TOWN OF MIDDLETON Wisconsin

September 24, 2020

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Governor Tony Evers
115 East, State Capitol
Madison, WI 53702
(Sent via email and U.S. Mail)

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Mayor Gurdip Brar
City of Middleton
7426 Hubbard Avenue
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Rebecca.MacPherson@faa.gov
Federal Aviation Administration
Rebecca B. MacPherson, Regional Administrator
Great Lake Region
2300 East Devon Avenue
Des Plains, IL 60018
(Sent via email and U.S. Mail)

Dear Sir/Madam:

The Towns of Middleton and Springfield are deeply frustrated and seriously concerned that efforts to expand the City of Middleton ("City"), Middleton Municipal Airport – Morey Field (a/k/a "C29" or "Morey Airport or "Airport") are like a plane taking off without a flight plan or instruments.

As we will explain in this letter, the City of Middleton is pushing a major expansion of Morey Airport, a project which will have major effects – indeed, its most substantial effects – on our communities. Our Towns' residents are the vast majority of those living under the flight paths of the expanded Airport. Yet, the process has been deliberately crafted to exclude representation from our Towns. The City refused and refuses to allow the Towns to be represented in any meaningful aspect of the process, even while allowing the body supervising current day-to-day operations to be chaired by a person who resides in the Town of Vermont, miles removed from impact.

For the reasons set forth herein, we respectfully ask that the federal and state agencies see that the process is reset and managed with full appropriate public input and engagement.

The Setting

The City of Middleton owns and operates Morey Airport. Morey Airport is a small airport which has primarily served recreational flying. It is just 9.9 miles from the Dane County Regional Airport. Morey Airport has not significantly grown in the decades since it was built. The community around it, however, has grown rapidly.

The Town of Middleton, Wisconsin (population 6,614 as of 1/1/2020), which, in part, shares a geographic border with the City of Middleton and the City's Morey Airport located on the western border of the City of Middleton and immediately adjacent to the Town of Middleton to the west, and the Town of Springfield (population 2,935 as of 1/1/2020) is located to the north of Morey Airport.

The Town of Middleton has approximately 900 residences within three miles of Morey Airport to the west. The Town of Springfield has a significant number of residents to the north and west of Morey Airport and there are at least eight schools (nearly 5,000 students) located in the Towns of Middleton and Springfield and the City of Middleton all within three miles of Morey Airport. These existing residential and school land uses are considered noise sensitive areas by the Federal Aviation Administration ("FAA"). Any potential expansion of Morey Airport raises serious land use incompatibility and safety issues for these existing homes and schools in the vicinity of Morey Airport.

The Process

Our system of government depends on public input. We believe that government derives its just powers from the consent of the governed. Airport expansion involves the same philosophy – in concept. The FAA has made a strong commitment to public involvement. In the germane policy, FAA stated, in pertinent part:

- The first step in meeting the needs of the public is to understand the public's needs.

- The FAA is committed to complete, open, and effective participation in agency action. The agency regards community involvement as an essential element in the development of programs and decisions that affect the public.
- The public has a right to know about our projects and to participate in our decision-making process. Our goals are:
    - To provide active, early, and continuous public involvement;
    - To solicit and consider public input on plans, proposals, alternatives, impacts, mitigation and final decision.

[FAA Order JO 7400.2H, Effective Date: March 10, 2011, Change 1, Effective Date: August 25, 2011, Procedures for Handling Airspace Matters, Community Involvement Policy Statement (httsp://tfmlearning.faa.gov/publications/atpubs/AIR/airapp10.html)]

The Policy Statement also states that the agency must use public involvement techniques designed to meet the diverse needs of the broad public, including not only interested groups and the general public, but individuals as well.

In addition to the FAA Order JO 7400.2H, Change 1, the FAA recently updated its Community Involvement in Airport Planning Advisory Circular ("AC") No. 150/5050-4A, on 10/28/2019. AC No. 150/5050-4A, 10/28/2019 cancels the prior AC 150/5050-4, *Citizen Participation in Airport Planning,* dated September 26, 1975. The FAA AC No. 150/5050-4A, 10/28/2019, Appendix B. Glossary, page B-1, 4. Airport Master Plan, states:

> The master plan describes a set of steps to satisfy the anticipated future needs of an airport while accounting for the surrounding community, the local environment, and socioeconomic factors. The future needs of the airport must be balanced with the needs of the surrounding community, particularly when the airport is located in close proximity to populated areas.

The FAA AC No. 150/5050-4A, Appendix B. Glossary, page B-2, 7. Community Involvement, states:

> Community involvement is the process of engaging in dialog and collaboration with communities affected by aviation actions.

The FAA AC No. 150/5050-4A, Appendix B. Glossary, page B-3, 10. Public, states:

> For an airport project, the public includes residents, usually in the vicinity of the airport, that may be affected by airport operations or are interested in airport activities.

FAA AC No. 150/5050-4A, 1.6.1, page 1-6, states, "The need for community involvement is grounded in aviation law and FAA Order 5100.38, Airport Improvement Program Handbook (Footnote 10: Grant Assurance 7, in Grant Assurances: Airport Sponsors, available on the AIP Grant Assurances webpage, and, 49 USC 47106(b)(2)), which requires the Secretary of Transportation to only approve an application for an airport improvement grant when 'It has given fair consideration to the interests of communities in or near where the project may be located.'"

The FAA's guidance could not be clearer. Sadly, the City of Middleton's process has fallen far short of these directives. The City has had a goal – to expand Morey Airport into a larger urban airport which will accommodate corporate air traffic. The process has been tailored to emphasize and feature information which supports that goal, and rebuff that which does not. The City has taken that to the length of completely excluding its neighboring communities from the planning process.

We are also disappointed that the Wisconsin Department of Transportation Bureau of Aeronautics ("BOA"), which acts as an agent of the FAA in Wisconsin is not organized in a manner to provide any significant regulatory protection to the public. With respect to the City of Middleton's proposal for its Morey Airport, the BOA is on the record as the agent of the City of Middleton. There seems to be no other agency under the Wisconsin Department of Transportation and no independent section of the BOA to listen to, examine, or protect the public interest with regard to Airport operations or expansion in the City of Middleton (or elsewhere in Wisconsin).

Because the City of Middleton's process excluded contrary opinions and input, the Town of Middleton felt compelled to contribute expert opinion to the process.

An Independent Review Shows the City's Plans are Highly Flawed

The Town of Middleton hired an experienced airport consultant to review the supporting materials prepared by Mead & Hunt. Attached is a copy of the Resume/Curriculum Vitae and the analysis the airport consultant performed.

Our consultant analyzes the Mead & Hunt Revised (July 2020) Ch. 2 Forecasts for the Master Plan for Morey Airport expansion. Apparently, the FAA and BOA have given preliminary approval to Revised (July 2020) Ch. 2 Forecasts (the "Forecasts") to "justify" a future expansion of Morey Airport. That is unfortunate, as these Forecasts are flawed.

The Forecasts contain significant deficiencies; they have inaccurate analysis and a lack of empirical information supporting various projects and conclusions. We are enclosing a detailed critique highlighting some of the inadequacies of the Forecasts.

We also note the Forecasts have been preliminarily approved – without taking into account the economic impacts of the ongoing COVID-19 Pandemic. The Pandemic caused the most severe recession since the Great Depression and an 80 percent reduction in air travel. It is expected to take years for a recovery. And it was completely ignored by the Forecasts.

This is just highlighting further evidence of the lack of meaningful community and citizen involvement in the process. Many of the deficiencies and inadequacies in the Mead & Hunt Forecasts should have been identified and raised by the FAA or BOA in their regulatory capacity as part of their duty to involve and protect the public.

Even in normal times, it would make no sense to build a second major airport just 9.9 miles from Dane County Regional Airport. In these times of high unemployment and exceptionally low air

traffic, we should be concentrating on assuring the economic vitality of the area's main airport, Dane County Regional Airport.

We also note with respect to Dane County Regional Airport ("DCRA" or "MSN") that the FAA and BOA worked with Dane County during the past 25 years on a well-managed program to acquire avigation easements and land in the vicinity of the airport to create buffer areas around the airport. Development around the airport has been a model of impact mitigation. We spent millions of dollars to lay the foundation for future air traffic growth at DCRA. Why would we now spend millions to increase traffic at any airport surrounded by residential areas?

Instead of Benefiting from Public Scrutiny, the Plan has been Pushed Through

With respect to the City of Middleton, the Morey Airport sponsor, there has been no effort expended or consideration given to an airport compatible land use plan for existing or future Morey Airport operations.

There has apparently been one current, legitimate user survey with respect to Morey Airport and that survey, by an overwhelming percentage, indicated satisfaction with the current airport facilities. The City of Middleton made no effort to consult the community-at-large around the airport prior to expending considerable dollars on creating a proposed C29 expansion plan. In other words, there has been no effort to determine whether or not current C29 operations are in any way balanced with the needs of the surrounding community and existing land uses let alone an analysis dealing with a future C29 expansion.

Furthermore, the City of Middleton has failed to even explain why an expansion may be appropriate or required and how the surrounding community would in any way benefit from such an expansion. In other words, there needs to be considerably more community involvement, an airport land use compatibility plan, and explanation of a legitimate need or value with respect to any expansion of C29.

While the current Morey Airport Master Plan Advisory Committee (a/k/a as "AMPAC" or a Technical Advisory Committee or "TAC") may have some reasonable value on the technical aspects of an airport expansion, it is wholly inappropriate as a Citizen Advisory Committee.

AMPAC is inappropriate as a Citizen Advisory Committee because several of its members do not reside in any of the affected communities and several members have significant conflicts-of-interest as they operate for-profit, private businesses at C29 or serve on the Board of Directors of the owner of the C29 terminal, the Middleton Area Development Corporation.

The Wisconsin Department of Transportation should establish an independent section either within the BOA or elsewhere in the Wisconsin Department of Transportation to provide for independent regulatory review of all aspects of C29 operations and proposed future plans as well as for other similarly situated airports in Wisconsin.

- The Mayor of the City of Middleton, with Common Council approval, should immediately create a Citizen Advisory Committee comprised only of non-pilot, resident

citizens of all C29 affected communities, and provide City Clerk staff resources for the Citizen Advisory Committee for purposes of compliance with open meetings and public records law, minute taking and related staff support functions for the Citizens Advisory Committee.

- The Mayor of the City of Middleton, with Common Council approval, should immediately apply for FAA/BOA funding for the creation of, and for support of, a Citizen Advisory Committee, including but not limited to retaining a neutral, qualified meeting facilitator to assist with Citizen Advisory Committee engagement and dialog with the City, as referenced in AC No. 150/5050-4A, 10/28/2019.
- The actions of the current AMPAC and all related actions regarding the C29 Master Plan should stop until such time as the BOA or a separate independent section of the BOA or the FAA is in a position to conduct an independent, regulatory review of C29 current operations and any suggested need for a proposed expansion.
- The City of Middleton should work cooperatively with the Citizen Advisory Committee for the preparation of a C29 existing operations and existing land use airport compatible land use plan and effective mitigation of existing C29 negative impacts on noise-sensitive areas, and overflights in the vicinity of C29, and determine means and methods to effectively incorporate community input into any and all planning related to C29 operations now and in the future.

We look forward to hearing from you.

Sincerely,

Town Board of Supervisors of the Town of Middleton
Town Hall, 7555 W. Old Sauk Road, Verona, Wisconsin 53593

By: _____
Cynthia Richson, Town Board, Chair

By: _____
Richard Oberle, Supervisor, Seat #1

By: _____
Brent Renteria, Supervisor Seat #2

By: _____
Denise Schmidt, Supervisor Seat #3

By: _____
Tom Stemrich, Supervisor Seat #4

Town Board of Supervisors of the Town of Springfield
Town Hall, 6157 County Highway P, Dane, Wisconsin 53529

By: _____
Jim Pulvermacher, Town Board, Chair

By: _____
Art Meinholz, Supervisor

By: _____
Dan Dresen, Supervisor

By: _____
Dave Laufenberg, Supervisor

By: _____
Bill Statz, Supervisor

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cc:

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MEMORANDUM

TO: Town Board of Supervisors, Town of Middleton, WI

FROM: Daniel P. Bartholomew, AICP, ACE, A.A.E.

CC: Attorney Michael J. Lawton, Boardman Clark, LLP

DATE: August, 17, 2020

SUBJECT: City of Middleton C29 Airport Master Plan Chapter 2: Forecast

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Forecasts of aviation demand over a 20-year planning period provide a path for determining the type, size, and timing of aviation facility development, along with potential support for federal funding. Aviation forecasts are the second of two factors in an airport master plan used to evaluate existing and future airport facility needs. While the Inventory (Chapter One) notes the facility's current baseline conditions, the forecast attempts to quantify existing and future operational needs. Together, a resulting gap analysis is formulated and is presented as Chapter Three: Facility Requirements in the master plan process.

FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*, states that forecasts should be:

- Realistic;
- Based on the latest available data;
- Reflective of current conditions at the airport (as a baseline);
- Supported by information in the study; and
- Able to provide adequate justification for airport planning and development.

Any forecasting effort contains uncertainty, and this uncertainty usually increases the longer into the future a forecast is made. Uncertainty can be tempered by using accurate and long-term historical data. When estimates or placeholders are used to fill gaps in missing historical data, data becomes skewed and the level of uncertainty rises. Similarly, when only recent historic datasets are used, they may contain outliers that may not be repeated during the long-term forecast period. Unfortunately, many of the forecast developed in this chapter are based on placeholder data, limited historical data sets, or both. This can introduce excessive uncertainty in forecasting efforts.

The forecast of based aircraft in this chapter is assembled from actual based aircraft counts (easily obtained through airport records and FAA aircraft registries), with few if any gaps. To predict future based aircraft at the airport, a number of factors were evaluated, all pointing to potential ongoing demand. Historic FAA data shows that the Airport has continued to gain based aircraft at a slightly higher rate than seen at both the national and regional levels. A simple extrapolation and application of this increasing market share should suffice and provide a reasonable forecast of based aircraft. Although the study utilizes a slightly different method to reach a based aircraft forecast, the results are similar, and reasonable.

While the number of based aircraft can be an indicator of general aviation demand, it can also be a result of the supply/demand of specific amenities/services offered at one airport, versus others in the

local area. As a general aviation reliever airport, C29's service area is typically driven by aircraft owners/operators and where they choose to base their aircraft. The primary consideration of aircraft owners/operators when choosing where to base their aircraft is convenience, however, some aircraft owners have other priorities, such as services, hanger availability, and runway length. From a purely economic standpoint, a shortage of hanger space, an increasing based aircraft count, along with a robust hanger wait list, may indicate that the current pricing for aircraft storage at C29 is too low and price equilibrium has not been reached. Since the FAA allows airports to charge less than fair market value of aeronautical uses (such as aircraft storage), the perceived convenience to storage an aircraft at C29 is not supported by current costs of storage at C29.

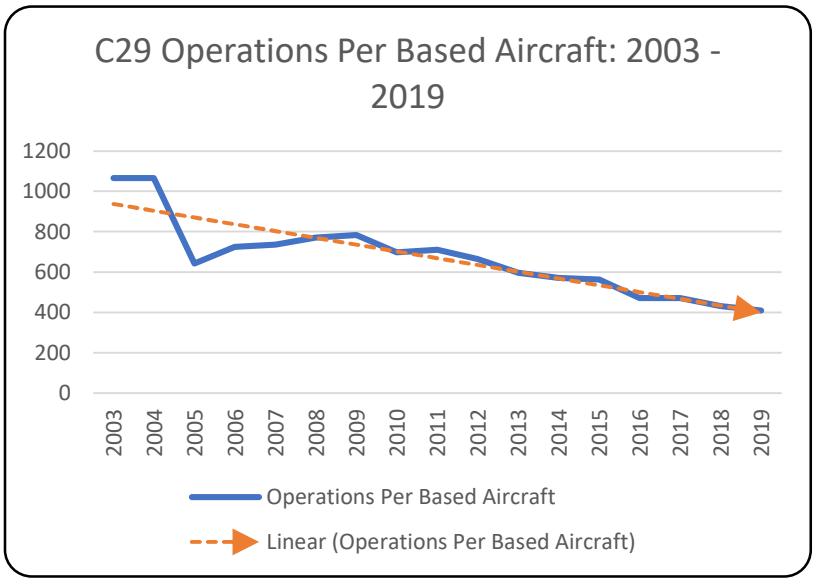


Figure 1

An additional trend that has emerged at C29, supporting the possibility that the airport is being increasingly used for the storage of aircraft, is that the number of operations per based aircraft has dropped dramatically since at least 2003 (See Figure 1). At that time, the average aircraft based at C29 experienced 1068 operations annually. This has dropped to only 409 in 2019. This suggests that aircraft are flown less, and stored more. A study evaluating the location of based aircraft (and potential based aircraft) by their registered address, along with the cost of aircraft storage at other facilities within the airport service area (typically 30 miles) could help answer if pricing for storage at C29 is sufficient and cost competitively, based on the perceived convenience of that storage. Aircraft storage that is priced below its competitive market value, limits the ability of the facility to be financially self-sufficient and amortize sunk costs (utilities, fire/police protection, maintenance, administration) of existing hangers.

Forecast of annual aircraft operations are considered consistent with the FAA TAF if they differ by less than 10-percent in the five-year period and 15-percent in the 10-year period. Both of the preferred (medium growth) five and ten-year baseline consolidated aircraft operations forecasts developed in Chapter 2 are within 3% and 5%, respectively, of the FAA TAF. While the consolidated forecast meets this objective, the forecasted aircraft fleet mix appears to have a preordained objective towards the promotion of turbine, particularly jet, aircraft operations at the Airport. This is seen in several areas:

- An increasing aircraft operation forecast with a reduction in the ratio of single engine piston operations to turbine operations.
- An increasing forecast of passenger enplanements
- An increasing forecast of freight operations
- Increased forecast use by larger (ADG B-II) aircraft

According to FAA AC 150/5300-13A, Airport Design, *"airport designs based only on existing aircraft can severely limit the ability to expand the airport to meet future requirements for larger, more demanding aircraft. Airport designs that are based on large aircraft never likely to be served by the airport are not economical."* Therefore, selection of the current and future critical design aircraft must be realistic in nature and supported by current data and realistic projections.

The dominant operation at C29 is performed by single engine piston aircraft. Not only does the infrastructure at the airport not support larger, more demanding aircraft, but the airport has long been a training facility, now supported by two de facto Fixed Based Operators (FBO). While this alone would support a continued dominance in piston powered aircraft operations at C29, other factors such as historically increasing 100LL fuel sales (tied to piston aircraft operations) and a significant decline in the number of annual instrument approach (AIA) operations (Practice or training approaches do not count as AIAs nor do IFR approaches in visual conditions, and therefore can be correlated to air taxi (often jet and turboprop activity) also support robust local piston powered operational numbers. It should be noted that a trending decrease in the number of AIAs may reduce FAA support for enhanced instrument capabilities at C29 since annual instrument operations provide guidance in determining an airport's requirements for navigational aid facilities, such as an instrument landing system.

While both jet and turboprop aircraft fall under the classification of "turbine", it is important, from an airport design standpoint, to understand they have distinctively different facility operating requirements. In most cases, jet aircraft are considered the more demanding of the two. At C29, while turbine aircraft operations have trended slightly higher over the past several years, this is only due to an increase (CAGR of 8.3%) in turboprop operations. Jet operations have continued to decline at a compounded annual growth rate (CAGR) of -6.8% during the period. It is important to note, for forecasting purposes, that neither jet nor turboprop aircraft operations are near their historic 10-year highs, and there is no empirical data to support significant operational growth during the forecast period at C29. In fact, the number of jet operations at C29 has trended significantly downward (CAGR -2.3%) during the past decade, contrary to national trends.

The report continues to push for an increasingly demanding fleet mix by forecasting an increase in commercial (air taxi and air freight) operations during the forecast period (Typically, commercial operations utilize turbine powered aircraft). One method to quantify existing and future forecasted commercial operations is by analyzing historical and forecast passenger enplanements. The report states that overall enplanements are limited because a portion of air taxi operations are required to divert to MSN during inclement weather. Letters, included in "Appendix D – Correspondence from Business Users" repeatedly proclaim their desire to use C29 for their business operations, but are unable to do so due to facility operating restrictions. While claims of future use will be discussed later, historic enplanement data does not support actual increasing enplanements. Only one year (2012) recorded enplanements at or above 300 at C29 in the past decade, while two years (2016 and 2018) saw annual enplanement totals below 100. Overall, since 2009, the CAGR for enplanements is -13% and from 2003, the CAGR is -12%. Other than using speculative, anecdotal information, there is no evidence to support a growth in enplanements at C29 during the forecast period.

The preferred Medium Growth Forecast for freight operations shows a CAGR of 3.50% during the long-range forecast period, slightly higher than that seen between 2015 and 2019 (CAGR 3.2%). Although this

is the trend unfolding in e-commerce, both globally and domestically, there is no empirical information to support continued or increased air freight operations at C29 rather than MSN or larger facilities such as those in Chicago and Minneapolis and trucked regionally. While the report states that air freight operations will increase at C29, primarily based on the airport's proximity to a UPS facility, no empirical evidence supports a nexus between a UPS facility and their intent to increasingly utilize C29 for air freight operations. This increased forecast should be supported by information such as past and anticipated future load factors, along with a desire by air freight operators to utilize more frequent and/or larger freight aircraft at C29. Letters from major air freight carriers such as UPS and FedEx should be used to back up this assertion. Even the Wisconsin Airport System Plan 2030 states that, at Large GA Airports, air cargo volume is expected to increase only by 0.1% by 2030, while air cargo operations are expected to have no measurable increase (far less than the forecasted CAGR of 3.50% at C29). Only commercial service airports, such as Dane County Regional Airport, are expected to show increases in both air cargo volume and operations. Given that the region is already served by a commercial service facility, there is no reason to predict that C29 will realize a significant increase in air cargo volume.

The Airport Reference Code (ARC) is a coding system developed by the FAA to relate airport design criteria to the operational and physical characteristics of the airplane types that will operate at a particular airport. The ARC is used for planning and design only, and does not limit the aircraft that may be able to operate safely on the airport (The ARC is not affected by runway length since runway length is typically aircraft specific). In order to determine the appropriate ARC for an airport, a "design aircraft" is first determined. The design aircraft is typically the most demanding aircraft (in terms of an airport's physical features) that conducts at least 500 annual operations at the airport, excluding touch-and-go operations. The critical design aircraft is defined by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG), these three parameters correspond to aircraft approach speed, wingspan, and landing gear configuration, respectfully. The current ALP dated 10/06/2008 (Not dated or signed by the City, WDOT, or the FAA) for C29 identifies an existing and future ARC of B-II.

The current ARC designation of B-II exceeds the current, and forecasted operational needs of the airport. In fact, operations of ADG-II aircraft have not eclipsed the 500-itinerant threshold at C29 since 2010, and the most recent full calendar year (2019) saw the lowest (176) ADG II operations at C29 in a decade. Based on this downward trend (See Figure 2), it seems unlikely that the airport will meet, and sustain, the minimum threshold of 500 itinerant operations within the forecast period. It is important to note that the first consideration is the safe operation of aircraft likely to use an airport. Any operation of an air- craft that exceeds design criteria of an airport may result in a lesser

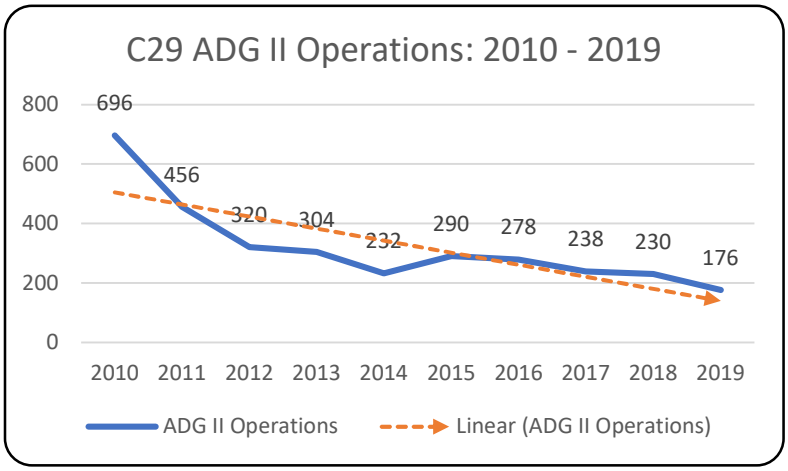


Figure 2

safety margin; however, it is not the usual practice to base the airport design on an aircraft that uses the airport infrequently.

Although some minor modifications may be needed to taxiway fillet designs to accommodate TDG-2 aircraft (Cannot be verified using the provided ALP), the airport configuration (based on the ALP) meets current ADG B-II minimums (Per FAA AC 150/5300-13A). The only variables not included in the ARC are runway length and approach minimums, since they are often aircraft specific. The only support offered for increasing the facility's runway length and/or improving the instrument approach minimums are based on letters of support from area businesses. Such letters imply a "build it and they will come" justification, something that the FAA would not support. In addition, given the recent development of power transmission lines west of C29, it is extremely unlikely that these lower approach minimums could be accommodated. In fact, because the airspace was not protected for lower minimums at C29, the cost burden to mitigate the towers would likely be shouldered by the airport proprietor.

