv	608-751-0103	C205	Own or Rent
13	10/22/2018	Zhuov,	Igor	404-268-1404		
14	12/26/2018	Martin,	Jim	847-343-1670		
15	1/2/2019	Carpenter,	Chris	608-695-1526	Cirrus	Own then Rent
16	2/9/2019	Bowles,	Jeff	608-219-9336	A36	Own or Rent
17	2/13/2019	Tomlinson	Doug	608-849-5666	Cardinal	Own or Rent
18	3/23/2019	Riley,	Shannon	608-358-8198	C172	
19	3/25/2019	Jensen,	Erik	608-345-8701	no A/C yet	Own or Rent
20	3/26/2019	Glenn,	Josh	608-709-7058	60' x 60'	
21	4/8/2019	Demonovic,	Zach	651-315-3005	Taylorcraft VC120	Own or Rent
22	Apr-19	Davis,	Bob	608-234-8868		Own or Rent
23	Apr-19	Ring,	Jim & Mike	608-444-9473	C182	Own or Rent
24	Apr-19	Bunz,	Gary	608-443-4444		
25	May-19	Pomery,	Brian	717-579-4578	Cirrus (50' x 50')	
26	7/10/2019	Arenz,	Chris	608-287-6208	C414	Own then Rent
27	8/12/2019	Plumb,	Donald	657-297-5290	LSA	Own/Rent/Build
28	8/19/2019	Tritz,	Aaron	920-254-0343		Own
29	9/24/2019	Edlund,	Kyle	612-865-6417	C172	Own or Rent
30	10/8/2019	Luo,	Ross	608-609-3919		Own / Rent
31	11/5/2019	Monk,	Steve	715-302-4201	C172	Own then Rent
32	11/19/2019	Hansen,	Ken	608-469-9875	Bonanza A36	Own / Rent (2)
33	12/16/2019	Ralph,	Benjamin	608-575-3998	C182	Own / Rent
34	1/19/2020	Zimmerman,	Mark	262-492-6889	C182	Own / Rent
35	1/21/2020	Zhang,	Weiyu	541-610-5622	RV9	Either
36	2/26/2020	Vick,	Allen	608-444-5304	Vans RV9E	Rent / Own

Sources: Morey Airplane Company & City of Middleton Records

Appendix C – Airport User Survey (2018)

Available online:
https://www.cityofmiddleton.us/DocumentCenter/View/6499/All-response----Existing-User-Survey-1-Results-Summer-2018?bidId=

Appendix D – Correspondence from Business Users

Epic

Mark Opitz
City of Middleton
7426 Hubbard Avenue
Middleton, WI 53562

Dear Mark Opitz,

I am writing today in support of the proposal to extend Morey Field's runway.

The current runway length of 4,000 feet at Morey Field cannot support take-off and landing for midsize or larger jets. In addition, for planes that are able to fly out of Morey Field, the length of Morey's current runway can be prohibitive for using full passenger and weight load. This limitation may deter private owners and charter operators from using Morey Field.

Most importantly, it is unsafe for most business jets to use Morey Field when there is inclement weather. Many flights that have been scheduled to use Morey Field are often rescheduled or diverted to Dane County Regional airport on short notice due to inclement weather. A longer runway would allow pilots and passengers to utilize Morey during inclement weather and eliminate last minute changes for plane, crew, and airport scheduling and staffing.

The extension of Morey Field's runway may bring a significant economic benefit to the Middleton area. Businesses, individuals, and charter operators would be able to hangar planes at Morey that they wouldn't otherwise be able to. Business travelers would also be able to fly into a more convenient location and stay in the Middleton area, rather than flying into other airports lengthening travel to companies they do business with.

Thank you for consideration of the proposal to extend the runway at Morey Field.

Sincerely,

Judith R. Faulkner
CEO
Epic

cc:
Mayor Gurdip Brar
Mike Davis
Middleton Airport Commission members

RECEIVED
OCT - 6 2017
PUBLIC WORKS DEPT.

November 8, 2019

Responses from Epic Systems Corporation

The role and importance that C29 (Morey Field) has in your current and/or future business operations.

The extension of Morey Field's runway may bring a significant economic benefit to the Middleton area. Businesses, individuals, and charter operators would be able to hangar planes at Morey that they wouldn't otherwise be able to. Our business travelers would also be able to fly into a more convenient location and stay in the Middleton area, rather than flying into other airports lengthening travel to companies they do business with in our community.

The existing aircraft that you currently operate at C29, and/or the aircraft you foresee operating in the future.

Epic flies out of Morey for trips using turbo prop planes, small Lear jets (31 and 35), or mid-range jets such as CJ2 or CJ3. The majority of our current trips out of Morey use either a CJ2 or CJ3 jet.

If we need to use a larger plane such as a Hawker or Lear 45, we are only able to use Wisconsin Aviation for these trips at this time.

The number of annual operations you currently conduct to/from C29 and an estimate of how your activity would change both with and without facility improvements to the airport. NOTE: an operation is defined as one (1) takeoff or one (1) landing, therefore one trip to and from the airport counts as (2) operations.

In 2018, Epic used 74 charter flights. Of those, 43 flights were scheduled to go from Morey. Our records show that 28 flights likely took place from Morey and 15 flights were likely diverted to other airports due to inclement weather or other factors. Note that sometimes the charter companies report back to us that they have been diverted elsewhere, but not all the time.

The extent to which the existing facilities at C29 do not meet your current or future demand levels. (Please provide specific details on how much additional runway length, or how much hangar development space is needed).

The current runway length of 4,000 feet at Morey Field cannot support take-off and landing for midsize or larger jets. In addition, for planes that are able to fly out of Morey Field, the length of Morey's current runway can be prohibitive for using full passenger and weight load. This limitation may deter private owners and charter operators from using Morey Field.

It is unsafe for most business jets to use Morey Field when there is inclement weather. Many flights that have been scheduled to use Morey Field are often rescheduled or diverted to Dane County Regional airport on short notice due to inclement weather. A longer runway would allow pilots and passengers to utilize Morey during inclement weather and eliminate last minute changes for plane, crew, and airport scheduling and staffing.

The extent to which weather conditions or other factors limit your use of the airport.

About 30% of our scheduled Morey trips per year are relocated to Wisconsin Aviation or Dane County Regional airport due to the inability to fly out of Morey during inclement weather.

HY CITE ENTERPRISES/LLC

April 24, 2020

Greg Stern
Mead & Hunt, Inc.
2440 Deming Way
Middleton, WI 53562

Dear Mr. Stern:

I appreciate you contacting Hy Cite Enterprises concerning the City of Middleton evaluating the possibility of lengthening the main runway at the Middleton Airport. We have been proponents since 2010 for a longer runway in order to use our corporate jet at the Middleton Airport more frequently. Since that time, we have invested further in the Middleton Community by building our Corporate Headquarters at 3252 Pleasant View Road where we employ more than 300 employees. We have a beautiful view of the airport from our offices. We currently operate a Learjet 70 however the runway length at the Middleton Airport continues to be a significant concern for the pilots. As a result, unless conditions are ideal, our flight operations are typically to and from the Dane County Regional Airport. Although less convenient than Middleton, I have been told that the grooved and longer runways offer a significant margin of safety for jet operations. Hy Cite plans on upgrading our aircraft to a larger mid-size business jet within the next 5 years which would also necessitate a larger hangar to be available at the airport. With flight operations based out of Middleton we would have approximately 150-175 annual operations.

