BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of **REPUBLIC WIND, LLC** for a Certificate of Environmental Compatibility and Public Need for a Wind-Powered Electric Generating Facility in Republic and Sandusky Counties, Ohio.	)))))	Case No. 17-2295-EL-BGN

DIRECT TESTIMONY OF

Benjamin M. Doyle
Capitol Airspace Group

on the behalf of

Republic Wind, LLC

October 21, 2019

Q-1. Please state your name, current title, and business address.

A-1. My name is Benjamin M. Doyle. I am the President of Capitol Airspace Group (Capitol Airspace"), located at 5400 Shawnee Road, Suite 304, Alexandria, VA 22312

Q-2. What is your educational background?

A-2. I received an Associate's Degree (1996) in History from Cochise College, Sierra Vista, Arizona. I am also a graduate of the following courses:

- 1994 Air Traffic Control Course, U.S. Army Air Traffic Control School, Fort Rucker, Alabama.
- 1997 Air load Planning Course, U.S. Air Force, Munich, Germany.
- 1997 Primary Leadership Development Course, Non-Commissioned Officer Academy, Grafenwoehr, Germany

Q-3. What is your professional background?

A-3. I have 25 years of aviation experience. I served five years in the U.S. Army where I held two fixed base tower ratings as well as tactical facility ratings. I was responsible for supervising and conducting air traffic control services for both civil and military air aircraft operations in the United States, Germany and Bosnia-Herzegovina. During my time in the Army I served as a tower controller, shift supervisor, training supervisor and tower chief. These positions were held, variously, at Libby Army Airfield, Fort Huachuca, Arizona; Wiesbaden Air Base, Wiesbaden, Germany; and Camp Colt, Bosnia-Herzegovina.

Q-4. What are your current job duties?

A-4. As President and Owner, I am responsible for the overall management of Capitol Airspace, an aviation consulting firm. Capitol Airspace focuses on providing airspace, obstacle evaluation and instrument procedures design services to airports and private companies.

Q-5. On whose behalf are you offering testimony?

A-5. I am testifying on behalf of the Applicant in the case, Republic Wind, LLC ("Applicant" or "Republic Wind").

Q-6. What is the purpose of your testimony?

A-6. The purpose of my testimony is the following:

- Describe the thorough aeronautical study and public comment process undertaken by the Federal Aviation Administrations ("FAA") to determine whether the Republic Wind Project ("Project") would create a hazard to navigable airspace;
- Describe the determinations of no hazard ("DNHs") issued by the FAA regarding the Project, and the implications of the DNHs regarding alleged impacts on navigable airspace within the Project area;
- Explain why the alleged concerns of Seneca County Airport are unfounded; and
- Explain why the OPSB should reject the Ohio Department of Transportation Office of Aviation's ("ODOT") recommendations for the Project.

Q-7. My understanding is that you are not an attorney, is that correct?

A-7. Yes, that is correct.

Q-8. In the scope of your position with Capitol Airspace, do you have a working understanding of the FAA's regulations and its process for determining whether a proposed wind turbine creates a hazard to navigable airspace?

A-8. Yes, I do. I have been working with the FAA on behalf of clients for the past twenty years. All of the work that I have conducted has been focused on the obstacle evaluation process established under 14 CFR Part 77 and administered by the FAA through its aeronautical study process. In that time, my staff and I have worked in excess of 55,000 7460-1 filings.

Q-9. You indicated that the FAA issued DNH's for the Republic Wind Project. What does that mean?

A-9. An FAA Determination of No Hazard is a formal decision by the United States Government regarding the impact of a proposed or existing structure on the safety and efficiency of air traffic operations. A Determination of No Hazard is a finding that the structure, at its proposed height and location, will not have a substantial adverse effect on safety or efficiency.

Q-10. How are the obstruction standards that are defined under 14 CFR Part 77 applied as a part of the FAA's aeronautical study process?