It should be noted that C29 is classified as a General Aviation Relief Airport for MSN. The term "reliever" is important here in that it has been designated to offer capacity relief to MSN, rather than act as a surrogate or replacement for MSN. Operators of aircraft that cannot operate at the existing C29 configuration should utilize MSN, a local facility (well within the airport service area) available to meet their needs. This is why operators of larger aircraft such as the Boeing 737, or other air carrier aircraft, do not operate at C29, and will likely never do so. Aircraft typically operate at facilities designed for their use, rather than altering other local facilities to conform to certain aircraft operations when another viable facility is available. When another facility is not available within a reasonable distance, it becomes justifiable to apply capital funding to enhance an airport's capabilities. Although several statements related to correspondence from local businesses who would make greater use of the airport if it could accommodate more demanding aircraft, there is no mention that any of these businesses originally chose their current location, nor would they move their business location, based on existing/future facilities at C29.

A wide range of factors can influence the aviation industry and can have significant impacts on the extent and aspect of aviation activity. Historically, the nature and direction of the economy has had a direct impact on the level of aviation activity. Recessionary periods have been closely followed by declines in aviation activity. According to the National Business Aircraft Association, during the first seven months of 2020, business aviation activity has been down as much as 71% from prior year levels. As of the end of August, 2020, the National Association for Business Economics expects that the economic effects of the coronavirus will likely be felt through the year 2023, and some economists even say that the impacts could be felt for another decade. Given the unknown economic impacts and recovery timeline associated with the current pandemic, it would be prudent to postpone the master planning effort until evolving factors impacting the aviation industry are less nebulous, and a forecast more reflective of post-pandemic conditions can be developed.

Comments

Page 2-3, 2.21 Local Aviation Trends – ***"Information on the total number of operations 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 nontowered, 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)."***

This statement lays the foundation for cascading issues with the aviation forecasts presented in this chapter. A "flat historical estimate" involving nine years of recent historical annual operations data cannot, and should not, be used as a basis for a twenty-year operations forecast. Although this is not an unusual occurrence at small, non-towered, general aviation airports, other methods should be used to calibrate/adjust historical data, especially for a long-range forecast. The FAA has published reported operations numbers for C29 back to 1990. Although much of this information appears to contain similar "placeholder" numbers, using a larger set of historical data could help temper gaps in actual historical numbers.

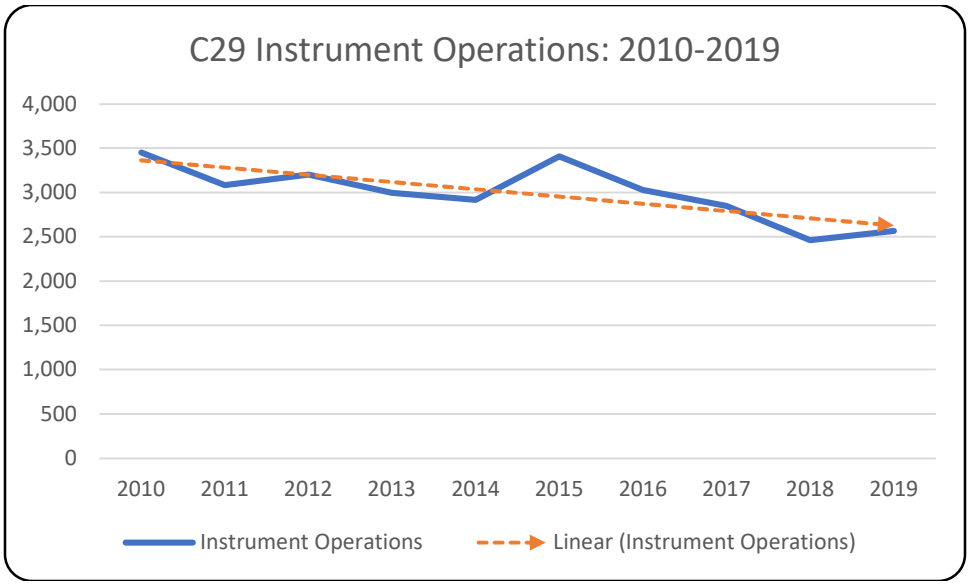
It should be noted that airport proprietors have the opportunity, and one could argue, a duty, to update a number of data points (operations, based aircraft, etc.) on an annual basis and report it to the FAA via form 5010-1. This would certainly assist in future master planning efforts.

Note: In addition to "Freight", "Jet" and "Turboprop" aircraft operations, Table 2-1 should depict "Piston Powered" aircraft trends, preferably both Local and Itinerant. This would assist in providing a comprehensive view of historic users of the airport and differentiate between long-range itinerant operations and local training activity.

Page 2-4 – ***"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."***

Actually, the number of IFR operations has steadily declined since 2015 by nearly 25% and has experienced a compounded annual growth rate (CAGR) of negative 3.2% since 2010. Annual instrument operations provide guidance in determining an airport's requirements for navigational aid facilities, such as an instrument landing system. Since practice/training approaches do not count as AIAs nor do IFR approaches in visual conditions, the decline in IFR operations likely correlates to the decrease in air taxi (often jet and turboprop) activity.

The graph below depicts both the actual and the decreasing linear trendline instrument operations at C29.



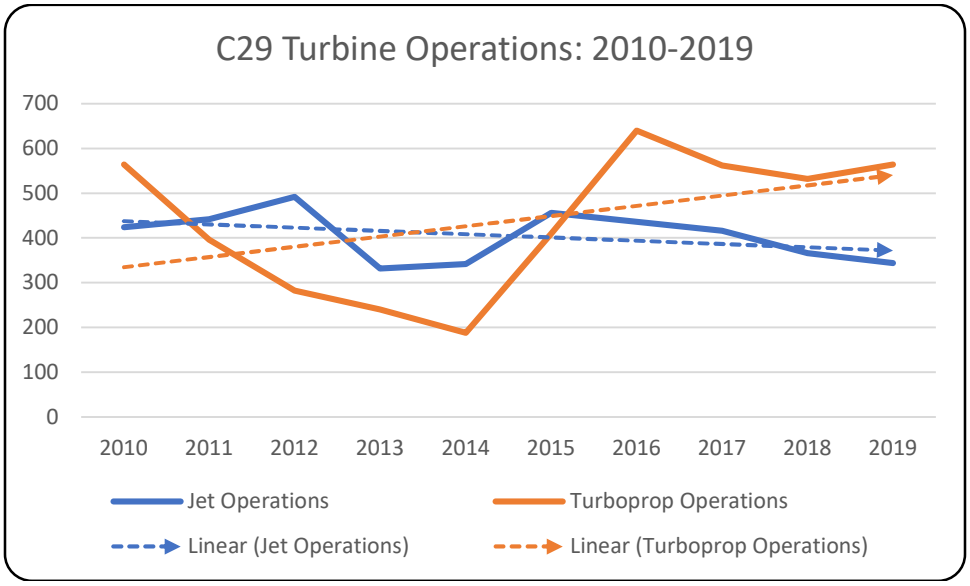
Page 2-4 – *"As the growth in e-commerce continues to increase, and as many businesses continue to rely on air-freight deliveries to meet the needs of their customers, the corresponding trend of increased demand for next-day delivery service and overall air-freight operations is anticipated to continue."*

Although this is the trend unfolding in e-commerce, both globally and domestically, this comment is extremely speculative by stating that this will continue at C29 rather than MSN or larger facilities such as those in Chicago and Minneapolis and trucked regionally. Wisconsin Airport System Plan 2030 states that, at Large General Aviation Airports (like C29), air cargo volume is expected to increase only by 0.1% by 2030 while air cargo operations are expected to have no measurable increase. Specifically, at C29, this plan states that between 2020 and 2030, only 100 additional pounds of airfreight will be delivered with no additional increase in air freight aircraft operations. Only Commercial Service Airports, such as Dane County Regional Airport, are expected to show increases in both air cargo volume and operations. Given that the region is already served by a commercial service airport facility, there is no reason to predict that C29 will realize a significant increase in air cargo operations during the forecast period. If a continued increase in air freight activity is expected in both the short and long range forecast periods, letters of support (Similar to the letters of support solicited/received from area businesses stating that a longer runway is desired for their respective operations) should be obtained and added to the document appendices, from UPS/FedEx to state that air-cargo activities (operations and volume) will continue to increase at C29.

Page 2-6 – *"Of the two, jet activity has been the most consistent, averaging roughly 400 operations per year."*

"Consistent" is a relative term. When combined, jet and turboprop operations have remained fairly consistent, however, when viewed individually, the number of jet operations has been declining while turboprop operations have been trending higher. These trends are depicted in the graphs below. Neither jet nor turboprop operations have been "consistent" over the past ten years with jet operations fluctuating by 148% and turboprop operations fluctuating by 340% during the past 10-years.

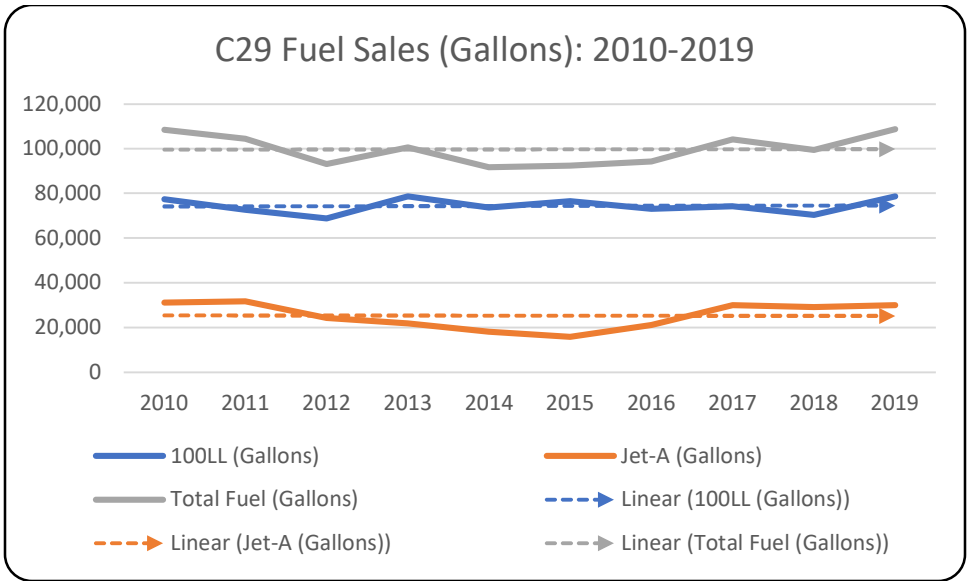
In addition, for discussion purposes, turboprop aircraft should be separated from jet operations at C29. These are two distinctly different aircraft operation types and generally have significantly different facility operating requirements.



Page 2-6 –*The volume of fuel sold in 2019 (Jet-A and 100 Low Lead combined) was the highest in the past decade."*

The number of gallons of Jet-A fuel sold at C29 has increased fairly significantly since between 2015 and 2017. This increase correlates well with the number of turbo-prop aircraft, however, there appears to be a negative correlation between increasing Jet-A fuel sales and decreasing jet operations, during the same period.

Because fuel types relate to the operation of distinct types of aircraft (piston versus turbine), any discussion regarding the volume of fuel sales should be discussed independently. While overall fuel sales were the highest in the past decade, sales of Jet-A have not yet reached 2011 levels. Only by factoring in sales of 100LL, which saw record sales in 2019, can it be stated that *"the volume of fuel sold in 2019 was the highest in the past decade"*. By combining fuel type data, the report provides a nebulous illustration of aircraft operations by aircraft type. Evaluated separately, it can be seen that sales of jet fuel have been on a slight decline since 2010, and total fuel sales have only seen a minimally increasing trend, supported by an increasing trend in the number of gallons of 100LL sold. In short, fuel sales for turbine powered aircraft are trending lower while fuel sales for piston powered aircraft have increased over the past decade. Fuel sales from 2010 through 2019 are depicted in the graph below. Overall, fuel sales at C29 have trended relatively flat over the past decade.



Page 2-6 -*Growth in Based Aircraft and Sustained Interest in Hangar Construction / Aircraft Storage*
Aircraft hanger facilities are in limited supply nationwide and it is not uncommon for airports to have waiting list of customers for this type of storage. It is also not uncommon for an aircraft owner to be on waiting lists at multiple airport facilities within a region due to the limited availability as a means to increase their chances of obtaining hanger storage. In addition, up to 47% of the individuals listed on the C29 hanger wait list are not currently listed as registered as possessing a valid FAA Pilot's Certificate, further adding speculation to the degree of need at C29. Therefore, a wait list is not always an accurate representation of the need for additional hanger storage at a particular facility since this is not necessarily focused on a particular airport, but several in the region.