Corporate jet travel is integral to our growing business and my preference would be to base our flight operations at the Middleton Airport where we have a corporate hangar, in close proximity to our Corporate Headquarters and Distribution Center. We currently support over 5,000 Distributors throughout the Americas and frequently bring in small groups of our top Distributors to the Madison area. The ability to land in Middleton would keep 90% of our activities in the Middleton area versus currently using downtown hotels and restaurants. Amongst other 'home airport' criteria, we would consider 5500 feet to be sufficient minimum runway length for the Middleton Airport to support private corporate travel needs.

Like Hy Cite Enterprises, I am aware of other 'local' companies with corporate jet operations who would benefit from the option of using Middleton Airport. Additionally, I am certain that there are jet card holders and fractional users who would benefit from the convenience of flying into and out of Middleton Airport as a gateway to Madison's greater west side.

It is my sincere hope that the City of Middleton sees the airport as a strategic asset that can serve Middleton businesses, attract new businesses to the area and that airport investment and expansion will open the door to future economic development opportunities.

Sincerely,

Erik S. Johnson
Chairman & CEO

HY CITE ENTERPRISES/LLC

June 18, 2014

Mike Davis
City Administrator
City of Middleton
7426 Hubbard Avenue
Middleton, WI 53562

Dear Mr. Davis:

It was great news to hear that the City of Middleton is evaluating lengthening the main runway at the Middleton Airport and is open to input from the business community. You may recall our meeting in August of 2010 when we presented our interest in a longer runway to support basing our corporate jet at the Middleton Airport. Since that time we have taken delivery of a new, more capable corporate jet but the runway length at the Middleton Airport continues to be a concern to the pilots. As a result, unless conditions are ideal our flight operations are typically to and from the Dane County Regional Airport. Although less convenient than Middleton, I have been told that the grooved and longer runways offer a significant margin of safety for jet operations.

Corporate jet operations are integral to our growing business and my preference would be to base our flight operations at the Middleton Airport where we have a corporate hangar, in close proximity to our Middleton based marketing staff and distribution center. Amongst other 'home airport' criteria, we would consider 5000-5500 feet to be an appropriate minimum runway length for the Middleton Airport.

Like Hy Cite Enterprises, I am aware of other 'local' companies with jet operations who would benefit from the option of using Middleton Airport. Additionally, I am certain that there are jet card holders and fractional users who would benefit from the convenience of flying into and out of Middleton Airport as a gateway to Madison's greater west side.

I hope that the City of Middleton sees the airport as a strategic asset that can serve Middleton businesses, attract new businesses to the area and that airport investment and expansion will open the door to future economic development opportunities. Lengthening the runway would be a step in the right direction.

Sincerely,

Erik S. Johnson
Chairman & CEO

MEDEX, LLC

Stone Ridge III
N14 W23833 Stone Ridge Drive Suite 220
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April 23, 2020

Greg Stern, P.E.
Mead & Hunt, Inc | M & H Architecture, Inc.
2440 Deming Way
Middleton, WI 53562

Mr. Stern,

I live in Middleton and I own a hangar at Morey Airport (C29). I operate a Citation Mustang, the smallest jet in the Citation family. I use this aircraft for business trips to Colorado, Minnesota, Wisconsin and Michigan approximately 5-7 times/ month. I do not plan to upgrade to a larger aircraft or increase my frequency of flights in the near future. I would not be able to carry out my business without an aircraft.

At 4000 feet, the paved runway at Morey is barely adequate for my needs. If there is contamination such as snow, ice or heavy rain, I have to divert to Madison. This has occurred several times since I acquired the Mustang. I am very supportive of extending the existing paved runway to 5000 feet for a much improved safety margin. A longer main runway would allow me to land at my home airport with greater frequency. Diverting to Madison is a huge inconvenience and expense.

In addition, a paved north/south runway of 4000 feet would allow me to operate safely when there are severe winds out of the south or north. Even though the runway would be shorter than the main runway, using it when there are strong winds would be safer than fighting severe crosswinds on the main runway. Again, the only current alternative for severe crosswinds from the north or south is to divert to Madison.

I realize there is a lot of opposition to lengthening the runways at Morey. However, a 5000 foot runway would not attract larger aircraft and would make the airport safer for the current tenants.

Although I do not currently need more hangar space, I have inquiries regarding hangar availability frequently. There are currently no hangars available at Morey Airport and a long waiting list. I would support having more hangar space available as part of the Master Plan. Morey Airport could use and additional 40 or more hangars.

I hope this has helped answer your questions. Feel free to contact me at any time.

Sincerely,

Richard Lemon, M.D.

Richard Lemon, M.D. | 608-692-8021

Via Email

May 5, 2020

Greg Stern, P.E.
Mead & Hunt, Inc
2440 Deming Way
Middleton WI 53562

Dear Greg:

I am writing regarding the need for additional runway length at Morey Field (C29). We operate a Glasair III and Husky A1-C200 out of C29 and would like to move our Citation CJ3 to C29.

Current ops with the Husky and Glasair is approximately 150. With the operation of our CJ3 out of C29 in addition to the two aircraft we now operate would involve a total of approximately 400 ops – an increase of 250 ops.

C29 does not currently have enough runway length to operate our CJ3 fully loaded or on a hot day. The runway snow and ice removal also does not meet the minimum standards of a commercial airport. There are many days when we cannot depart from C29 because of runway contamination. More equipment and manpower is needed to make this airport commercial-ready, including the capability of fueling the aircraft with modern, well-maintained equipment. A communications outlet is also necessary via VHF radio to be able to transmit and receive an IFR clearance on the ground before departure from Madison air traffic control and a modern full-service FBO would be a plus.

In addition, a more precise instrument approach is needed to RWY 10 and 28. The lowest ceiling and vis approach today is limited to a 400-foot ceiling and 11/2mi vis on the RNAV LPV to 28 and 650'and 1 miles on the Localizer to 10. Runway lighting is also not adequate to shoot lower vis approaches below 400 feet and 11/2mi vis.

Please feel free to contact me via email dlenz@ncghotels.com should you have any questions or need additional clarification.

Sincerely,

THE NORTH CENTRAL GROUP

David A. Lenz
Founder & Chairman

DAL/mhl

Plastic Ingenuity
thermoforming your vision

Dear Mr. Stern:

The company headquarters for Plastic Ingenuity, Inc is located in Cross Plains, WI. If C29 had adequate infrastructure we would consider moving our flight department from KMSN.

We currently operate a Cessna Citation Encore + and plan to upgrade to a mid-size jet in the next five years. Some of the aircraft being evaluated are the Cessna Citation Latitude, Embraer Praetor 500, Gulfstream G280, and Bombardier Challenger 350.

We currently use C29 only once every several years because we are based at KMSN.

In order to consider basing our flight department at C29 we would require at least:

A 5000-foot-long, 100-foot-wide, grooved runway.

An ILS or RNAV LPV approach to a DA of 250 feet AGL and minimum visibility of 3/4 mile.

Runway End Identifier Lights (REIL), Medium Intensity Runway Edge Lights (MIRL), and a Precision Approach Path Indicator (PAPI).

A DA of 200 feet AGL, a minimum visibility of 1/2 mile, High Intensity Runway Lights (HIRL), and an Approach Light System (ALS) would be of great value.

We would need hangar development space to accommodate a 90 X 90-foot hanger.

Please contact me any time via email, wolcott@plasticingenuity.com or phone 608-798-6198.

Best regards,

Wolcott B. Hansen
Aviation Department Manager
Plastic Ingenuity, Inc.