A-10. When conducting an aeronautical study, the first step is to determine whether a structure will exceed the height of one or more of the obstruction standards or civil airport imaginary surfaces defined in 14 CFR Part 77. These surfaces are referred to collectively as "Part 77 surfaces." Obstructions standards are contained in 14 CFR 77.17 and civil airport imaginary surface standards are contained in 14 CFR 77.19.

Q-11. Which of the "Part 77 surfaces" did the FAA analyze in issuing its DNHs?

A-11. The FAA assessed all of the surfaces defined under 14 CFR Part 77. Of these, the FAA identified that the Republic Wind Project would exceed the heights defined by three specific surfaces. These three surfaces are defined in 14 CFR 77.17(a)(1) – (3).[1]

Q-12. Would you explain what each of the three standards means in everyday language?

A-12. Exceedance in height of any of these surfaces would result in the FAA identifying the structure as an obstacle which would then warrant further analysis to determine if the structure would pose a hazard to air navigation. The first two provisions are quite simple. 14 CFR 77.17 (a)(1) specifies that a structure exceeding 499 feet above ground level would be deemed an obstacle. 14 CFR 77.17 (a)(2) establishes a 200 foot above ground level surface within 3 nautical miles of certain airports. This surface extends an additional three nautical miles, in radius, sloping upward at a rate of 100 feet per nautical mile.

14 CFR Part 77.17(a)(3) is a "catch-all' provision that assesses for impact to instrument flight operations. The surfaces that are used to protect instrument flight operations are too

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[1] **§ 77.17 Obstruction standards.**

(a) An existing object, including a mobile object, is, and a future object would be an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 499 feet AGL [above ground level] at the site of the object.

(2) A height that is 200 feet AGL, or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile from the airport up to a maximum of 499 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

numerous to describe here. That said, the application of this standard follows the logic that a structure that would cause a change to instrument flight must be an obstacle.

Q-13. Please describe the standard the FAA uses in applying the obstruction standards.

A-13. The FAA has detailed standards in determining whether a structure constitutes an obstruction to air navigation. 14 CFR 77.15(a) defines such an obstruction as one:

> …that may affect the ***safe and efficient*** use of navigable airspace and the operation of planned or existing air navigation and communication facilities."

It is important to note that this standard does not consider whether a structure simply is an obstruction to navigable air space, but whether the obstruction may affect the "safe and efficient use of navigable air space." In fact, 14 CFR 77.15(b) provides that "[o]bjects that are considered obstructions under the [obstruction] standards…are presumed hazards to air navigation ***unless further aeronautical study concludes that the object is not a hazard***."

Q-14. What process does the FAA use in applying this standard?

A-14. The FAA conducts an aeronautical study. I'll describe the FAA's process in applying this standard in steps, at a very high level:

First, if a proposed or existing structure will exceed the notification standards established under 14 CFR 77.9, the structure's sponsor is required to notify the FAA by submitting FAA Form 7460-1. One of these notification standards is that the proposed construction is 200 feet or more above ground at its site. The form contains information that includes the structure's latitude and longitude, elevation above ground, height, and proposed lighting, among other information.

Second, once a technician verifies the form as accurate, a case file is completed and sent to various FAA offices within the obstacle evaluation group for review under the direction of an airspace specialist. Each FAA office has a different expertise to contribute to the review and to determine whether the structure would adversely affect its area of responsibility. Every Aeronautical study must be reviewed by the following FAA offices:

1. Office of Airports
2. Technical Operations Services

3. Frequency Management
4. Flight Standards
5. Flight Procedures

Additionally, agencies external to the FAA also are responsible to review and assess for impact to their operations. These are:

1. Department of the Army
2. Department of the Air Force
3. Department of the Navy
4. Office of the Secretary of Defense (for Wind Turbine Projects)
5. Department of Homeland Security

Pilots, Engineers and Technicians in each of these organizations assess the proposed structure to determine if it will create an impact to their areas of responsibility. The findings for these individual assessments are then sent to an airspace specialist within the FAA's Obstacle Evaluation Group for assessment.