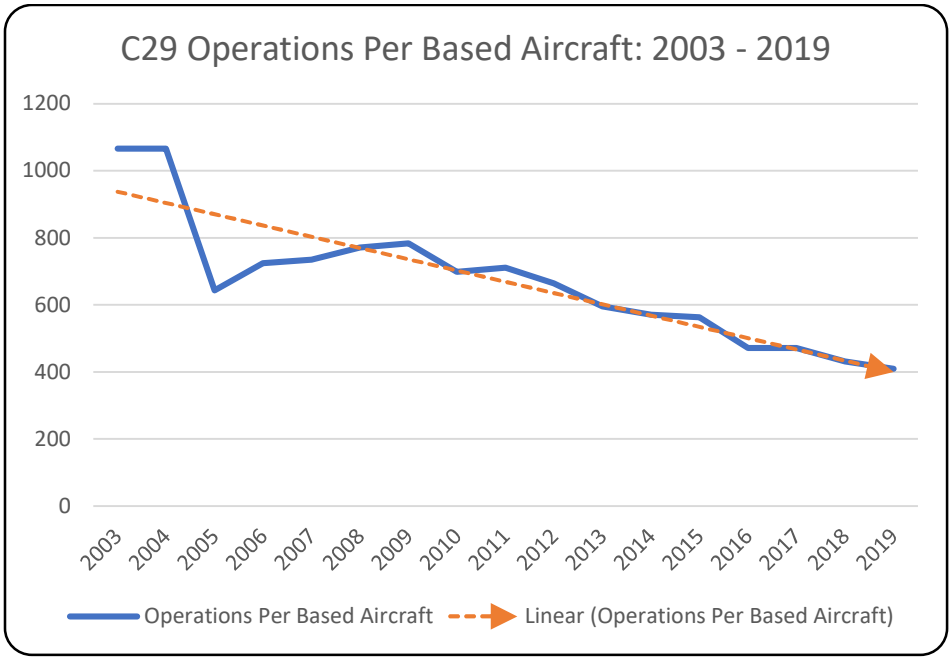
Often, an aircraft may already be based at a specific facility and stored outdoors, desiring an indoor storage option. This would not necessarily adjust the number of based aircraft, rather it would simply adjust how the aircraft is stored. It is important to keep in mind that a desire or inquiry to obtain hanger storage at a facility does not directly correlate with actual intent to base an aircraft at that facility in the future, even if space did become available. This is simply a metric to demonstrate potential market demand in the region.

For this reason, many master plan studies will perform an Airport Service Area Study. As a rule of thumb, this area typically encompasses a region within 30-miles of the airport and helps determine what factors influence an owner to base an aircraft at a particular airport rather than competing airports within the service area. Typically, convenience is the primary factor for basing an aircraft at a particular location, however other factors such as runway length, hanger availability, or other amenities may impact an owner's decision on where to base an aircraft. An effective method of evaluating an airport's service area is by analyzing based aircraft by their registered address. Plotting the addresses on a map can help establish the actual service area for the airport and offer insights into proximity of the airport to aircraft owners and competing airports. This can offer insights that a survey of airport users cannot.

From a purely economic standpoint, a shortage of hanger space may indicate that the current pricing for aircraft storage is too low and price equilibrium has not been reached, although the elasticity of price for

aircraft storage is unknown, for C29 or the region. To simply state that a waiting list is directly correlated with future occupancy rates does not translate into actual possible future based aircraft and/or hanger stored aircraft.

Based aircraft numbers are often used as a metric when evaluating historic and future aircraft operations. Aircraft operations are often directly related to the number of operations commencing at a general aviation airport facility much in the same way that the population of a city is closely related to the number of vehicle trips, and even traffic congestion. This is a simple relationship in that the more aircraft based at an airport, the greater the number of operations. As the number of based aircraft increases, in nearly all cases, this would translate into a similar proportional increase in aircraft operations. As can be seen in the graph below, at C29, the inverse of this trend transpiring, where the ratio between based aircraft and the number of aircraft operations is decreasing, significantly. Since 2000, the number of operations per based aircraft at C29 dropped 61% (CAGR -4.87%) from 1,067 (2000) to 413 (2019). While there are likely numerous reasons for this significant decrease in the number of operations per based aircraft, it is clear that on an aircraft by aircraft basis, the airport is increasingly being used for the storage of aircraft. This may also explain the large hanger wait list.



It is important to note that non-aeronautical uses such as hanger facilities can be offered at below fair market value, per FAA rules, resulting in a shortage of such facilities through demand-based economics. This also reduces the operating revenue received by the airport. A typical method to ensure that rental and lease rates reflect changing economic conditions (inflation, etc.) is to conduct annual rate adjustments, rather than once every five years. Enhanced diligence related to rate adjustments may not only nominalize hanger occupancy rates, it would also add additional funds to the airports operating budget and reduce its impact on municipal coffers.

Page 2-7, 2.2.2. National Aviation Trends

This section lays out current, and forecast aviation trends in the United States. Figure 2-1 highlights a healthy upward growth trend for business jet activity nationally, but are counter to the trends reported at C29 between 2010 and 2019, which has experienced overall consistent downward trend. Since 2016,

this downward trend has accelerated at C29. Such a dichotomy would suggest that market conditions at C29 do not necessarily reflect national trends for jet operations. During the same period, however, national trends correlate well with those experienced at C29 for turboprop powered aircraft.

Historical data from the FAA TAF for General Aviation (Non-Air Carrier, Air Taxi, Commuter, or Military) at C29 aircraft shows a steady to increasing average over the past several decades (However, recent years have mostly included placeholder values). Since nationally, trends in the General Aviation (piston) market has recorded a decrease since 2007, this would imply that C29 may be gaining market share versus the nation for this type of activity.

This section also states that "*…with declines in fixed-wing piston aircraft being offset by increases in the turbine, experimental, and light sport fleets.*" Typically, "experimental" and "light sport" aircraft fall into the "fixed-wing piston aircraft" category. Therefore, it is not clear what is being stated here.

Page 2-9 - 2.3.2. User Survey Responses - Operations and Trip Length *"This would indicate that pilots are using their aircraft to their maximum range or stopping to refuel while operating out of C29."*
This language should be changed to (Or omitted completely since this statement isn't relevant to forecasting aircraft operations): **"**This would indicate that pilots, **on occasion**, are using their aircraft to their maximum range or stopping to refuel while operating out of C29."

As mentioned previously, this section should include feedback from air freight transportation entities such as UPS and FedEx. This is especially pertinent since strong statements are made regarding significant increases in future e-commerce related air freight activity at C29. This would complement the host of letters from regional businesses in support of enhancing airport facilities to accommodate prospective future aircraft fleet mixes. This would also help avoid a perception of "build it and they will come" by having companies commit to future aircraft purchases and airport use.

Page 2.9 – 2.3.4 - "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)."
It should be noted that C29 is classified as a General Aviation Relief Airport for MSN. The term "reliever" is important here in that it has been designated to offer capacity relief to MSN, rather than act as a surrogate or replacement for MSN. Operators of aircraft that cannot operate at the existing C29 configuration should utilize MSN, a local facility (well within the airport service area) available to meet their needs, rather than C29. This is why operators of larger aircraft such as the Boeing 737, or other air carrier aircraft, do not operate at C29, and will likely never do so. Aircraft typically operate at facilities designed for their use, rather than altering other local facilities to conform to certain aircraft operations when another viable facility is available. When another facility is not available within a reasonable distance, it becomes justifiable to apply capital funding to enhance an airport's capabilities.

Page 2-10 – 2.4 - Forecasting Approach
There are a number of quantitative methods that can be used to forecast future aviation activity. It is important to note that the FAA does not have a specific policy with regards to the method used for aviation forecasting, rather it offers guidance within several publications. The FAA does, however, have a policy when comparing the developed "baseline" forecast to the FAA's Terminal Area Forecast (TAF) https://taf.faa.gov/ . In most cases, the developed 5-year forecast must differ by no more than 10% and

the developed 10-year forecast must differ by no more than 15%, from the FAA TAF for that facility. Both of the preferred (medium growth) five and ten-year baseline aircraft operations forecasts developed in Chapter 2 are within 3% and 5%, respectively, of the FAA TAF.

Common forecasting methods used in general aviation airport master planning include:

• Market share forecasting—Local activity calculated as a "share" of a larger composite forecast (Regional, State, National).
• Regression analysis (Econometric model) forecasting—Aviation activity tied to other socioeconomic measures (Population, Retail Sales, Personal Income, etc.).
• Time series model forecasting—A past trend of aviation activity is extrapolated and applied into the future.

When evaluating a forecast methodology, it is important to ensure that a relationship exists between a dependent variable (historic operations) and one or more independent variables (Population, Retail Sales, Personal Income, National Aircraft Trends, etc.). Regression can be used to determine the degree of relationship in variation between two or more variables through the calculation of a coefficient of correlation denoted as "r". The value of r can vary between 1.0, perfect correlation (for example, as height increases, weight also increases), and -1.0, perfect negative correlation (as height increases, weight decreases). When r=0, there is zero correlation (height has no impact on weight), meaning that the variation of one variable cannot be used to explain any of the variation in the other variable. The **coefficient of determination, r^2,** is a measure of how well the variation of one variable explains the variation of the other, and corresponds to the percentage of the variation explained by a best-fit regression line which is calculated for the data. The **r^2** value explains the chance that a given value will fall on a regression line and can be used to predict future values with a degree of certainty. An **r^2** value of .90 states that a point has a 90% change of falling on the regression line, hence a significant variation in the dependent variable can be explained by a variation in the independent variable. This variable can be applied to baseline data to extrapolate forecast numbers.

While this metric was not included in prior versions of the forecast chapter, it is a welcome addition. The use an r^2 to determine a fitness of various independent variables explains the changes in the "Preferred Forecast" chosen for several of the forecasts within the chapter, when comparing May versus July versions.

It is rare that a single independent variable can explain a large percentage of the growth on aircraft activity. The best approach is to use a regression model utilizing multiple simultaneous independent variables, rather than just one. Given that no r^2 value in this report met the minimum threshold of .90, it is likely that a multiple regression model would have provided better results.

Page 2-17 - 2.5.4. Based Aircraft Forecast – Local Demand and Regional Market-Share – ***"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."***
While the report's forecast methodology adequately reflects the growth in the regional market share, it also captures the increasing share of the regional market share realized at C29. Unfortunately, the methodology used to accomplish the forecast is somewhat unconventional. Mathematically, it must be

assumed that all aircraft on the C29 based aircraft wait list are already located in the region, hence, they are already part of the regional share of based aircraft (unless they are purchasing new/additional aircraft). Therefore, applying the wait list aircraft to the regional share amount to a double-dipping of based aircraft. Instead, simply applying C29's increasing share of the regional based aircraft market share would have sufficed.

In addition, given that C29 has grown from 58 based aircraft in 2010 to 100 in 2019 (an increase of 42 aircraft), the forecast of an additional 25 based aircraft ("Regional Market Share and Local Demand") seems reasonable by 2039.

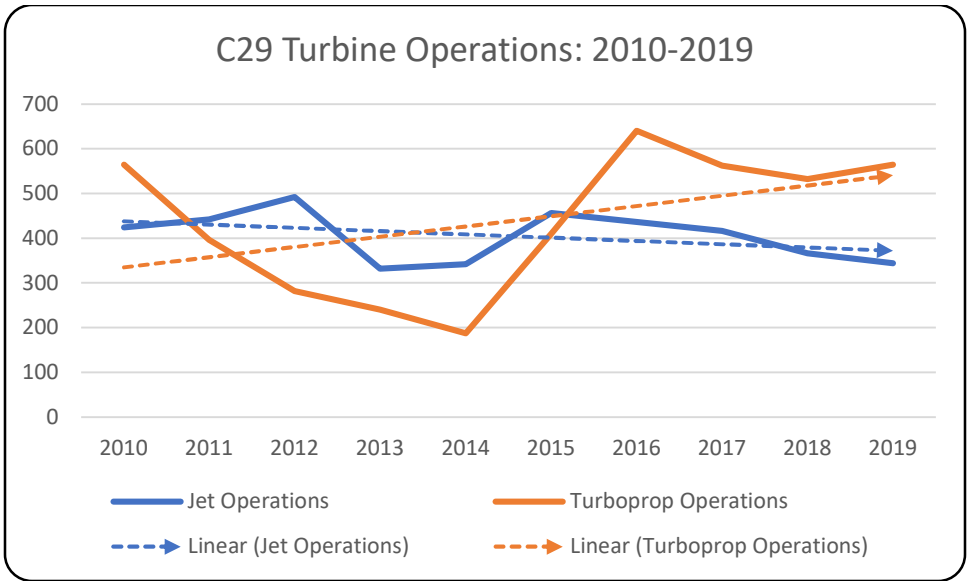
Page 2-21, Based Aircraft Fleet Mix – ***"The FAA Aerospace Forecast 2019-2039 projects that turboprop and jet aircraft will see a higher growth rate than that of piston aircraft through 2039. This is supported by the historic trends in active general aviation aircraft types in the United States since Year 2000 as presented earlier on Figure 2-1. While fixed wing piston aircraft comprise the largest segment of the overall active general aviation fleet, their numbers have consistently been on the decline for the past two decades."***

Due to the lack of historic data available for C29, it is difficult to ascertain if the facility is following national trends in the reduction of piston powered aircraft with a corresponding increase in turboprop and jet aircraft fleet mixes. However, aggregate based aircraft numbers for both C29, the region, and the United States are available, revealing that total based aircraft at C29 have grown significantly faster (CAGR 3.21%) than at both the national (CAGR 0.10%) and regional (CAGR0.64%) level since 1990. This suggests that C29 is gaining share of based aircraft at both the national and regional shares. Given this long-term trend, both the short and long-range based aircraft forecast for C29 appears reasonable.