Plastic Ingenuity • 1017 Park Street • P.O. Box 130 • Cross Plains, WI 53528-9630 • p.608.798.3071 • f.608.798.4452 • www.plasticingenuity.com

GCG
Investments LLC
5105 W. Clayton Road • Madison, Wisconsin 53711 • (608) 443-4444

4/15/2020

Greg Stern, P.E.
Mead & Hunt Inc.

Morey airport, C29 is a tremendous asset to our Middleton community and area business. Having access to a safe local business friendly airport was very valuable to our operations. Our business operated a twin piston and more recently a twin turboprop aircraft. Including the necessary training and recurrency, these hours accounted for very significant portion of its total hours flown and 100+ operations to/from Morey each year. In addition to enabling us to efficiently conduct and grow our businesses over the past 18 years, we have completed several medical mission and patient transfer flights for Middleton area residents. C29's location and accessibility were key to making many of these missions possible.
Over the past 3 years of operations, 60+ % are during the "worst weather months" October to March. Often times we return to Morey at night with IFR or low IFR conditions. Most of the trips we are able to successfully get into Morey however almost every year there are times when either the ceiling is too low for Morey's instrument approaches or runway conditions of ice and blowing snow just do not give enough of a safety margin to land on 4000' runway and come to a full stop. When this occurs, we either divert to Madison or stay where we are until the following day. Morey's 4000' runway is adequate under wet or dry conditions, but the period of time where the safety margin can run dangerously thin is anytime during the fall and winter (6 months) when the icy conditions and crosswinds occur. An extra 1000' feet on the existing runway would definitely provide that necessary margin of safety. Extending and paving the north/south would also greatly improve the safety of airport operations especially for light aircraft and flight training.
I hope Morey Airport can continue to grow with the community and we can improve the safety and infrastructure of this facility.

Garry Bunz

Matthew A. Hofeldt
President
4918 Lantern Hollow Lane
Waunakee, WI 53597
608.332.6110
Corporate Hangar-C29
matt@capital-flight.com
www.capital-flight.com

Dear Mayor Brar and Middleton Common Council members:

As the Common Council considers making appointments to the Airport Master Plan Advisory Committee on Tuesday, we wanted to take this opportunity to offer Capital Flight's services and provide an update on our operation and plans, as well as to ask for your help.

CAPITAL FLIGHT'S CONTRIBUTION TO THE COMMUNITY
Capital Flight is the first aviation-oriented business to establish in Dane County in over 30 years. Since beginning operations out of the facility we built in 2016, Capital Flight has:
- provided hundreds of hours of flight training in the Midwest's most advanced and modern training fleet.
- transacted (bought/sold) nearly 19% of aircraft based at Middleton and dozens more around the world, as well as more than 25 local area hangars since our inception.
- raised over one hundred thousand dollars in 2018 alone at fundraisers hosted in our facility, most recently to help the Middleton Police Department develop its K9 program

Our business directly purchases over 10% of Morey Airplane Company's total annual fuel sales; 7% of which is contributed to the City's Airport Fund. Worth noting that this percentage doesn't count the fuel purchased by pilots we've trained who now make their own purchases or clients flying into and out of the Middleton Airport who visit Capital Flight.

In January, we were honored to be recognized by Cirrus Aircraft as their top performing training center of 2018, out of 90+ centers in the North America--this, after only 2 years since becoming an official Cirrus Aircraft Partner.

Clearly, Capital Flight has a tremendous economic impact on Middleton and the surrounding community. Given our proven track record of unparalleled success, and our compelling vision for the future, we are uniquely positioned to work with the City to plan for the airport's future. We have the experience, initiative, and vision to make this airport one of the City's greatest assets.

ACCOMMODATING FUTURE GROWTH
We want to continue to grow our business at the airport, but we need the City's help to do so.

We have proposed to lease the 9,600 square foot. vacant site directly east of the terminal building in order to construct a state-of-the-art headquarters. We have worked with a local architect to design a standalone building that can be connected in the future to a revamped airport terminal. We also would like the City's support for improvements to our existing headquarter facility.

Mead & Hunt has reviewed our plans and has concluded that the building would not encumber potential runway improvements being studied as part of the master plan process. The mayor has told us that he wants the master plan to be completed before the City makes a decision on the future of this site, but quite frankly, we cannot wait that long.

In recent weeks, we have begun exploring the option of moving our headquarters to Waukesha's Airport. Their airport manager sees our business as a tremendous asset to their field. We wish Middleton embraced Capital Flight in the same manner.

Existing and prospective users of Middleton's airport deserve a welcoming, high quality of service, comparable to what is offered at many other general aviation facilities such as Waukesha, Appleton, and other airports around the country. If you ask many pilots based at the airport, you'll hear that Middleton lags significantly behind.

INVITATION AND OFFER TO HELP
We'd like to invite the mayor, alders, and any member of City committees or staff to visit our headquarters to learn more about our business and vision.

Capital Flight has a lot to offer the City and we would like to be part of the airport planning process. We ask that the mayor and council consider appointing one of us to the master plan advisory committee. Since 2016 We have attended almost every airport commission meeting, but largely as silent voices, desiring to move the needle on the status quo. We have enclosed our applications and resumes for your consideration, and Matt plans to be present at Tuesday's meeting to answer any questions you may have about Capital Flight and the value we bring to the airport and the master planning process.

We also ask that at your next meeting, the Council consider our request to lease the vacant land parcel so we can continue our growth curve and better serve this community we love.

Let's work together to accomplish mutual objectives and take the airport to the next level!

Kind regards,
Matt and Jade Hofeldt

Appendix E – Historical Summary of IFR Operations by Aircraft Type

Appendix E: Historical Sumary of Annual Instrument Flight Rule (IFR) Operations by Aircraft Type

Middleton Municipal Airport - Morey Field (C29)

AAC: Aircraft Approach Category (based on approach speed)
ADG: Airplane Design Group (based on wingspan)
TDG: Taxiway Design Group (based on wheel configuration)