Third, the airspace specialist will review the comments of the various offices as to whether the obstacle may adversely affect the specific office's area of responsibility. If the obstacle is found to cause electromagnetic interference or a change in flight operations, *e.g.*, increase the instrument flight rule ("IFR")[2] altitude or cause a visual flight rule ("VFR") aircraft to fly in a different manner, then the obstacle would then be deemed to have 'adverse effect'.

Fourth, if an adverse effect is identified, the FAA will issue a "Notice of Presumed Hazard," at which point the structure's sponsor may (1) accept the height limitations proposed in the notice (or cancel or move the project), or (2) request the FAA to conduct further study of the structure.

Fifth, if the structure's sponsor chooses further study, the FAA will seek comment on that particular structure through a "circularization" process. The process provides a 37-day period in which the public may provide comments. In order to facilitate this public

[2] Instrument Flight Rules (IFR) are the rules that pilots must follow when the meteorological conditions fall below thresholds established for both cloud ceilings and visibility. Pilots operating under IFR are afforded a greater number of navigational assistance than pilots flying under Visual Flight Rules (VFR). Pilots flying under VFR are required to "see and avoid" other aircraft, terrain and obstacles and are responsible for their own navigation.

comment period, the FAA will solicit input from "[a]ll known aviation interests such as state, city, and local aviation authorities: airport authorities; various military organizations within the DOD; flying clubs; national, state and local aviation organizations; flight schools; fixed base operators; air taxi, charter flight offices; and other organizations and individuals that demonstrate a specific aeronautical interest such as county judges and city mayors."[3] The FAA will consider public comments made within this timeframe that have a valid aeronautical basis. Comments filed outside of the timeframe are not considered.

Sixth, in making its final determination, the FAA will consider the significance of the adverse effect. As stated previously, the FAA's overriding standard is to ensure the safety and efficient use of navigable airspace. Paramount in making this determination is public safety. In order to ensure that flight operations can be conducted and meet the standards of safety set by the FAA, the agency may opt to alter procedure designs and/or increase minimum altitudes. However, before the FAA decides to alter its operations, it first must determine what impact doing so would have on the efficiency of operations in the area; essentially, how many aircraft operations would be affected by the change. If the number of aircraft operations impacted would exceed a certain threshold then the FAA will deem the impact to be substantial. In this context, the FAA will determine that a structure is a "hazard" to air navigation only if it concludes that the obstruction will have a "substantial aeronautical impact to air navigation." See 14 CFR 77.31(c). A structure would have a substantial adverse effect if:

- it causes electromagnetic interference to the operation of an air navigation facility or the signal used by aircraft,
- The significant volume of aeronautical operations would be affected by the structure.

[3] Joint Order 7400.2M Procedures for Handling Airspace Matters, 2/28/2019, Para. 6-3-17 (c).

Q-15. Would you apply each of these steps to the FAA's consideration of Republic Wind's proposed turbines? Please address the first four steps.

A-15. Republic Wind filed Form7460-1 to initiate FAA study because the height of each proposed turbine would exceed 199 feet. The FAA issued its Notice of Presumed Hazard which found that:

(1) The location and height of each of the 50 proposed turbines would exceed the 499 foot height limit and would constitute an obstruction to air navigation under 14 CFR 77.17(a)(1).

(2) The location and height of four turbines (T1, T8, T48, and T49) would constitute an obstruction to air navigation by exceeding the height of 14 CFR 77.17(a)(2) for Sandusky County Airport by 139 to 221 feet, depending upon the turbine in question.

(3) The location and height of 33 turbines would constitute an obstruction to air navigation by exceeding various instrument approach procedure obstacle clearance surfaces for Seneca County Airport and Fostoria Metropolitan Airport under 14 CFR 77.17(a)(3), which would result in an increase in various minimum IFR altitudes.

a. Of these 33 turbines, the height and location of turbine T1 affects the non-directional beacon ("NDB") approach to Runway 24[4] at Seneca County Airport and would require an increase in minimum altitude by 40 feet, from 1460 feet to 1500 feet above mean sea level.