2.5.6. Based Aircraft Fleet Mix

Page 2-21 - ***"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."***

While this may be the case at the national level, historical data clearly shows that while turboprop operations have increased, and will likely continue to increase through 2039, there is no empirical evidence for the same trend in the number of jet operations at C29 (See graph below). The number of jet operations at C29 has trended significantly downward during the past decade, contrary to national data. For forecasting purposes, turboprop operations should be discussed separately from that of jet operations, since they often utilize distinctively different operating conditions. Given the lack of historical piston aircraft operational numbers for C29, it is difficult to determine whether an increase or decrease in this type of operation is being realized, and if that this type of operation is gaining or declining in the overall share of operations at C29. Any assumption that is contrary to historical data, is highly speculative.



2.6.1. Existing Airport Activity – 2019 Inventory
Page 2-23 - Table 2-14: Existing General Aviation Operations – 2019 Inventory -*"(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"***

Why is "median" being used as a metric? Mean would be more representative and consistent, especially since the mean (average) is being used consistently elsewhere in the report. In addition, mixing varying measures of central tendency is not a good practice within the same calculation/measurement. Use of the median can offer radically skewed data, especially in forecasting exercises, since it simply focuses on the middle value. For example, for a series of numbers such as: 1, 5, 2000, 2000, 2001; the median value is 2000, while the mean (average) value of 1021. This can have extreme impacts on long range forecast.

Page 2-29 - 2.6.4. General Aviation (GA) Operations Forecasts Summary – *"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."*
One respondent to the Business Outreach effort stated that they would consider moving their flight operations from MSN to C29 if the airport supported instrument operations having Decision Altitude (DA) of 250 feet AGL (Above Ground Level) and a minimum visibility of ¾ mile. Given the recent development of power transmission lines west of C29, it is extremely unlikely that these minimums

could be accommodated. Based on the respondents needs, they should be omitted from relocating to C29 for this reason alone. Because the airspace was not protected to ensure lower minimums at C29, the cost burden to mitigate the towers would likely be shouldered by the airport proprietor.

One respondent used the term "may" to describe whether current conditions at C29 "deter or prohibit" operations by some aircraft, and that upgrades to C29 infrastructure "may" bring significant economic benefit. Both of these statements are speculative and would not justify the investment of millions of dollars to enact changes to the facility.

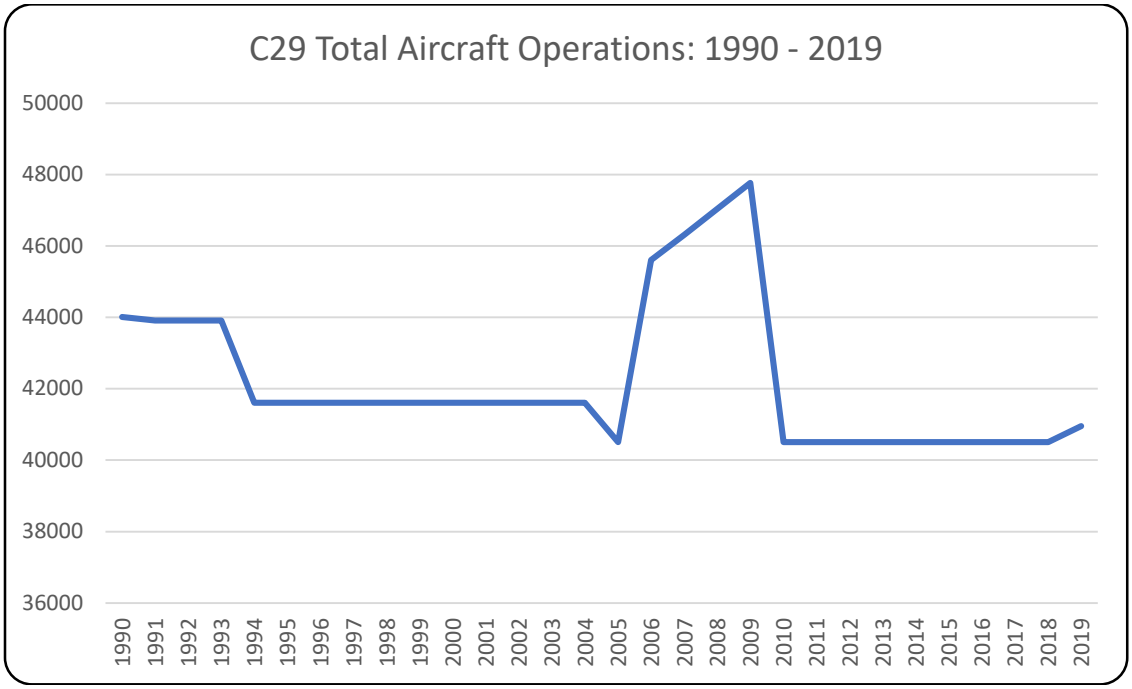
Page 2-29 - 2.6.4. General Aviation (GA) Operations Forecasts Summary – ***"Through coordination with the FAA and the WisBOA, the national market-share methodology was selected as the preferred forecast of future GA operations at C29. Both the regional and national market share projections are under 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."***
The July, 2020 draft operations forecast provides correlation coefficients for the three forecast methods using socioeconomic factors. This was an excellent addition given that this was not provided/performed during the May, 2020 revision, where the socioeconomic values for Dane County retail sales were used as the independent variables for the preferred forecast. The July, 2020 version reveals that the use of Dane County retail sales has a correlation coefficient (R-squared) of .32, which is well below the minimum threshold of .90. In hindsight, given the low R^2 value of using retail sales as a basis for operations projects is very questionable. And should never have been considered in the May 2020 version of the forecasts.

Rarely is a single independent variable (Population, Retail Sales, Personal Income, etc.) responsible for a trend in aviation activity. Rather than attempting to use a single variable liner regression model, the report should evaluate and apply differing time series multivariate regression models. This analysis attempts to quantify historical trends and apply their results by "fitting" a line over historical data and extending that line into future years. Typically, the more independent variables used, the greater the fit to historic data, decreasing the probability for errors when generating forecasts. Simply applying a growth rate (national or regional) without a quantitative determination if the growth rate/s apply locally, is speculative.

2.6.5. General Aviation Operations – Local vs. Itinerant

Page 2-31 – ***"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."***
Based on FAA TAF data, both nationally and regionally, local operations have, and are expected to increase at a faster rate than itinerant operations through the forecast period. This is counter to the report's forecast for C29. This is difficult to quantify since the vast majority of general aviation operations data for C29 has been entered and carried forward as placeholder data (The horizonal

segments in the plot of total C29 aircraft operations below denote placeholder values in the FAA TAF). Since very little actual data is available for the facility, there is little evidence to support a forecast that is contrary to national or regional trends.



Note: Many of the forecast areas of this chapter (based aircraft, operations, etc.) mention the use of data back to the year 2003 while all tables only display data from the year 2014 forward. Data mentioned in the text, and shown on graphs, should be also listed in tables, allowing the reader visualization of the information.

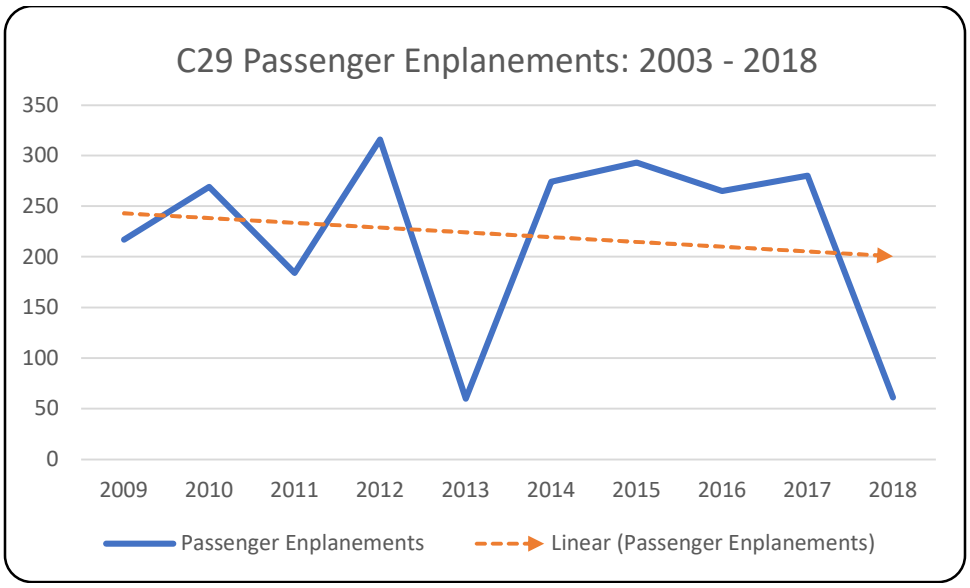
Page 2-31 -Table 2-24: Local vs. Itinerant General Aviation Operations Forecast
This forecast appears to be based on one year of historical data, 2019. This is not adequate, and no forecast should ever be based on a single data point, especially a forecast attempting to visualize 20-years out. Since, as previously mentioned, the vast majority of general aviation operations data for C29 has not been updated annually in the FAA TAF by the airport proprietor, and therefore carried forward as placeholder data. Since very little actual data is available for the facility, other methods to forecast future local versus itinerant operations should be used.

2.8. Commercial Operations

Page 2-33 – *"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."*
This is an "interesting" statement. In actuality, only one year (2012) recorded enplanements at or above 300 at C29 since 2009. Two years (2016 and 2018) saw annual enplanement totals below 100. There is absolutely no empirical data to show that enplanements are increasing, or expected to increase, at C29. Annual data going back to 2003 shows that enplanements are trending downward. In fact, since 2009, the CAGR for enplanements is -13% and from 2003, the CAGR is -12%. Other than using speculative,

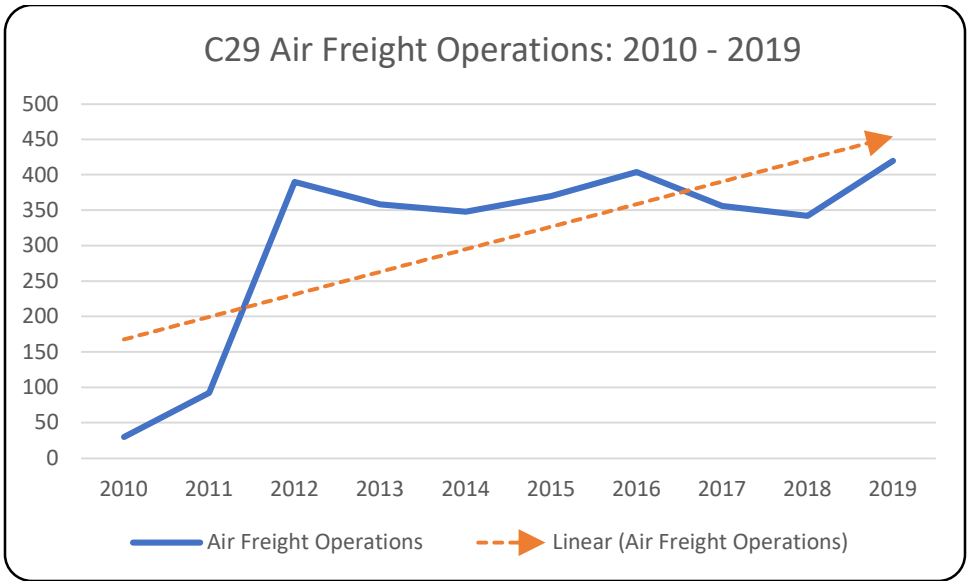
anecdotal information, there is no evidence to support a growth in enplanements at C29 during the forecast period.

A check of the FAA Air Carrier Activity Information System (ACAIS) shows a linear downward enplanement trend (See graph below) at C29 from 2003 to 2019 (C29 has not reported preliminary enplanement data for calendar year 2019 to the FAA). Recently, enplanements for 2018 were down significantly (61) compared to those reported on 2009 (447) or 2017 (280). Based on this trend, there is little, if any, empirical evidence to project a significant growth in enplanements at C29 during the forecast period.