								Annual Operations at (C29)									
Aircraft	Physical Class	No. of Engines	AAC	ADG	TDG	Max. Takeoff Weight	Wingspan (ft)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
AA5 - American AA-5 Traveler	Piston	1	A	I	1A	2,200	31.42	10	10	6	2	18	34	30	26	24	2
AC11 - North American Commander 112	tbd	tbd	A	I	tbd	tbd	0.00	2	4	2	4	2	4	4		4	
BE23 - Beech 23 Sundowner	Piston	1	A	I	1A	tbd	0.00	4	6	4	2		2				
BE24 - Beech 24 Sierra	Piston	1	A	I	1A	tbd	0.00	2			2	2	2				
BE33 - Beech Bonanza 33	Piston	1	A	I	1A	3,500	33.50	38	16	10	32	26	24	28	12	20	14
BE35 - Beech Bonanza 35	Piston	1	A	I	1A	3,125	33.50	86	62	66	60	70	72	78	36	30	48
BE36 - Beech Bonanza 36	Piston	1	A	I	1A	3,650	33.50	134	76	78	66	116	158	184	198	58	46
BE55 - Beech Baron 55	Piston	2	A	I	1A	5,300	37.83	34	46	34	14	22	24	20	12	20	10
C150 - Cessna 150	Piston	1	A	I	1A	1,600	33.17	4	2		2	2		2			
C152 - Cessna 152	Piston	1	A	I	1A	1,675	33.17	4	8	2	4	2	4		2		2
C172 - Cessna Skyhawk 172/Cutlass	Piston	1	A	I	1A	2,650	36.08	258	208	192	206	208	198	156	80	62	82
C177 - Cessna 177 Cardinal	Piston	1	A	I	1A	2,500	35.50	8	10	10	6	10	24	24	12	2	4
C182 - Cessna Skylane 182	Piston	1	A	I	1A	3,100	36.00	146	124	124	100	142	172	118	102	98	88
C210 - Cessna 210 Centurion	Piston	1	A	I	1A	4,000	36.75	76	66	42	34	32	28	12	20	12	12
C240 - Cessna TTx Model T240			A	I									4	12	12	8	10
C310 - Cessna 310	Piston	2	A	I	1A	5,500	36.92	118	120	136	218	156	124	114	86	28	22
C82R - Cessna Skylane RG	Piston	1	A	I	1A	3,100	36.00	24	16	26	26	20	32	36	20	22	14
COL3 - Lancair LC-40 Columbia 400	Piston	1	A	I	1A	3,400	36.08	4		18	32	28	98	124	162	72	16
COL4 - Lancair LC-41 Columbia 400	Piston	1	A	I	1A	3,400	36.08	32	16	58	30	32	52	26	38	34	62
DA40 - Diamond Star DA40	Piston	1	A	I	1A	2,888	38.17	20	4	12	6	18	18	6	4	4	4
DA42 - Diamond Twin Star	Piston	2	A	I	1A	4,407	44.50		2	8					2		
EA50 - Eclipse 500	Jet	2	A	I	1A	5,950	37.25	26	24	26	36	20	14	12	8	2	
EVOT - Lancair Evolution Turbine			A	I									12	6			
M20P - Mooney M-20C Ranger	Piston	1	A	I	1A	2,575	35.00	40	26	24	34	40	40	24	10	84	94
M20T - Turbo Mooney M20K	Piston	1	A	I	1A	2,900	36.08	14	14	12	20	24	8	14	16	12	28
P210 - Riley Super P210			A	I					4		2		4	2	2		2
P28A - Piper Cherokee	Piston	1	A	I	1A	2,400	30.00	56	72	72	70	76	130	108	102	22	16
P28B - Piper Turbo Dakota	Piston	1	A	I	1A	2,900	35.00	6	6	4		4	6		2	4	4
P28R - Cherokee Arrow/Turbo	Piston	1	A	I	1A	2,900	35.42	22	30	24	16	16	14	6	6	10	6
P32R - Piper 32	tbd	tbd	A	I	tbd	tbd	0.00	6	16	16	10	2	4	8	4	4	6
P46T - Piper Malibu Meridian	Turboprop	1	A	I	1A	4,850	43.00	70	4	2	4	2	2	12	18	4	2
PA23 - Piper PA-23	Piston	tbd	A	I	tbd	tbd	0.00		2	4	4		2	2			
PA24 - Piper PA-24	Piston	1	A	I	1A	3,600	36.00	12	12	50	42	34	26	8	2	6	4
PA27 - Piper Aztec	Piston	tbd	A	I	tbd	tbd	0.00	8	4	2	2	2	8	2			2
PA28 - Piper Cherokee			A	I				10	8	8	6	10	10				
PA30 - Piper PA-30	Piston	2	A	I	tbd	tbd	0.00	10	8	4		8	6			4	4
PA31 - Piper Navajo PA-31	Piston	2	A	I	tbd	6,500	40.67	36	34	20	26	10	18	28	26	26	18

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TDG: Taxiway Design Group (based on wheel configuration)

								Annual Operations at (C29)									
Aircraft	Physical Class	No. of Engines	AAC	ADG	TDG	Max. Takeoff Weight	Wingspan (ft)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
PA32 - Piper Cherokee Six	Piston	1	A	I	1A	3,400	32.67	10	24	36	40	44	120	48	30	16	14
PA34 - Piper PA-34 Seneca	Piston	2	A	I	1A	4,750	38.90	38	48	12	30	68	20	10	18	24	4
PA46 - Piper Malibu	Piston	1	A	I	1A	4,340	43.00	10	16	14	14	18	20	28	24	14	12
PAT4 - Piper PA-31T3-500	Piston	2	A	I	tbd	9,000	42.69				14			2	8	8	
S22T - Cirrus SR-22 Turbo			A	I								2			84	174	198
SR20 - Cirrus SR-20	Piston	1	A	I	1A	2,126	38.33	82	102	62	66	50	54	44	90	84	176
SR22 - Cirrus SR 22	Piston	1	A	I	1A	2,358	38.33	86	62	72	66	94	136	112	68	122	162
TBM7 - Socata TBM-7	Turboprop	1	A	I	tbd	7,394	41.60	64	72	26	16	20	8	16	28	8	2
TBM8 - Socata TBM-850	Turboprop	1	A	I	1A	7,394	41.60		8	12	16	8	6	12	22	18	22
TBM9 - Socata TBM	Turboprop	1	A	I	1A	7,394	42.10						4	4	8	16	38
Total A-I Operations:								1,610	1,392	1,330	1,380	1,458	1,746	1,482	1,400	1,160	1,250
BE18 - Beech 18	Piston	2	A	II	1A	9,900	49.67		2		6						
PC12 - Pilatus PC-12	Turboprop	1	A	II	1A	10,450	53.33	44	70	52	38	36	42	34	20	16	14
Total A-II Operations:								44	72	52	44	36	42	34	20	16	14
AEST - Piper Aero Star	Piston	2	B	I	1A	6,850	36.67	4		4					2	2	2
BE10 - Beech King Air 100 A/B	Turboprop	2	B	I	tbd	11,800	45.92	2	2				6	10	6		
BE40 - Raytheon/Beech Beechjet 400/T-1	Jet	2	B	I	1A	16,100	43.50	24	34	10	4		6		4		
BE58 - Beech 58	Piston	2	B	I	1A	5,500	37.83	24	12	26	16	12	20	14	16	54	54
BE60 - Beech 60 Duke	Piston	2	B	I	1A	6,775	39.25		2	2				2			
BE99 - Beech Airliner 99	Turboprop	2	B	I	1A	11,300	45.92	18	20	36	4	6	182	398	352	340	420
C206 - Cessna 206 Stationair	Piston	1	B	I	1A	3,600	36.00	6	4	10	14	8	16	4	8	2	
C25M - Cessna Citation M2	Jet	2	B	I	1A	10,700	47.25							4		8	
C340 - Cessna 340	Piston	2	B	I	1A	6,025	38.11	652	596	490	460	338	334	286	332	188	194
C402 - Cessna 401/402	Piston	2	B	I	1A	6,300	44.17	10	2	274	350	342	178		8	6	4
C414 - Cessna Chancellor 414	Piston	2	B	I	1A	6,750	44.17	140	148	146	84	68	84	50	80	70	44
C421 - Cessna Golden Eagle 421	Piston	2	B	I	1A	7,450	44.17	6	6	14	14	8	2	4		6	2
C425 - Cessna 425 Corsair	Turboprop	2	B	I	1A	8,600	44.17							2		24	18
C500 - Cessna 500/Citation I	Jet	2	B	I	2	11,850	47.08			2					2		
C501 - Cessna I/SP	Jet	2	B	I	2	11,850	47.08	6	8	22	6	8	14	22	16		4
C510 - Cessna Citation Mustang	Jet	2	B	I	1A	8,645	43.17	4	156	200	88	152	122	114	112	92	108
C525 - Cessna CitationJet/CJ1	Jet	2	B	I	1A	10,600	46.92	52	42	84	78	66	164	130	128	150	114
E50P - Embraer Phenom 100	Jet	2	B	I	1B	10,582	40.33					4	2	2			
HDJT - HONDA HA-420 HondaJet	Jet	2	B	I	tbd	tbd	0.00									4	
P180 - Piaggio P-180 Avanti	Turboprop	2	B	I	2	10,810	46.04	2	2	2		6		2			
PAY1 - Piper Cheyenne 1	Piston	2	B	I	tbd	8,700	42.69						4		8	2	
PAY2 - Piper Cheyenne 2	Piston	2	B	I	tbd	9,474	42.69	2		2	2		2				
PAY3 - Piper PA-42-720 Cheyenne 3	Turboprop	2	B	I	2	11,200	47.67						4	2			