Q-16. Do you contest these findings?

A-16. No. These findings comply with the technical requirements of the FAA's rules as to what structures would be an obstruction (or have an adverse effect) on air navigation. However, Republic Wind chose to pursue further study with the FAA under the belief that the turbines would likely not pose a "substantial adverse effect" on air navigation.

[4] A Non-Directional Beacon is a radio transmitter fixed at a certain location that can be used by pilots to navigate.

Q-17. Did the FAA initiate a "circularization" process contemplated by the fifth step in their review?

A-17. Yes. It received only one comment. As stated in the DNHs, the comment related to the Seneca County Airport and opposed the construction of the Project. The comment alleged that raising minimum descent altitudes would result in fewer flights at the airport during adverse weather, which would affect economic development. The comment also alleged that the turbines would interfere with the opportunity for helicopter Life Flight to land at accident scenes to assist victims in need of medical attention. The DNH for turbine T1 is attached Attachment BMD-1.

Q-18. Do you concur with the commenter's allegations regarding the effect of the turbines on the Seneca County Airport?

A-18. No. As I indicated earlier, the FAA's standard in determining whether a structure has a "substantial adverse effect" takes into account the "***safe and efficient*** use of navigable airspace." By proposing to increase the minimum altitude on airport approaches, the FAA has resolved the "safety" component of its inquiry. The commenter's objection goes only to the "efficiency" component and concerns whether the loss of navigable airspace will result in fewer flights and potentially affect economic development in the county.

Q-19. Did the FAA consider the public comment it received in the sixth step of its deliberations?

A-19. Yes. In its DNH (see Attachment BMD-1) the FAA found the increase in the minimum descent altitude of 40 feet for the NDB approach to Runway 24 at Seneca County Airport would not be considered excessive and would have a negligible impact on flights during inclement weather. In support of its findings, the FAA pointed out two bases for it finding:

1. There are four terminal area instrument approach procedures to Seneca Airport including the NDB approach to Runway 24. The remaining three approach procedures have significantly lower minima and are therefore more efficient (accurate) instrument approach procedures. The Non-Directional Beacon, is an aging technology. The FAA has undertaken an effort to replace NDB's with more efficient means of providing navigational information into the cockpit.

2. According to FAA radar track data and with corroboration with the air traffic control facility with responsibility for the area, few NDB approaches were flown at Seneca Airport. Further those that were flown were not flown fully which indicates that the procedure was not being flown to completion. In order for the FAA to issue a determination of hazard, it must determine that the adverse impact (increasing the NDB minimum descent altitude by 40 feet) would affect a significant volume of operations. Data indicated, and consultation with Toledo Terminal Radar Approach Control (TRACON) confirmed, that "few aircraft use the NDB approach"[5]

Q-20. From your experience in the aviation industry, do you have any insight into the FAA's comment that the NDB is an aging technology?

A-20. Yes. The few remaining NDB's left in the United States are typically owned and operated by municipalities and are rarely used by pilots, particularly when meteorological conditions dictate that the pilot must fly an instrument approach procedure in order to land.

Q-21. Did the FAA issue a DNH as a result of its further study?

A-21. Yes. It issued a DNH for each of the 50 proposed turbine structures. See Attachment BMD-1. As the basis for its determination that the proposed turbines did not have a significant adverse effect on navigable airspace, the FAA found that the structures would not conflict with airspace required to conduct normal VFR traffic pattern operations, would not have a substantial adverse effect on VFR en route flight operations, and that there were no substantial adverse IFR effects as the affected airspace will be adjusted to mitigate the height of structures. .

Q-22. Again, I understand that you are not an attorney, but in the scope of your position with Capitol Airspace, do you have an understanding of ODOT's regulations for determining whether a structure is an obstruction to navigable airspace?

A-22. Yes, I have reviewed the provisions of the Ohio Revised Code and applicable regulations that relate to obstruction standards so that I may compare them to the FAA regulations.