Page 2-33 - Table 2-25: Commercial Operations Forecasts AND Page 2-35 – *"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."*

The preferred Medium Growth Forecast for freight operations shows a CAGR of 3.50% during the long-range forecast period. This forecast is slightly higher than the CAGR of 3.20% realized from 2015 – 2019 (The chart below depicts freight aircraft operations during the past decade). As stated previously, no empirical data supports the report's claims that air freight operations will increase at C29, in general or based on the proximity to a UPS facility. This should be supported by information such as past and anticipated future load factors, along with a desire to utilize more frequent and/or larger freight aircraft at C29. Letters from major air freight carriers such as UPS and FedEx should be used to back up this claim. Even the Wisconsin Airport System Plan 2030 states that, at Large GA Airports, air cargo volume is expected to increase only by 0.1% by 2030 (far less than the forecasted CAGR of 3.50%) while air cargo operations are expected to have no measurable increase. Only Commercial Service Airports, such as Dane County Regional Airport, are expected to show increases in both air cargo volume and operations. Given that the region is already served by a commercial service facility, there is no reason to predict that C29 will realize a significant increase in air cargo volume.

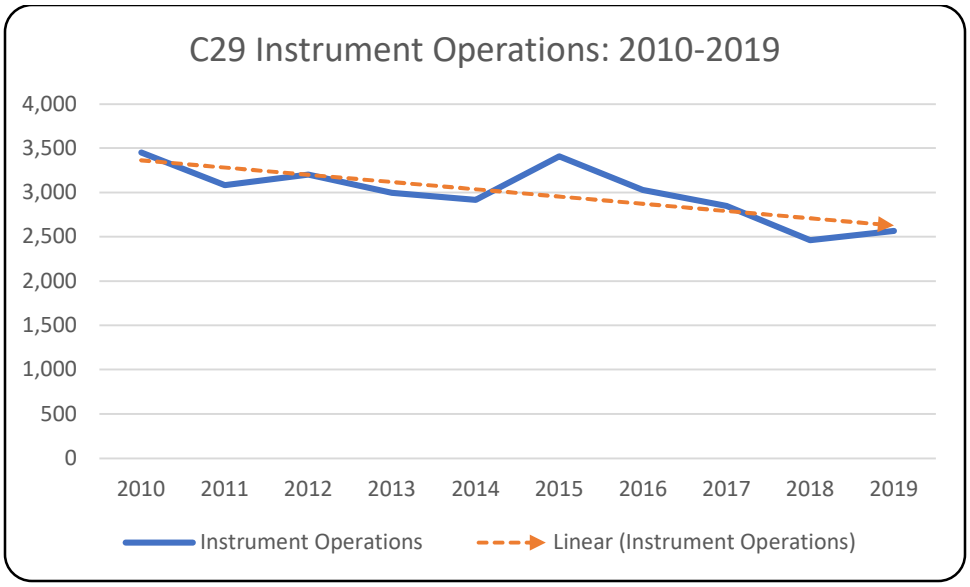


Page 2-35 – *"The medium and high forecast scenarios assume that commercial operations will grow at rates more consistent with local economic trends and that greater use of commuter/air taxi service will be seen with greater business use of C29."*

The report should state and explain what "local economic trends" are being used to and why their specific use is related to the forecasted growth in commercial operations at C29. The forecasts shown in Table 2-25 of the report, other than the Low Growth Forecast utilizing FAA TAF forecast data, offers absolutely no basis for their respective growth rates and a reasoning for their use. Based on recent events that are expected to have lasting economic impacts, the forecast should be adjusted accordingly.

Page 2-36 - 2.9.1. Historic Jet and Turboprop Operations – *"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."*

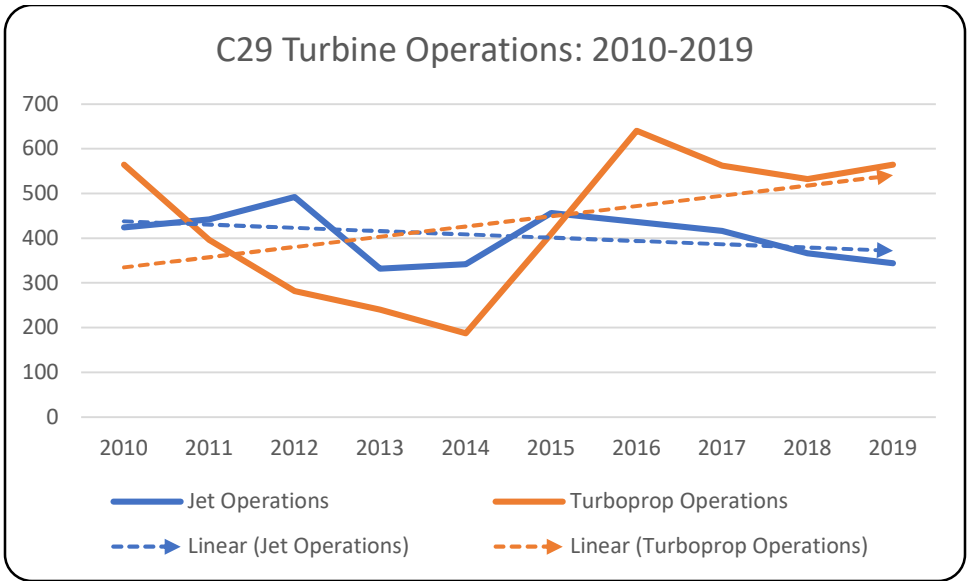
Annual instrument approach (AIA) operations are often used as a metric to evaluate historic and forecast turboprop and jet operations due to the high correlation between the two. Since 2010, the number of AIAs has decreased at an annual rate of -3.2%, and has recently (2015-2019) accelerated to an CAGR of -6.8%. This decline, as depicted in the graph below, is contrary to the forecasted increase in turboprop and jet operations.



Forecasts of annual instrument approaches provide guidance in determining an airport's requirements for navigational aid facilities, such as an instrument landing system, hence practice or training approaches do not count as AIAs nor do IFR approaches in visual conditions. The documented reduction in instrument approaches at C29 does not support the need for enhanced instrument approach capabilities during the forecast period.

Page 2-38 – ***"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)."***

Although technically accurate, this section fails to mention that jet aircraft operations at C29 depict a linear trend of decreasing (CAGR -2.3%) annual operations since 2010 while turboprop operations have trended flat and are nowhere near their ten-year highs. More recently, jet operations have experienced a compounded annual growth rate decline of -6.8% while turboprop operations have seen an increase trend of 8.3% (and higher overall volumes than jet aircraft). Neither jets nor turboprop operations have revisited their respective historic highs nor their combined high since 2016.



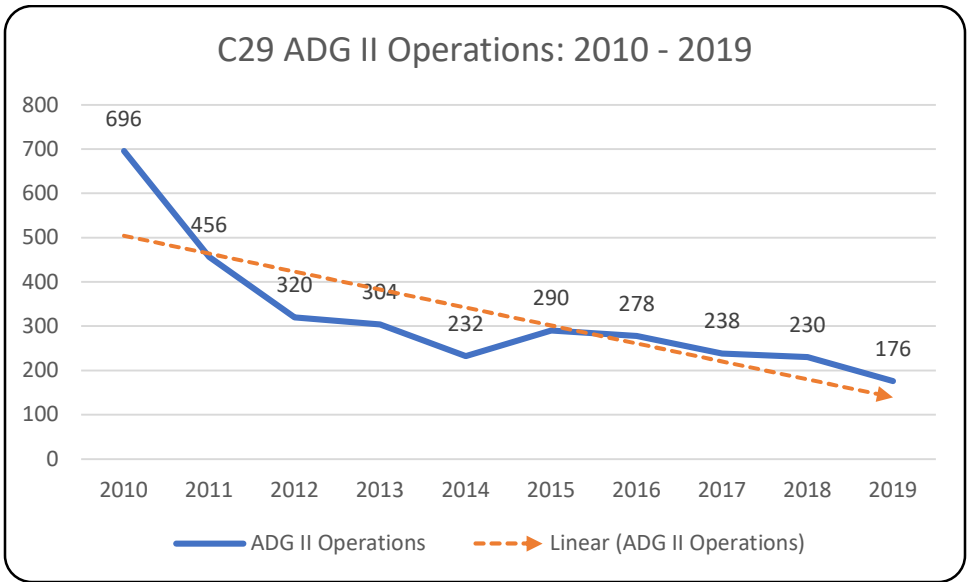
2-47 - 2.10.1. - Design Aircraft by Approach Category and Design Group – "The forecasted change to a greater percentage of ADG II aircraft is additionally based on the business users who expressed a desire to relocate their operation to C29 or otherwise make greater use of the airport with these type of aircraft (see Appendix D)."
This section contains several statements related to correspondence from local businesses who would make greater use of the airport if it could accommodate more demanding aircraft. There is no mention that any of these businesses originally chose their current location, nor would they move their business location, based on existing/future facilities at C29.

Page 2-49 - *"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."*
The FAA establishes clear thresholds between different ADG categories. To suggest that because current aircraft using C29 are "just under" a threshold does not indicate that the next higher aircraft design category should be applied. This implies that there is a "gray area" between design categories as they relate to airport design standards and capital facility funding. This is not the case.

Page 2-49 – *"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."*
According to information in the report, ADG-II aircraft have not eclipsed the 500 itinerant aircraft operational threshold at C29 in a decade.

Page 2-50 – *"In 2010, 500 annual operations of B-II aircraft were surpassed"*
Since the airport could function in its current configuration in 2010, why can't it in the future, especially since operations within the forecast period are not anticipated to exceed 2010 levels? In fact, the most recent full calendar year (2019) saw the lowest ADG II operations at C29 in a decade.

The figure below, showing ADG II operation at C29 since 2010, presents anything but a "consistent" level of aircraft operations in this category during the past decade. In fact, there has been a significant decrease in operations by this type of aircraft during the past decade. It is difficult to see, based on this trend, how the report anticipates exceeding the minimum threshold of 500 itinerant operations within the forecast period.



Based on the ADG II forecast, the minimum threshold for facility requirement needs for itinerant aircraft operations of 500 annual operations will not be reach until 2037. Without this threshold being reached and sustained, there is no evidence to support expanding the design standards to meet this aircraft need within the forecast period of this Master Plan. Any increase to the design aircraft at C29 (Although the airport ARC code signifies that the airport already meets B-II standards) appears to be decades away, if ever, and should be evaluated again in a future Master Plan study.

Page 2-51 ***"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."***
Although not supported by the data, should the airport experience increasing numbers of aircraft requiring Taxiway Design Group 2 (TDG 2) facilities, these could be implemented at minimal costs.

Page 2-51 ***"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)."***
The existing C29 ALP dated 10/06/2008 (Not dated or signed by the City, WIDOT, or the FAA) states that the existing configuration of the airport meets ARC B-II standards (Based on the Airport Reference Code noted below).

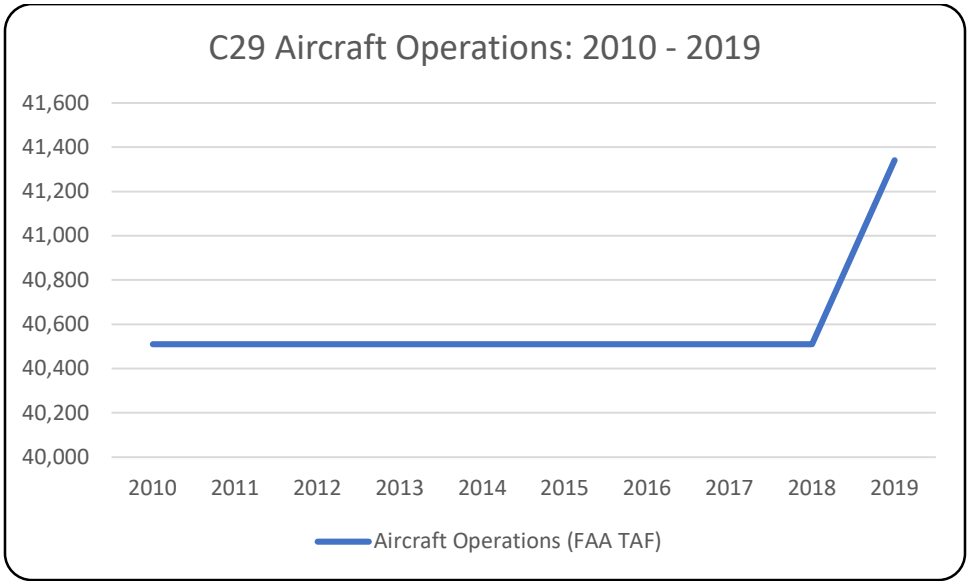
DESIGN CRITICAL AIRCRAFT DATA				
	EXISTING		FUTURE	
RUNWAY	10/28	1/19	10/28	1/19
AIRCRAFT WEIGHT	12,500lbs	turf	12,500lbs	12,500LBS
APPROACH SPEED	@ 121 knots	@ 91 knots	@ 121 knots	@ 91 knots
WING SPAN	@ 79 feet	@ 49 feet	@ 79 feet	@ 49 feet
TAIL HEIGHT	14'-9.6"	9'-11"	14'-9.6"	9'-11"
AIRPORT REFERENCE CODE	B-II	A-I	B-II	A-I

Source: C29 Airport Layout Plan, 10/06/2008

Although some minor modifications may be needed to taxiway fillet designs (Cannot be verified using the provided ALP), the airport configuration (based on the ALP) meets current B-II minimums (Per FAA AC 150/5300-13A). The only variable that may not be included is runway length since this is often aircraft specific. Based on the much higher number of ADG B-II aircraft operation experienced in 2010, the current airport configuration, including runway length, should suffice for the forecast period. The only area where the airport may experience limitations is the number of available hangers for aircraft storage based on reasonable based aircraft forecast.