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								Annual Operations at (C29)									
Aircraft	Physical Class	No. of Engines	AAC	ADG	TDG	Max. Takeoff Weight	Wingspan (ft)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
PAY4 - Piper Cheyenne 400	Turboprop	2	B	I	2	12,050	47.67				2						
PRM1 - Raytheon Premier 1/390 Premier 1	Jet	2	B	I	1A	12,500	44.50	2							6	2	2
TEX2 - Raytheon Texan 2	tbd	tbd	B	I	tbd	tbd	0.00			10			2	2			
Total B-I Operations:								954	1,034	1,334	1,122	1,018	1,142	1,048	1,080	950	966
AC50 - Aero Commander 500	Piston	2	B	II	1A	6,000	51.71					2					
AC95 - Gulfstream Jetprop Commander 1(	Turboprop	2	B	II	tbd	tbd	0.00							4		2	
B190 - Beech 1900/C-12J	Turboprop	2	B	II	2	16,600	54.50					2	2	2			
B350 - Beech Super King Air 350	Turboprop	2	B	II	2	15,000	57.92	6	6	2		6	10	16	26	32	10
BE20 - Beech 200 Super King	Turboprop	2	B	II	2	12,500	57.92	138	74	82	94	58	72	84	46	46	24
BE30 - Raytheon 300 Super King Air	Turboprop	2	B	II	2	14,000	57.92	4	8	8	2		2	10		2	6
BE9L - Beech King Air 90	Turboprop	2	B	II	2	10,100	50.25	164	88	18	18	18	14	12	10	10	8
BE9T - Beech F90 King Air	Turboprop	2	B	II	1A	10,950	54.50	8	4			2		6	4		
C208 - Cessna 208 Caravan	Turboprop	1	B	II	1A	8,000	52.08	12	8	2	6	6	14	6			
C25A - Cessna Citation CJ2	Jet	2	B	II	2	12,300	49.83	122	52	62	18	38	70	50	50	26	16
C25B - Cessna Citation CJ3	Jet	2	B	II	2	13,870	53.33	18	8	4	12	8	18	8	38	50	70
C25C - Cessna Citation CJ4	Jet	2	B	II	1B	17,110	50.83			2					4		
C441 - Cessna Conquest	Turboprop	2	B	II	1A	9,850	49.33	26	30	28	36	16	26	12	14	14	
C550 - Cessna Citation II/Bravo	Jet	2	B	II	2	14,800	52.17	20	14	12	48	14	4	10	10		2
C551 - Cessna Citation II/SP	Jet	2	B	II	2	14,800	52.17				2				2		
C560 - Cessna Citation V/Ultra/Encore	Jet	2	B	II	2	16,300	52.17	10	8	14	8	10	8	14	4	20	14
C56X - Cessna Excel/XLS	Jet	2	B	II	1B	20,200	56.33	106	74	32	6	8	4	4	10	6	4
C650 - Cessna III/VI/VII	Jet	2	B	II	1B	22,000	53.50	14									
C680 - Cessna Citation Sovereign	Jet	2	B	II	1B	30,300	63.33		4					2		2	4
C750 - Cessna Citation X	Jet	2	B	II	1B	36,100	63.58										
E55P - Embraer Phenom 300	Jet	2	B	II	1B	17,968	52.17			2				2		2	4
SW4 - Swearingen Merlin 4/4A Metro2	Turboprop	2	B	II	tbd	tbd	0.00	2			2	2					
Total B-II Operations:								650	378	268	252	190	244	242	218	212	162
C207 - Cessna Turbo Stationair 7	Piston	1	B	III	1A	3,800	36.17		70	76					2		
AT72 - Aérospatiale/Alenia ATR-72	Turboprop	2	B	III	1B or 2	44,070	88.75	2									
Total B-III Operations:								2	70	76	0	0	0	0	2	0	0
LJ31 - Bombardier Learjet 31/A/B	Jet	2	C	I	1B	15,500	43.83	12	8	14	14	12	8	38	10		
LJ40 - Learjet 40; Gates Learjet	Jet	2	C	I	1B	21,000	47.78	4	2	4	4	4					2
LJ45 - Bombardier Learjet 45	Jet	2	C	I	1B	21,500	47.83			2	4	6	4				
Total C-I Operations:								16	10	20	22	22	12	38	10	0	2
CL60 - Bombardier Challenger 600/601/60	Jet	2	C	II	1B	36,000	64.33					2	2				
CRJ2 - Bombardier CRJ-200	Jet	tbd	C	II	1B	47,450	68.67	2			2						
E145 - Embraer ERJ-145	Jet	2	C	II	2	45,415	65.75		4		4						

Appendix E: Historical Sumary of Annual Instrument Flight Rule (IFR) Operations by Aircraft Type

Middleton Municipal Airport - Morey Field (C29)

AAC: Aircraft Approach Category (based on approach speed)
ADG: Airplane Design Group (based on wingspan)
TDG: Taxiway Design Group (based on wheel configuration)

								Annual Operations at (C29)									
Aircraft	Physical Class	No. of Engines	AAC	ADG	TDG	Max. Takeoff Weight	Wingspan (ft)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
E45X - Embraer ERJ 145 EX	Jet	2	C	II	2	53,131	68.92				2						
G150 - Gulfstream G150	Jet	2	C	II	1B	26,100	55.58									2	
H25B - BAe HS 125/Hawker 800	Jet	2	C	II	2	28,000	54.33		2			4	2	2			
Total C-II Operations:								2	6	0	8	6	4	2	0	2	0
LJ35 - Bombardier Learjet 35/36	Jet	2	D	I	1B	18,000	39.50	4	2		4	6	12	26	12		
Total D-I Operations:								4	2	0	4	6	12	26	12	0	0
Sub-Total A-I Aircraft Operations:								1,610	1,392	1,330	1,380	1,458	1,746	1,482	1,400	1,160	1,250
Sub-Total A-II Aircraft Operations:								44	72	52	44	36	42	34	20	16	14
Sub-Total B-I Aircraft Operations:								954	1,034	1,334	1,122	1,018	1,142	1,048	1,080	950	966
Sub-Total B-II Aircraft Operations:								650	378	268	252	190	244	242	218	212	162
Sub-Total B-III Aircraft Operations:								2	70	76	0	0	0	0	2	0	0
Sub-Total C-I Aircraft Operations:								16	10	20	22	22	12	38	10	0	2
Sub-Total C-II Aircraft Operations:								2	6	0	8	6	4	2	0	2	0
Sub-Total D-I Aircaft Operations:								4	2	0	4	6	12	26	12	0	0
Sub-Total (Un-Classified) Operations:								170	119	123	165	180	205	157	107	122	172
Total Annual IFR Ops:								**3,452**	**3,083**	**3,203**	**2,997**	**2,916**	**3,407**	**3,029**	**2,849**	**2,462**	**2,566**

Source: FAA's Traffic Flow Management System Counts (TFMSC)
Note: As not all IFR operations are captured in TFMSC, the higher value of Arrivals or Departures was doubled to calculate the annual total for each aircraft.
File Path: X:\2309916\130874.01\TECH\MP Chapters\2 - Forecast\V2\Operations\C29 IFR Ops (Year 2001-2019).xlsx (App E Tab)

Middleton Municipal Airport (C29)
BOA/FAA Forecast Review Comments
8/12/19

1. **2.3 General Aviation Trends**. The FAA is not the source for Terminal Area Forecast (TAF) data for non-towered airports. This data comes straight from airports and states through the 5010 process. Therefore, please to do not use this data as an FAA validated reflection of actual traffic at non-towered airports. Instead, confirm the current operations at the airport using fuel slips/sales, logbooks, surveys, TFMCS, etc. A true reflection of the types and number of operations is the most important piece of a forecast for non-towered airport. Please adjust this section accordingly.