[5] FAA Determination of No Hazard, Aeronautical Study Number 2018-WTE-11673-OE.

Q-23. Did ODOT make a recommendation in this case?

A-23. Yes. Its recommendation was issued July 18, 2019, after receipt of the FAA's DNHs. I have reviewed ODOT's recommendation, which is attached as Attachment BMD-1. ODOT's analysis was adopted in the text of the Staff Report.

Q-24. Did ODOT consider the FAA's DNHs?

A-24. Yes it did. ODOT even concurred with the FAA findings that each of the proposed 50 turbines constituted an obstruction under 14 CFR 77.17(a)(1); that turbines T1, T8, T48 and T49 constituted an obstruction under 14 CFR 77.17(a)(2); and that 33 turbines (including T1) constituted an obstruction under 14 CFR 77.17(a)(3).

Q-25. Having accepted the FAA's determinations under these three obstruction standards, did ODOT also adopt the FAA's determination that the height and location of the turbines did not constitute a significant adverse effect on air navigation?

A-25. Not entirely. It placed conditions on the construction of turbines T1, T8, T48, and T49. ODOT seems to say that its standard for reviewing the siting of structures is different from the FAA's standards. ODOT claims that, while the FAA considers whether a structure poses a "substantial adverse effect" to air navigation, ODOT's standard requires that:

> …the consideration of safety shall be paramount to consideration of economic or technical factors. In making a determination…the department may consider findings and recommendation of other governmental entities and interested persons. [ODOT Recommendation at unnumbered 2]

Q-26. You stated that after the FAA determines that a structure is an obstruction, it may still issue a favorable determination of no hazard if it finds that there is no substantial adverse impact on air navigation. Must ODOT deny a permit once it finds an obstruction to air navigation?

A-26. No. According to R.C. 4905.32, ODOT may waive the obstruction standards based upon "sound aeronautical principles" as defined in various FAA publications.

Q-27. Based upon your review of the ODOT July 18, 2019 Letter and the Staff Report issued in this case, did ODOT consider whether the FAA's rationale for waiving the obstruction standards in 14 CFR 77.17(a)(1)-(3) for the four identified turbines was based upon sound aeronautical principles?

A-27. No.

Q-28. Based upon your review of the ODOT July 18, 2019 Letter and the Staff Report issued in this case, did ODOT consider any other sound aeronautical principles under which the obstruction standards could be waived for the four identified turbines?

A-28. No. As I'll explain later, the Staff Report and ODOT's July 18, 2019 Letter left the waiver to the discretion of someone at the Sandusky Airport, without further explanation of the reason.

Q-29. Do the FAA's standards consider safety?

A-29. Yes, as I stated previously, the FAA's overriding concern is with aviation safety and safety to the public. The agency's policy clearly states that "The prime objective of the FAA in conducting OE [obstacle evaluation] studies is to ensure the safety of air navigation, and the efficient utilization of navigable airspace by aircraft."[6]

Q-30. Does the FAA consider the findings and recommendations of other governmental entities and interested persons?

A-30. Yes, as detailed in the steps outlining the FAA's process, it considers input from other governmental agencies (*e.g.*, the military branches, homeland security), and also accepts input from interested persons through the circularization process. In fact, the FAA and ODOT each considered the input received from the public in response to the public comment period. Of course, the ODOT standard also permits it to consider the findings and recommendations of the FAA.

Q-31. In addition to the comment received by FAA in this case, did ODOT rely on any other comments from interested persons?

A-31. Yes. It considered comments from Brad Newman, who is the manager of the Sandusky Airport.

Q-32. Have you been able to review those comments?