Even though no data supports an existing and/or future ADG-II standard, an investment has already been made to develop the airport to ARC B-II threshold. Since significant investments were made to develop the facility to meet B-II standards, they should be protected and maintained.

Page 2-52 - 2.11. Forecast Summary and TAF Comparison - ***"Activity at the Middleton Municipal Airport (C29) has been consistent and stable over the past decade…"***
The following graph depicting total aircraft operations at C29 for the past decade (2010 – 2019) does not appear to depict a "consistent and stable" condition.



Page 2-53 – *"The presence of another FBO-like facility suggests that interest in general aviation within the Madison and Dane County area is robust."*
This statement adds credence to the need for an Airport Service Area Study as part of this master plan effort.

Page 2-53 – *"C29 sold its highest volume of fuel in 2019."*
As mentioned previously, while overall fuel sales were at their highest in 2019, the number of gallons of jet fuel has not surpassed its high seen in 2011. Sales of 100LL did see its highest volume in 2019. This trend (lower jet fuel sales and higher 100LL fuel sales) is counter to the presumption that jet aircraft operations are climbing while piston aircraft operations are declining.

Page 2-53 – *"From outreach to a few area companies known to operate at C29, there is a desire to make greater use of the airport."*
There is a difference between selective outreach and a company independently contacting the airport to state that they would like to come there but can't because of a certain condition. One is solicitation and the other is demand based.

Page – 2-56 – *"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."*
A recommendation should be made to the FAA to adjust the TAF to reflect the airport's increasing share of the national and regional based aircraft, however, an aircraft hanger wait list can only address the airport service area, rather than a specific airport.

DANIEL P. BARTHOLOMEW, AICP, ACE, A.A.E.

926 East Historic Columbia River Highway, Troutdale, OR 97060

PROFESSSIONAL EXPERIENCE

Reno-Tahoe Airport Authority • Reno, NV • 2017 – 2020

Vice President of Planning, Engineering, and Environmental Management
Provided executive level leadership to the Planning, Engineering and Environmental Management Department. Responsible for providing administrative direction oversight and coordination for the development, modification and improvement of plans and facilities for the Airport Authority, which included program planning, budgeting, design, construction administration, contract procurement and quality assurance.

- Supervised staff of twelve (Director to Technician level)
- Developed, implemented, directed, and managed the Planning, Engineering and Environmental Management Department's goals, objectives, priorities, and strategic initiatives
- Assigned projects and programmatic areas of responsibility
- Ensured that department efforts are supportive of the organization-wide goals and/or strategic priorities
- Screened, interviewed, and selected new employees in accordance with established policies
- Evaluated staff performance and implemented corrective actions if needed
- Directed the preparation of plans and proposals for future airport development
- Recommended and implemented master plans and planning studies to be responsive to future facility development needs:
  - Reviewed capital improvement projects
  - Analyzed justifications in order to recommend priorities
  - Provided leadership in the development capital improvement programs.
  - Directed the preparation of Consultant Solicitations, Professional Services Agreements, and Request for Qualifications/Proposals bid documents
- Administered and coordinated FAA grant and passenger facility charge funds for airport development projects
- Directed the preparation of Environmental Reports on proposed airport development projects in compliance with the requirements of the FAA, NEPA, state and local jurisdictions
- Performed Aircraft Performance Analysis and Airspace Obstruction Analysis for proposed runway extension
- Facilitated RTAA developmental activities, construction, design, and environmental compliance by coordinating activities with RTAA staff, regulatory bodies and other agencies, and resolving conflicts in a timely manner
- Oversaw the development of on-airport and off-airport land use and site work to assure coordination and compliance with RTAA plans and requirements
- Evaluated tenant development proposals
- Oversight of all engineering, construction, and capital projects
- Negotiated and resolved sensitive, significant and controversial issues relating to planning, engineering, and environmental management issues at the RTAA
- Developed and administered the department's budget, and forecast the need for additional funds for staffing, equipment, materials and supplies
- Represented Planning, Engineering and Environmental Management to other departments/divisions, appointed and elected officials (including the Board of Trustees'), outside agencies and community groups
- Served as the RTAA representative on local, regional and/or national organizations regarding planning, engineering and environmental issues

Truckee Meadows Community College • Reno, NV • 2018 - 2019

Adjunct Instructor
Taught two lecture/lab courses, required for students transferring to the University of Nevada Engineering Program. Course focused on engineering design fundamentals, basic physics, programming, problem solving, and working in a team environment.

- Provided lectures and supervised lab activities
- Designed projects and exams
- Graded course work and assigned final grades

Reno-Tahoe Airport Authority • Reno, NV • 2013 - 2017

Manager of Planning and Environmental Services
Managed the Planning, Environmental, Airport Noise, and Geographic Information System (GIS) Divisions for the Reno-Tahoe Airport Authority, overseeing Reno-Tahoe International (RNO) and Reno Stead (RTS) airports.

This position is involved in all aspects of airport planning, aircraft noise monitoring, aviation forecasting, residential sound mitigation, airfield and terminal design, surface transportation analysis, cargo facility planning, capital improvement prioritization, contract negotiation and administration, airside and landside facility planning, grant management, property management, economic development initiatives, presentations before boards and elected officials, budgeting, and general staff management including hiring, evaluation and disciplinary proceedings. Projects entailed the management of consultants/contractors, in-house staff, or combination of the two along with FAA, NDOT and regional municipal coordination. Other duties and responsibilities include:

- Supervised staff of five (Program Manager to Technician level)
- Managed Authority's Geographic Information System (GIS) Implementation and Operation
- Acted as Project Manager for various consulting activities
- Managed all Airport Planning studies:
  - Reno-Tahoe International Airport Master Plan
  - Reno-Tahoe International Airport Air Service Market Study
  - Reno-Tahoe International Airport Rental Car Facilities Study
  - GIS Implementation Plan
  - Cargo Area Master Plan
  - Obstruction Mitigation Plan
  - Reno-Stead Airport Layout Plan
  - Reno Tahoe International Airport Land Use Plan
  - Reno-Tahoe International and Reno Stead Airport Roadway Access Plans
  - Alternative Energy Facility Site Suitability Analysis
  - Security Exit Lane Alternatives Evaluation
  - Terminal Facility Master Plan
  - Airfield/Air Service Capacity Analysis
  - Airfield Signage and Marking Plan
- Oversaw Environmental Compliance and Sustainability Programs
- Managed Authority's Surface Transportation Program
- Developed airport airspace surfaces (TERPS, Part 77, OEI)
- Supported Air Service Development
- Oversaw Noise Monitoring Program
- Supervised Airport Noise Mitigation Program Staff
- Facilitated and Supported Numerous Cross Departmental Initiatives

Broward County Aviation Department • Fort Lauderdale, FL • 2012 – 2013

Director of Planning and Environmental
Provided strategic leadership for all airport planning studies and master plans for both Fort Lauderdale-Hollywood International (FLL), a Primary Commercial Service Airport and North Perry Airport (HWO), a General Aviation reliever airport. This position also directed the Department's Geographic Information System (GIS) Program, Airport Noise Monitoring Program, Environmental Compliance and Sustainability Programs, Airport Project Review Process, and was responsible for achieving the goals and objectives of FLL's strategic plan as they related to planning and facility development, including the development of Master Plans for the use of limited airport space for airside and landside facilities, passenger terminal planning, and airfield capacity planning for the Broward County Aviation Department. Other duties and responsibilities included:

- Supervised staff of eleven (Program Manager to Administrative level)
- Oversaw Operating Budget of $2.5 million
- Presentations before Board of County Executives and other policy/governing bodies
- Acted as Contract Administrator for various consulting activities
- Managed all Airport Planning studies (Airside, Terminal, and Landside)
- Co-managed implementation of new 8,000' parallel runway, international terminal, and all enabling projects for FLL
- Oversaw Environmental Compliance Program
- Oversaw Noise Program

- Managed the BCAD Sustainability Master Plan
- Managed the BCAD Geographic Information System (GIS)/Computer Aided Design (CAD) Program
- Coordinated terminal space planning
- Coordinated the development of and updates to master plans, design standards and Airport Layout Plans (ALP)
- Managed airspace obstruction mitigation
- Capital budgeting
- Planning and development liaison to Port Everglades
- Facilitate and Support Numerous Cross Departmental Initiatives

Broward County Aviation Department • Fort Lauderdale, FL • 2009 – 2012

Manager of Airport Planning

Managed the Planning and Development Division overseeing Fort Lauderdale/Hollywood International Airport (FLL) and North Perry Airport (HWO). This position was involved in all aspects of airport planning, operations, airfield and terminal design, capital improvements, facility planning, grants, property management, land use, modeling, budgeting, and general management. Projects entailed the management of consultants/contractors, in-house staff, or combination of the two along with FAA, FDOT and local coordination. Evaluated and coordinated planning efforts associated with a new elevated 8,000-foot parallel runway, a new international terminal, modernization of exiting terminals and associated surface transportation, operational coordination, safety, environmental issues and enabling projects.

- Supervised staff of six (Principal Planner/Project Manager to Engineering Technician level)
- Managed various consultant activities and projects:
  - Strategic GIS Implementation Plan
  - Airport Layout Plan (ALP) (FLL and HWO)
  - Airport Master Plan (FLL and HWO)
  - Airfield Refinement and Construction Phasing Plan
  - Airport Property Management Plan
  - Airspace Obstruction Mitigation Plan
  - Storm Water Drainage/Discharge Master Plan
  - Terminal Space Management Plan
  - Sustainability Master Plan
  - Signage and Way Finding Master Plan
  - FLL Sub-Surface Utility Engineering Study
  - Near Term Cruise Passenger Facility Study
  - Pavement Management Study
  - One Engine Inoperative (OEI) Corridor Study
  - Ramp Rehabilitation and Design
  - Simulation Model Calibration for New South Runway
  - Port Everglades Crane/Vessel Airspace Evaluation
  - Construction Photographic Documentation of New South Runway and New International Terminal
  - Helicopter Design Surface Analysis
  - Aircraft Gate Utilization Analysis
  - Taxiway Alignment Cost Benefit Analysis
  - Monumentation of Primary (PACS) and Secondary (SACS) Airport Geodetic Control
  - Runway/Taxiway/Facility Cost Benefit Analysis
  - Airport Roadway Access and Parking Study
  - Air Traffic Control Tower Redevelopment Study
- Implemented first approved “Non-Pilot Program” FAA Electronic ALP (eALP)
- Applied FAA Advisory Circular directives to various projects
- Prepared project scopes for airport related studies and negotiate contracts
- Modeled and evaluated operational, environmental, business and airspace impacts of airport and regional development projects
- Developed Airspace Obstruction Mitigation Program for new south runway project
- Prepared section annual operating and capital budgets
- Reviewed and Validated FAA Terminal Area Forecast (TAF)
- Performed statistical analysis regarding facility utilization
- Evaluated potential airside, landside and terminal facility options
- Managed relocation of NAVAIDS (ASR-9, VOR, ASDE-X and Localizer)
- Residential Property Sales Assistance and Relocation Analysis
- Worked with adjacent municipalities to implement model airport zoning districts
- Prepared Noise Property Inventory/Re-Use Plan and ‘Exhibit A’ per FAA requirements
- Evaluated International, Domestic and Remain Overnight (RON) Ramp/Gate Design
- Prepared and submit FAA form 7460 for obstruction evaluations in the airport environs
- Prepared FAA Categorical Exclusion (CATEX) and Environmental Assessment (EA) documents
- Developed Business Systems Integration Procedures
- Served on FAA Airport Facilities Terminal Integration (AFTIL) Safety Management Study Team for FLL New South Runway and FLL ATCT Siting Study
- Served on Airport Project Review Committee

- Implemented Electronic Asset Management System
- Airfield pavement management
- Worked with on-going sustainability efforts

City of Aurora Department of Planning • Aurora, CO • 2002 – 2009

Planning Supervisor, Manager of Planning Data Services
Managed the Planning Data Service Division within the Department of Planning for the City of Aurora, Colorado.