   ***Response**: As suggested, an inventory of the 2019 operations was conducted through outreach to the based users, through interviews with the Fixed-Base-Operators (Morey Airplane Company & Capital Flight), through a review of the FAA's TFMSC database and through a review of visitor logs and fuel sales. The results of the Inventory are summarized within Appendix A.*

   As another means to estimate activity at C29, a statistical modeling equation was used that had been prepared for the Statistics and Forecast Branch of the FAA entitled 'Model for Estimating General Aviation Operations at Non-Towered Airports Using Towered and Non-towered Airport Data'. The results from the inventory and the modeling equation resulted in annual operations less than what had been reported on the 5010 estimates but were within 10%. For the purposes of this master plan, the 2019 inventoried number of operations was utilized as the baseline.

2. **2.3 General Aviation Trends.** If available, please add historic operations data for C29, preferably in chart form.

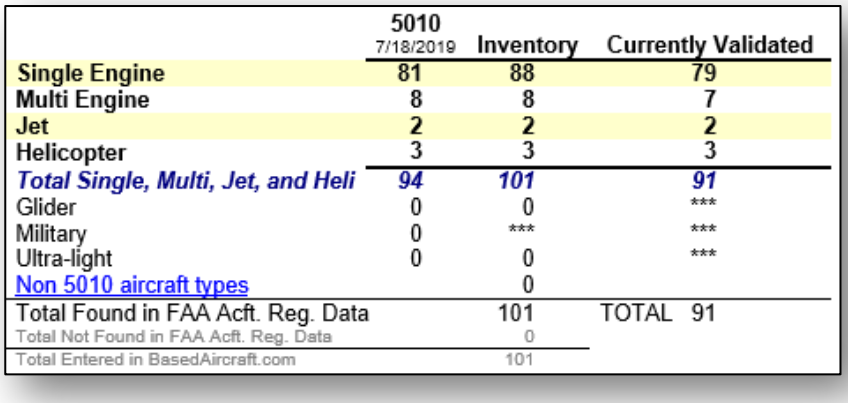
   ***Response:** Historic activity data was added in tabular form from 2010-2019 on Table 2-1.*

3. **2.4.2 Fleet Mix**. Instead of using the TAF data, confirm the actual fleet mix using local information such as fuel slips/sales, logbooks, surveys, TFMCS, etc.

   ***Response**: The existing fleet mix of aircraft based at C29 was pulled from information validated in the National Based Aircraft Inventory Program (basedaircraft.com). The TAF is no longer used. A broader discussion on Based Aircraft and Fleet Mix is now provided within Section 2.5*

4. **2.6 Based Aircraft Forecast.** 5010 data should not be used for based aircraft. Please exclusively use the validated aircraft at C29 from BasedAircraft.com. It is the authoritative source for this data. Please update this section and all subsections accordingly.

BasedAircraft.com as of 8/6/19



	5010 7/18/2019	Inventory	Currently Validated
Single Engine	81	88	79
Multi Engine	8	8	7
Jet	2	2	2
Helicopter	3	3	3
Total Single, Multi, Jet, and Heli	*94*	*101*	*91*
Glider	0	0	***
Military	0	***	***
Ultra-light	0	0	***
Non 5010 aircraft types		0	
Total Found in FAA Acft. Reg. Data		101	TOTAL 91
Total Not Found in FAA Acft. Reg. Data		0	
Total Entered in BasedAircraft.com		101	

Response: *The latest data from basedaircraft.com was e-mailed from GCR (John Lyon) on March 16th, 2020 and identifies 100 validated based aircraft. This was presented as the latest and official source of the existing number of based aircraft at C29. This was updated and reflected in all sections.*

5. **2.6 Based Aircraft Forecast.** If 5010 data is being used for historic purposes, please add a corresponding table and CAGR.

   Response: *The various reporting sources of based aircraft are listed in Table 2-3 for comparison. The text explains that basedaircraft.com is the authoritative source and that those numbers are utilized.*

6. **2.6.1 FAA TAF.** Having two jet aircraft automatically puts the airport into the regional asset role, which requires at least 1 jet OR 100 based aircraft. Since there are only two jets at the airport, we recommend that the sponsor err on the side of caution and resolve the 10 duplications with other airports by December (prior to the snapshot for the NPIAS). If the airport is having difficulty with this, they can contact the GCR helpdesk. GCR can look at all the data associated with the aircraft (where it is flying, where the owner resides, etc.) and perhaps resolve the questionable aircraft. GCR can be reached at BasedAircraftSupport@BasedAircraft.com or (504) 304-0781 option 2 from 7:30 AM to 4:30 PM CST, non-holiday weekdays.

   Response: *Thank you for supplying this information. We did reach out to GCR and obtained the latest data and the Airport had worked with the GCR folks to resolve the duplications.*

7. **2.7 Based Aircraft Fleet Mix.** Update using validated BasedAircraft.com data.

   Response: *This was updated using the data received from basedaircraft.com*

8. **2.8 General Aviation Operations Forecast.** As previously indicated, the 2017 data needs to be supported by local data (fuel slips, log books, etc.), not simply what is in the TAF.

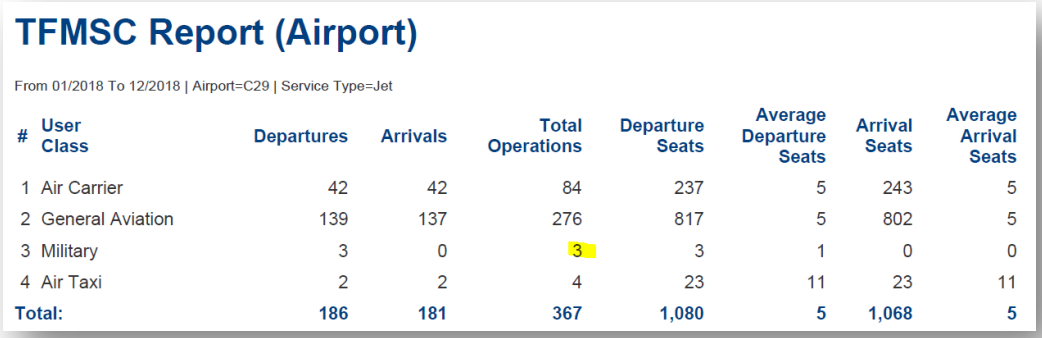
   Response: *Please see response to Comment #1. Inventory of 2019 operations provided in Appendix A.*

9. **2.8.4 Operations per Based Aircraft**. This is a really old methodology that our FAA Headquarters office has determined to be inaccurate due to variations in the percentage of itinerant operations

and overly optimistic. We would therefore not approve this preferred alternative and recommend deleting this as the method for determining future operations.