A-32. Yes, ODOT provided the comments of Mr. Newman and Mr. Steve Shuff as part of a response to Republic Wind's public records request. I note that Mr. Newman's comments were filed in Aeronautical Study Number 2017-WTE-9117-OE. The FAA's aeronautical Study Numbers for the Republic Wind Project are 2018-WTE-11673-OE- through 2018-

[6] FAA JO 7400.2M Procedures for Handling Airspace Matters, January 28, 2019, Para. 6-3-1

WTE-11722. Mr. Shuff's comments appear to be the comments filed with FAA in this case and addressed in the FAA's DNH.

Q-33. What is the thrust of Mr. Shuff's or Mr. Newman's comments?

A-33. Mr. Shuff's concerns are focused on the economics of Seneca airport and the ability of life flight helicopters to operate in the area. Mr. Newman's comments focus on the impact to the efficiency of the NDB approach at Seneca as well as impacts to visual flight operations in the area. Neither commenter bases his objections on any safety standard nor do they provide any standard for measuring the impact to the efficiency of the airport or procedure. I would point back to the FAA's findings that the NDB approach is seldomly used and that no impact to VFR traffic (either terminal or enroute) was determined.

Q-34. Did ODOT consider other interested persons' comments in making its recommendation to the Board?

A-34. Yes. In its letter of July 18, 2019, ODOT states that it spoke to someone at the Sandusky Airport who verbally indicated the airport had no objection to the height and locations of the turbines, but did not indicate the airport's non-opposition in writing.

Q-35. Based upon this input from interested persons, what recommendations did ODOT make?

A-35. ODOT based its recommendations on the four turbines' effect on the Sandusky and Seneca Airports.

Q-36. Please describe the recommendation related to the Sandusky Airport.

A-36. As you'll recall, four turbines exceeded the 14 CFR 77.17(a)(2) surface heights for the Sandusky County Regional Airport by the following amounts:

- T1: 176 feet.
- T8: 139 feet
- T48: 200 feet
- T49: 221 feet

ODOT recommends that the 14 CFR 77.17(a)(2) obstruction standards be waived for these turbines, but only if the Sandusky County Regional Airport submits a resolution from its

board or a written letter that it accepts the limitation to its navigable airspace. If Sandusky Airport does not submit the written documentation, ODOT recommends that the heights of turbines T8, T48 and T49 be reduced by the number of feet listed above, or eliminated from the Project. (ODOT's recommendation as to turbine T1 is addressed below.) The Board accepted this recommendation as a condition to a certificate to the extent that Republic Wind is required to obtain the consent of the airport. See Condition Number 57. Staff recognizes that without this consent, these three turbines could not be constructed because no other turbine models proposed by Republic Wind would meet the surface height standards of 14 CFR 77.17(a)(2). Staff Report at 52. In other words, without Sandusky airport's consent the turbines could not be constructed.

Q-37. Please describe the recommendation related to the Seneca Airport.

A-37. In addition to affecting Sandusky Airport's surface heights under 14 CFR 77.17(a)(2), turbine T1 also affects the NDB for a runway approach to the Seneca County Airport by exceeding the 14 CFR 77.17(a)(3) heights by 37 feet. ODOT recommended that, if the Sandusky Airport does not agree to the navigable space limitations, as set forth above, turbine T1 should be reduced by 176 feet or eliminated from the Project. However, if Sandusky Airport concurs with the FAA's DNH, the height of turbine T1 would only need to be reduced by 37 feet to comply with 14 CFR 77.17(a)(3). The Staff Report does not recommend elimination of turbine T1, but conditions the certificate to require that Republic Wind only construct a Vestas V136 turbine at this location with a tip height of 492 feet[7].

Q-38. Based upon your review of ODOT's aviation rules, what standard is ODOT required to use in determining if a structure will constitute an obstruction to air navigation?

A-38. Counsel has advised me that under R.C. 4561.341, ODOT is to use the rules adopted under R.C. 4561.32 in making this determination. I have reviewed R.C. 4561.32.

[7] Considering that turbine T1 is 606 feet in height and the proposed reduction is 37 feet, the tip height would be 569 feet.

Q-39. Based upon your experience in the aviation industry, can you identify the following terms used in this statute: airport's clear zone surface, horizontal surface, conical surface, primary surface, approach surface, or transitional surface?