- Supervised a staff of six. (Principal Planner to Administrative Support level)
- Managed Planning Department's GIS and associated computer applications
- Provided statistical analysis and assistance to various city departments and external entities
- Generated and enforced policies related to computer data dissemination for department
- Managed and/or assist in various planning and citywide studies (including two Comprehensive Plans)
- Managed socio-economic information analysis and dissemination
- Worked with Denver International Airport and Buckley AFB on various aircraft noise issues and mitigation measures
- Worked with the Denver Regional Council of Governments (DRCOG) to plan and establish light/commuter rail
- Served on Lowry Superfund Site Redevelopment Committee
- Worked closely with top city administrators to perform a needs assessment, budget, programming and design efforts for a new, $420 million, 60-acre municipal building and service complex
- Analyzed fiscal impacts of various planning proposals
- General planning duties (site plan analysis, zoning interpretation, development review)
- Served on City's Emergency Operations Committee
- Implemented City Electronic Document Management System
- Presented at numerous City Council, Council Sub-Committees, and Community meetings
- ESRI "Outstanding Achievement in GIS" Award, 2003
- ESRI "Special Award in GIS" (SAG) recipient, 2008
- City of Aurora "Innovation Award", 2007, for the use of GIS technology to supplant repetitive business processes

University of Phoenix System • Englewood, CO • 2007 – 2009

Adjunct Instructor, Graduate School of Business
Taught two courses preparing students to apply statistics and probability concepts along with quantitative reasoning to business decisions. Subject matter focused on appropriate sampling populations, descriptive statistics, probability concepts, confidence intervals, uncertainty, sampling designs, interpretation, data collection, parametric and nonparametric tests of hypothesis and regression analysis.

- Courses taught: Research and Statistics for Process Control, and Applied Business Research and Statistics
- Designed projects and exams.
- Graded course work and assigned final grades.
- Advisor to University on revised and alternate methods for teaching statistical applications.

Coffman Associates, Inc. • Lee's Summit, MO • 1998 - 2002

Senior Airport Planner
Managed and performed complex airside, landside and environmental projects for numerous Commercial Service and General Aviation Airports. Provided consulting services related to land use planning for municipalities in the vicinity of airports. Primary focus area was General Aviation Airports located in California and Arizona.

- Supervised a staff of three (Two Associate Planners and an Engineering Technician)
- Prepared Airport Master Plans, Airport Layout Plans, F.A.R. Part 150 Noise Compatibility Program Studies, Environmental Studies (NEPA and CEQA), Cost Benefit Studies, Air Service Demand Market Studies, and Infrastructure Master Plans
- Implemented company's Airport GIS Application
- Designed aircraft approach and departure procedures for obstacle avoidance and noise mitigation
- Measured airport aircraft noise levels, analyzed impacts and simulated mitigation alternatives
- Consulted with municipalities on zoning and land-use measures to mitigate existing and future aircraft noise issues

- Meet with various councils, boards, commissions, elected officials and civic groups to discuss airport development and land planning alternatives
- Implemented GIS technology for land use compatibility analysis

Blackhawk Technical College • Janesville, WI • 1997 – 1998

Adjunct Instructor - Geographic Information Systems
Developed, implemented and taught three courses focusing on GIS technology and its applications.

- Courses taught: "Introduction to Geographic Information Systems", "Applications of Geographic Information Systems" and "Advanced Applications of Geographic Information Systems"
- Implemented GIS course curriculum for Continuing Education and Business divisions
- Designed projects and exams
- Graded course work and assigned final grades

Rock County Department of Planning & Economic Development • Janesville, WI • 1995 – 1998

Senior County Planner
Primary planner in charge of comprehensive planning projects, site plan review, zoning inquiries, and geographic information systems (GIS). Additional duties included support for economic development endeavors, grant writing and socioeconomic research.

- Updated and enforced Rock County Comprehensive Development Plan
- Responsible for management, design and co-implementation of County GIS; work included database design, data maintenance, metadata archiving, acting GIS liaison between Federal, State and local users, and management of county GIS users
- Creation of Rock County GIS Master Plan for State of Wisconsin GIS Grants Program (Awarded two grants totaling $65,000)
- Updated and enforced township land use plans; includes leading town board meetings
- Developed and enforced zoning ordinances
- Interim Director of Planning, City of Evansville, WI

University of Wisconsin- Madison, Department of Mechanical Engineering • Madison, WI • 1993 - 1995

Adjunct Instructor and Teaching Assistant
Taught two lecture/lab courses per semester concentrating on engineering computer applications. Courses were degree requirements for the fulfillment of Civil Engineering, Mechanical Engineering, and Construction Administration curriculums. Topics covered included AutoCAD, computer modeling, and engineering design fundamentals.

- Designed projects and exams
- Graded course work and assigned final grades
- Provided career and academic advising

EDUCATION

Master of Business Administration (MBA), Concentration in Finance and Statistics, Baker University, Baldwin City, KS. (May 2002).

Master of Science, Urban and Regional Planning, Concentration in Land Use Planning, Statistical Analysis, and Geographic Information Systems. University of Wisconsin, Madison, WI. (May 1996).

Bachelor of Science, Industrial Design, University of Wisconsin, Madison, WI. (May 1992).

PROFESSIONAL CERTIFICATIONS AND AFFILIATIONS

- American Institute of Certified Planners (AICP). American Planning Association. Certification Number: 015677
- Accredited Airport Executive (A.A.E.), American Association of Airport Executives (AAAE). *Certification Number: 099562*
- Accredited Airport Employee - Operations (ACE)*, American Association of Airport Executives (AAAE)*
- *Geographic Information Systems Professional (GISP). Certification Number: 67986*

- FAA Licensed Pilot
- AAE Examination Mentor, SW and SE Chapters of the American Association of Airport Executives
- Judge, 2017 Planning Awards, Georgia Chapter of the American Planning Association (APA)
- Leader, AAAE OSPEM Planning Working Group, 2018 – Present
- Member of AAAE OSPEM, Academic Relations and UAS Committees, 2009 – Present
- National Academies of Science, Airport Cooperative Research Program (ACRP) 06-07 Developing Academic Programs for Future Aviation Professionals. (Study Author).
- (Chair) National Academies of Science, Airport Cooperative Research Program (ACRP) 03-43 – *Integrating Airport Access Planning with the Metropolitan Transportation Plan*
- (Chair) National Academies of Science, Airport Cooperative Research Program (ACRP) 03-37 – Using GIS for Collaborative Land Use Planning Near Airports.
- National Academies of Science, Airport Cooperative Research Program (ACRP) 11-02 *Research Roadmap on Selected Airport Topics – Design/Construction and Operations/Maintenance*
- National Academies of Science, Airport Cooperative Research Panel (ACRP) 09-12 *NextGen – Leveraging NextGen Spatial Data to Benefit Airports*
- National Academies of Science, Airport Cooperative Research Program (ACRP) 01-24 *Renewable Energy as an Airport Revenue Source*
- National Academies of Science, Airport Cooperative Research Program (ACRP) 02-40 *Climate Change Risk Assessment and Adaptation Planning at Airports*
- Appointee, Secretary of the Florida Department of Transportation, Advisory Working Group on Airport Compatible Zoning, 2010 – 2012.
- Broward County Metropolitan Planning Organization (MPO), Technical Advisory Committee, 2009 -2013
- Member, American Association of Airport Executives (AAAE), 2009 – Present
- Member, American Planning Association (APA), 1995 - Present
- Member, Denver Regional Council of Governments (DRCOG), Intermodal Transportation Committee, 2004 - 2009
- Board Member - Wisconsin Land Information Association, 1996 - 1998
- President, UW-Madison Chapter, Wisconsin Student Planning Association, 1995 - 1996

PUBLISHING AND PROFESSIONAL PRESENTATIONS

- “Aviation Forecasts in an Economic Downturn”, AAAE National Airports Conference, Anchorage, AK, Sept. 2018.
- (Featured in Article) “Evolving Requirements for Senior Airport Execs Demand Succession Planning & Employee Development”, Ken Wysocky, Airport Improvement Magazine, September 2017.
- “Leveraging GIS Data”, AAAE 20th Annual Airport Geospatial Conference, Reno, NV, Mar. 2017.
- “Introduction to Airport GIS”, AAAE 20th Annual Airport Geospatial Conference, Reno, NV, Mar. 2017.
- “Airport Management Succession Planning”, AAAE National Airports Conference, Sept. 2016.
- “GIS In The Cloud”, AAAE 19th Annual Airport GIS Conference, Milwaukee, WI, June. 2016.
- “Introduction to Airport GIS”, AAAE 19th Annual Airport GIS Conference, Milwaukee, WI, June. 2016.
- “Technological Advances in Airport Asset Management”, AAAE National Conference, May 2016.
- “The Future of Airport Roadway Access”, AAAE/ACI Planning Construction and Design Symposium, Salt Lake City, UT, Mar. 2016.
- “Airport Capital Improvement Funding”, Nevada Airports Conference, Las Vegas, NV, Mar. 2016.
- “Mapping Airports”, Nevada GIS Users Conference, South Lake Tahoe, NV, Oct. 2015.
- “Prioritizing Airport Pavement Management”, AAAE 18th Annual Airport GIS Conference, Savannah, GA, Mar. 2015.
- “Introduction to Airport GIS”, AAAE 18th Annual Airport GIS Conference, Savannah, GA, Mar. 2015.
- “Master Planning versus Ad-Hoc Planning”, AAAE/ACI Planning Construction and Design Symposium, Denver, CO, Mar. 2015.
- Keynote Speaker, “Airport Survey Projects”, Nevada Association of Land Surveyors Annual Conference, Sept. 2014.
- “Alternative Information Delivery Methods Using GIS”, AAAE 17th Annual Airport GIS Conference, San Diego, CA, Mar. 2014.
- “Introduction to Airport GIS”, AAAE 17th Annual Airport GIS Conference, San Diego, CA, Mar. 2014.
- “GIS For Human Resource Management”, AAAE 16th Annual Airport GIS Conference, Denver, CO, Mar. 2013.
- “Subsurface Utility Engineering Studies”, AAAE/ACI Planning Construction and Design Symposium, New Orleans, LA, Mar. 2013.
- (Featured in Article) “In The Know on the AOA – Facilitating Enhanced Situational Awareness in Airfield Operations”, Brad McAllister, Airport Business Magazine, June/July 2012.

- Keynote Speaker, “Successful Management of Large Scale Noise Mitigation Programs”, Bruel & Kjaer Annual Environmental Forum, Fort Lauderdale, FL, May 2012.
- “Obstruction Analysis at Fort Lauderdale/Hollywood International Airport Using New FAA Advisory Circulars”, AAAE 15th Annual Airport GIS Conference, Arlington, VA, Mar. 2012.
- “Introduction to Airport GIS”, AAAE 15th Annual Airport GIS Conference, Arlington, VA, Mar. 2012.
- “Technology Use in Airport Operations and Maintenance Systems”, Guest Lecture, Broward College, Apr., 2011.
- “FAA GIS Standards as Part of the Business Process: Application of Electronic Submittal Requirements at Fort Lauderdale/Hollywood International Airport”, AAAE 14th Annual Airport GIS Conference, Portland, OR, Apr. 2011.
- (Featured in Article) “Foresight Puts Fort Lauderdale/Hollywood Int’l Airport at the Forefront of New FAA Survey Standards”, Ronnie Garrett, Airport Improvement Magazine, Oct., 2010.
- “Airport Land Use Planning Considerations”, Guest Lecture, Florida Atlantic University, Department of Urban and Regional Planning, April, 2010.
- “Application of FAA Standards and Electronic Submittal Requirements at Fort Lauderdale International Airport”, ACC/AAAE Planning, Design, Construction Symposium, Denver, CO, Mar. 2010.
- “Automation of the Development Review Process”, Presentation, 2009 Colorado American Planning Association State Conference, Sept., 2009.
- “GIS in Development Review”, Presentation, American Planning Association National Conference, Apr. 2009.
- “Medical Practice Site Demographic Analysis”, Lecture, University of Colorado Medical School, Apr. 2008.
- “GIS in Facilities Management”, Paper Presentation, 2007 ESRI International Users Conference, June, 2007.
- “Identifying Service Delivery and Economic Development Opportunities with Business Analyst”, Paper Presentation, 2007 ESRI International Users Conference, June, 2007.
- “Medical Practice Site Analysis”, Lecture, University of Colorado School of Dentistry, May, 2007.
- “Pitfalls of Statistical Analysis”, Lecture, University of Colorado School of Dentistry, Feb., 2007.
- “Using GIS to Maintain Municipal Service Delivery Standards”, Paper Presentation, 2006 ESRI International Users Conference, Aug., 2006.
- “Municipal Asset Management”, Paper Presentation, 2005 ESRI International Users Conference, Aug., 2005.
- “Plan Smart: Development Review Application:” Presentation, 2003 ESRI International Users Conference, Aug., 2003.