***Response**: This forecasting method was removed as suggested.*

10. **2.9 Military Operations Forecast**. As previously discussed, the TAF is airport/state self-reported data that does not originate and is not validated by the FAA. Please determine what is currently at the airport and adjust this section accordingly. TFMSC shows three military operations in calendar year 2018.



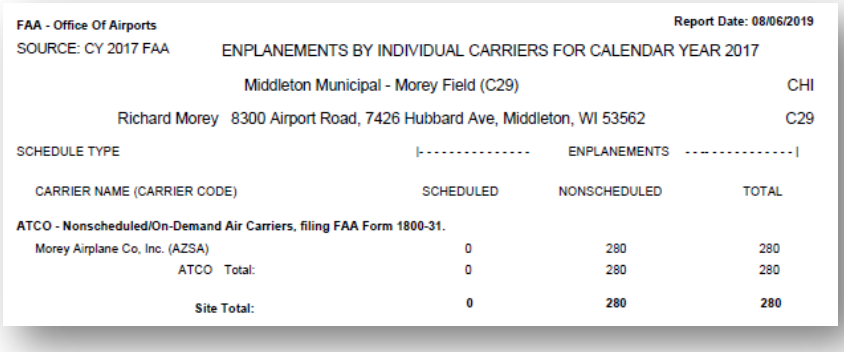
TFMSC Report (Airport)

From 01/2018 To 12/2018 | Airport=C29 | Service Type=Jet

#	User Class	Departures	Arrivals	Total Operations	Departure Seats	Average Departure Seats	Arrival Seats	Average Arrival Seats
1	Air Carrier	42	42	84	237	5	243	5
2	General Aviation	139	137	276	817	5	802	5
3	Military	3	0	3	3	1	0	0
4	Air Taxi	2	2	4	23	11	23	11
Total:		**186**	**181**	**367**	**1,080**	**5**	**1,068**	**5**

***Response:** Very few military operations occur at C29. Some helicopter operations from nearby Truax ANG base at MSN have been seen on occasion but are not common. This section has been updated accordingly.*

11. **2.10 Commercial Operations.** As previously stated, TAF data needs to be supported with local data. The latest ACAIS data shows that the only commercial service at C29 was by Morey Airplane Co. with 280 enplanements in calendar year 2017. Morey's website indicate that they fly Cessna 152s/172Ns/172Ss, which have the capacity to transport 2-4 people. That translates into 70-280 departures, with a possibility of 140-560 total operations, which is far less than the 2,500 TAF figure for 2017. TFMSC shows 100 air taxi / air carrier IFR flights in calendar year 2017 and 88 in calendar year 2018.



FAA - Office Of Airports — Report Date: 08/06/2019

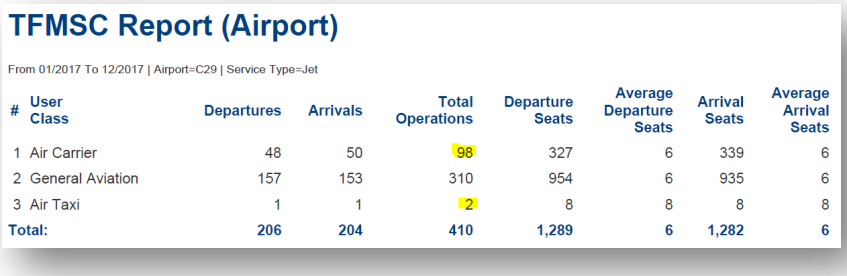
SOURCE: CY 2017 FAA

ENPLANEMENTS BY INDIVIDUAL CARRIERS FOR CALENDAR YEAR 2017

Middleton Municipal - Morey Field (C29) CHI

Richard Morey 8300 Airport Road, 7426 Hubbard Ave, Middleton, WI 53562 C29

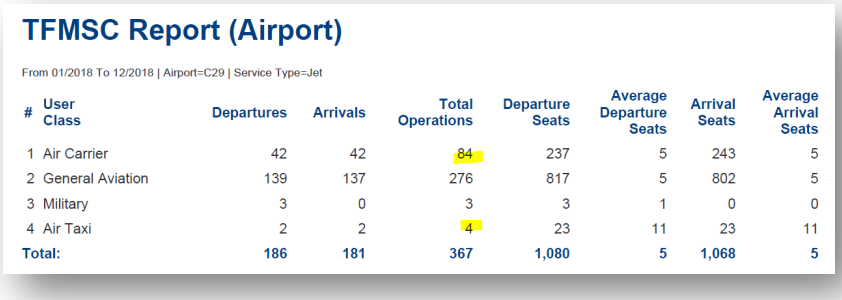
SCHEDULE TYPE	ENPLANEMENTS		
CARRIER NAME (CARRIER CODE)	SCHEDULED	NONSCHEDULED	TOTAL
ATCO - Nonscheduled/On-Demand Air Carriers, filing FAA Form 1800-31.			
Morey Airplane Co, Inc. (AZSA)	0	280	280
ATCO Total:	0	280	280
Site Total:	**0**	**280**	**280**



TFMSC Report (Airport)

From 01/2017 To 12/2017 | Airport=C29 | Service Type=Jet

#	User Class	Departures	Arrivals	Total Operations	Departure Seats	Average Departure Seats	Arrival Seats	Average Arrival Seats
1	Air Carrier	48	50	98	327	6	339	6
2	General Aviation	157	153	310	954	6	935	6
3	Air Taxi	1	1	2	8	8	8	8
Total:		**206**	**204**	**410**	**1,289**	**6**	**1,282**	**6**



TFMSC Report (Airport)

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#	User Class	Departures	Arrivals	Total Operations	Departure Seats	Average Departure Seats	Arrival Seats	Average Arrival Seats
1	Air Carrier	42	42	84	237	5	243	5
2	General Aviation	139	137	276	817	5	802	5
3	Military	3	0	3	3	1	0	0
4	Air Taxi	2	2	4	23	11	23	11
Total:		**186**	**181**	**367**	**1,080**	**5**	**1,068**	**5**

Response: *This section has been updated to use TFMSC and ACAIS data. One of the biggest commercial activities occurring at the Airport right now is the daily deliveries from Freight Runners Express and Pro Aire Cargo Consultants. Both of these companies are contracted to provide air freight deliveries for UPS, which has a delivery center located only 1.5 miles south of the Airport. These operations were lumped together in the commercial operations category.*

The Morey Airplane Company reported that they have a Cessna 340 and a Cessna 310 that they utilize for charter flights. Morey reported 240 charter operations in 2019 but these were not reflected as air-taxi operations in TFMSC. Morey's charter operations were combined with other charter (air-taxi) operations identified in TFMSC and the air-freight operations to depict the overall commercial activity occurring at C29.

12. **2.12.2 Future Jet Operations**. For this airport, this section is critical for determining if the current runway and taxiway dimensions will satisfy existing and future demand. In order to paint a clear

and well reasoned picture for the reader about how and why jet traffic will increase, this section needs additional work.

a. None of the future demand from the user survey data referenced in Section 2.4 has been included. If this data is being used to support future jet growth, the supporting letters/surveys need to include specific aircraft and yearly number of operations.

Response: *The original 2018 user survey results are referenced and provided in Appendix C. Additionally, more specific documentation from known business users of the Airport were obtained and are additionally referenced in the chapter. Correspondence from the business users who have identified a need for additional airport facilities is provided in Appendix D.*

b. If you plan on using small jet aircraft as justification for existing/future aircraft length and will be using separate aircraft performance manuals for this justification instead of the charts provided in Advisory Circular 150/5325-4B, please add C29 specific data that shows the current and projected operations for each aircraft.