A-39. The horizontal, conical, primary, approach and transitional surfaces are imaginary surfaces defined under 14 CFR Part 77.19 and are used by the FAA to differentiate between obstacles and non-obstacles. The term "Clear Zone" is an old term that is no longer in use by the FAA. It has been replaced by term Runway Protection Zone (RPZ) which is an area immediately off the end of runways. The definition of this area is contained in the FAA's Airport Design Advisory Circular AC 150/5300-13A. Q-X. To what FAA regulations do those terms relate?

Excluding the Clear Zone, they pertain to standards related to civil airport surfaces in 14 CFR 77.19, formerly 14 CFR 77.25.

Q-40. Are the surfaces referred to in 4 CFR 77.19 the same as those referred to in 14 CFR 77.17(a)(1)-(3)?

A-40. No. The surfaces are different. They differ geometrically and the 14 CFR 77.19 surfaces are specifically related to runway classifications.

Q-41. Based upon your experience and working knowledge of the FAA's regulations, is there a benefit to having the FAA apply a single standard for determining whether a structure adversely affects air navigation?

A-41. Yes. It is imperative that aviation safety and efficiency be regulated by the Federal Government due to the interstate and international nature of aviation. A pilot should expect uniform safety protections, standards and procedures whether he is flying in the Ohio or any of the other 49 states. Absent uniformity, the system would break down and become less safe.

Q-42. Would the Seneca County Airport accept flights to and from other states?

A-42. Aircraft originating from other states can certainly land at Seneca County Airport.

Q-43. Do you agree with ODOT's recommendations?

A-43. No. I don't believe that ODOT's recommendations create a safer flying environment. Although both the FAA and ODOT agree that the turbines to be constructed in the Project

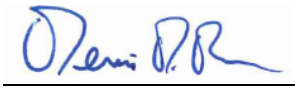
can technically be classified as an obstruction, only the FAA considered whether the obstruction created a substantial adverse impact on navigable airspace. The FAA's determination was based upon sound aeronautical principles. ODOT merely concluded that turbines T1, T8, T48 and T49 constituted an obstruction and did not consider whether those obstructions could be waived under the sound aeronautical principles identified by the FAA. Neither air safety nor efficiency requires that the height or locations of the turbines must be changed. The only effect of restricting wind turbine placement to a greater degree than the FAA would be to limit wind energy development in Ohio. Nothing more.

Q-44. Does this conclude your testimony?

A-44. Yes, it does, except that I reserve the right to supplement my testimony in response to the Supplemental Staff Report filed October 18, 2019, but not served upon Republic Wind until today, October 21, 2019. I also reserve the right to update or supplement this testimony to respond to any further testimony or reports offered in this case.

CERTIFICATE OF SERVICE

I hereby certify that the foregoing Testimony was served upon the following parties of record via regular or electronic mail this 21st day of October, 2019.



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September 27, 2019

VIA EMAIL (publicrecords@puco.ohio.gov) AND REGULAR U.S. MAIL

Public Utilities Commission of Ohio
Attn: Public Records
180 E. Broad Street,
Columbus, Ohio 43215

Re: Public Records Request Pursuant to ORC Chapter 149.43

Public Records Department:

Pursuant to Ohio Public Records Law, Revised Code 149.43, this is a request for copies of the following record(s), including, but not limited to, paper and electronic documents, correspondence, fax, telephone records, contracts, text messages, direct messages (regardless of electronic platform), emails (whether received by or sent from a public or private email account) and should include any drafts of such documents that are kept as a public record and not exempt according to Ohio law.