Response: *Both the guidance in AC 150/5325-4B and individual aircraft manuals will be used. We plan to submit a runway length justification study (separately) and would like to obtain concurrence from FAA on a runway length that can be supported before advancing the facility requirements section and before taking this to the public or the Master Plan Advisory Committee.*

c. Please include a chart with historical and all of the forecasting methods like you did in section 2.6.6.

Response: *A summary chart is now provided at the conclusion of all forecasting subjects.*

13. **2.14 Critical Aircraft**. Based only on the TFMSC IFR data, the existing critical aircraft would be B-I. Please provide additional data and a more transparent argument if you wish to get to B-II for either the existing or future critical aircraft. Normally, B-I cannot be added to B-II to justify B-II.

TFMSC Report (Airport)

From 01/2018 To 12/2018 | Airport=C29

#	Airplane Approach Category	Airplane Design Group	Departures	Arrivals	Total Operations	Departure Seats	Average Departure Seats	Arrival Seats	Average Arrival Seats
1	No Data	No Data	72	47	119	263	3	163	3
2	A	I	563	540	1,103	2,260	4	2,175	4
3	A	II	8	8	16	72	9	72	9
Sub-Total for A			571	548	1,119	2,332	4	2,247	4
4	B	I	438	481	919	1,767	4	1,741	3
5	B	II	85	87	172	517	6	532	6
Sub-Total for B			523	568	1,091	2,284	4	2,273	4
6	C	II	1	1	2	4	4	4	4
Sub-Total for II			86	88	174	521	6	536	6
7	D	I	3	0	3	3	1	0	0
Total:			**1,170**	**1,164**	**2,334**	**4,886**	**4**	**4,687**	**4**

Response: *A more robust discussion on the design aircraft at C29 is now presented in Section 2.10. The most demanding aircraft at C29 are the turbine powered aircraft (small jets and turboprops). The size of these aircraft ranges from the high end of the B-I standards to the low end of B-II standards. The forecasts outline that while there are not 500 annual operations of Group II aircraft currently, it is reasonable to expect that they will eclipse this threshold over the course of the planning horizon. B-II is identified as the future design critical aircraft category, these planes are anticipated to be on the small end of this classification with wingspans closer to 49' wide than 79' wide.*

14. **2.15 Forecast Summary and TAF Comparison.** Based solely on the data and arguments currently in your forecast submittal, the forecasted numbers are not strongly supported. We recommend either provide a stronger story with backup data and a clear line of logic; or changing your current forecast to a "high option" and develop a less aggressive "preferred option". If you plan on extending the runway at this airport, we cannot predict if an EIS will be needed and will probably need to obtain APP-400 approval based on FAA's Review and Approval of Aviation Forecasts (June 2008). If not, we are still required to make sure that the approved forecast is reasonable and will be providing it to APP-400 during the next TAF update. Either way, it is in your best interest to make the applicable changes during the master planning process.

Response: *We appreciate your review and hope that the updated chapter is received as a stronger, more documented case for the projected activity at C29. The chapter is structured to present low, medium and high-growth forecasting scenarios based on the above comment / suggestion. By structuring the forecasts in this way, we hope it will provide the City (and its surrounding residents) an idea of how the activity at the airport will change under a range of growth conditions; and better assist them in the decision making process regarding potential future actions.*

Exception to Headquarters Review

FAA headquarters review is not required for forecasts at non-towered general aviation and reliever airports where:

- five and ten year forecasts do not exceed 200 based aircraft or 200,000 total annual operations, and
- the related development is not expected to require an EIS and/or BCA.

FAA field offices should ensure that these forecasts are thorough, supported by reasonable planning assumptions and current data, and developed using appropriate methodologies. These forecasts should be provided to APP-400 and APO-110 for use in the annual update of the TAF. APO-110, when updating the TAF, may require additional information, especially if the forecast exceeds normal expectations without adequate justification.

- Basedaircraft.com shows 99, not 100
- Can't use socioeconomic analysis without using the R2 value. Needs to be 0.9 or above
- 2024 – 110 BA (show it moving up a bit slower and it will be within 10% of the TAF)
- Change preferred forecast National
- Are letters of support for extension needed in a Master Plan? Probably not because the runway extension isn't justified until late in the planning cycle.
- Table 2-13 - They referenced Appendix A, but they don't match.
- Critical aircraft is a B-I. It may be B-II in the future, but not right now.

Mark Opitz

From: Lyman, Sandy (FAA) <Sandy.Lyman@faa.gov>
Sent: Monday, June 29, 2020 12:39 PM
To: Holbrook, Joshua P - DOT; 'greg.stern@meadhunt.com'; Mark Opitz
Cc: 'Messina, Matthew R - DOT'; Graczykowski, Mark - DOT
Subject: Resolution/Notes: Middleton Master Plan Discussion
Attachments: C29 Forecast Review - June 2020.docx; C29 MP_Response to FAA Comments.pdf

All:

Just to summarize our conversation today and let you know the outcome of my discussion with Paul (shown in red). The yellow highlighted items are the only outstanding actions.

August 2019 Comments
These comments (attached) were satisfied based on your May 7, 2020 responses and chapter updates.

June 2020 Comments
These comments (attached) were discussed in our telecon today with the following outcomes:

- Greg will leave the based aircraft at 100 in the master plan, but will see what dropped off – possibly helping Mark Opitz to resolve the unvalidated aircraft.
- Greg will leave the socioeconomic analysis in the forecast chapter for comparative purposes.
- Greg will add the r-squared values to the socioeconomic analysis and explain why the historic data may be throwing the values off.
- Greg will change the preferred forecasts for each section to FAA approved methods (market share, TAF, trend).
- Not talked about in our meeting - Sandy is OK with using non-FAA preferred methods for any of the low, medium, or high forecasts that are not chosen as the preferred forecast.
- Headquarters review is not required if this master plan is outside the normal TAF tolerances – no need to try to stay within them.
- Sandy talked to Paul, and Headquarters COVID related forecast review is not required for an extension based purely on existing traffic levels.
- If an extension is not started right after the master plan and environmental review, the local traffic will have to be revalidated anyways, so there is no value in a HQ review at this time.
- Greg is going to keep the letters of support in the master plan.
- Table 2-13 and Appendix A don't match because the table is GA operations and Appendix A is total operations.
- The critical aircraft section clearly shows that B-I is justified as the existing critical aircraft – so no changes necessary.

Sandy Lyman
Community Planner, CHI-613
Chicago Airports District Office
Great Lakes Region
Federal Aviation Administration
(847) 294-8253 - transfers to my cell phone
sandy.lyman@faa.gov

Teleworking for the immediate future.
No work travel scheduled.
Off 7/17 and 7/27.

-----Original Appointment-----
From: Holbrook, Joshua P - DOT <Joshua.Holbrook@dot.wi.gov>
Sent: Wednesday, June 17, 2020 12:08 PM
To: Holbrook, Joshua P - DOT; Lyman, Sandy (FAA); 'greg.stern@meadhunt.com'; Mark Opitz - City of Middleton (mopitz@ci.middleton.wi.us); Graczykowski, Mark - DOT
Subject: Middleton Master Plan Discussion
When: Monday, June 29, 2020 10:00 AM-11:30 AM (UTC-06:00) Central Time (US & Canada).
Where: Skype Meeting

Meeting with Mead & Hunt to clarify remaining MP issues.

→ Join Skype Meeting

Trouble Joining? Try Skype Web App

Join by phone

Madison : (608) 316-9000,,73734605# (Madison) English (United States)

Find a local number

Conference ID: 73734605
Forgot your dial-in PIN? | Help