1. Records, including but not limited to correspondence from, to, or between the Ohio Power Siting Board ("OPSB") Staff and the Ohio Department of Transportation ("ODOT") regarding the case, Republic Wind, LLC, OPSB Case No. 17-2295-EL-BGN;

2. Records, including but not limited to correspondence from, to, or between the OPSB Staff and Seneca County Airport regarding the case Republic Wind, LLC, OPSB Case No. 17-2295-EL-BGN;

3. Records, including but not limited to correspondence from, to, or between the OPSB Staff and Sandusky County Regional Airport regarding the Republic Wind, LLC, Case OPSB No. 17-2295-EL-BGN;

4. Records, including but not limited to correspondence from, to, or between the OPSB Staff and ODOT regarding Condition 52 in "Staff Report of Investigation" in OPSB Case No. 17-2295-EL-BGN dated July 25, 2019. A copy of Condition 52 is attached hereto for your reference;

5. Records, including but not limited to correspondence from, to, or between the OPSB Staff and ODOT regarding Condition 56 in "Staff Report of Investigation" in OPSB Case No. 17-2295-EL-BGN dated July 25, 2019. A copy of Condition 56 is attached hereto for your reference.

6. Records, including but not limited to correspondence from, to, or between the OPSB Staff and ODOT regarding Condition 57 in "Staff Report of Investigation" in OPSB Case No. 17-2295-EL-BGN dated July 25, 2019. A copy of Condition 57 is attached hereto for your reference.

Under the Public Records Law, all non-exempt portions of any partially exempt documents must be disclosed. If any records are withheld or redacted, please provide the appropriate legal authority permitting the withholding or redaction.

If any fee will be assessed in fulfilling this request, please advise our office of the amount of the fees in advance and accepted method of payment.

Please send any responsive records via email to dparram@bricker.com as soon as they are available instead of waiting to compile the entire set of responsive records. If you have any questions or need clarification about the nature or scope of any of these public records requests, please do not hesitate to contact me.

Thank you for your prompt consideration of this request.

Sincerely yours,

Devin. D. Parram

Cc: Angela Hawkins
Jodi Bair

(a) An independent and registered surveyor, licensed to survey within the state of Ohio, shall determine the exact locations and worst-case Fresnel zone dimensions of all known microwave paths or communication systems operating within the project area, including all paths and systems identified by the electric service providers that operate within the project area. In addition, the surveyor shall determine the center point of all turbines within 1,000 feet of the worst-case Fresnel zone of each system, using the same survey equipment.

(b) Provide the distance in feet between the nearest rotor blade tip of each surveyed turbine identified within section (a) above and the surveyed worst-case Fresnel zone of each microwave system path.

(c) Provide a map of the surveyed microwave paths, center points, and boundaries at a legible scale.

(d) Describe the specific, expected impacts of the project on all paths and systems considered in the assessment.

(51) All existing licensed microwave paths, and licensed communication systems shall be subject to avoidance or mitigation. The Applicant shall complete avoidance or mitigation measures prior to commencement of construction for impacts that can be predicted in sufficient detail to implement appropriate and reasonable avoidance and mitigation measures. After construction, the Applicant shall mitigate all observed impacts of the project to microwave paths, and licensed communication systems within seven days or within a longer time period acceptable to Staff. Avoidance and mitigation for any known point-to-point microwave paths, and licensed communication systems shall consist of measures acceptable to Staff, the Applicant, and the affected path owner, operator, or licensee. If interference with an omni-directional or multi-point system is observed after construction, mitigation would be required only for affected receptors.

AIR, WATER, SOLID WASTE, AND AVIATION CONDITIONS

Staff recommends the following conditions to address the requirements discussed in Air, Water, Solid Waste, and Aviation:

(52) The Applicant shall meet all recommended and prescribed Federal Aviation Administration (FAA) and Ohio Department of Transportation (ODOT) Office of Aviation requirements to construct an object that may affect navigable airspace. This includes submitting coordinates and heights for all structures exceeding 199 feet AGL for ODOT Office of Aviation and FAA review prior to construction, and the non-penetration of any FAA Part 77 surfaces.

(53) At least 30 days prior to the preconstruction conference, the Applicant shall file in this docket a copy of the FAA Determination of No Hazard letter for the permanent meteorological towers.

(54) The Applicant shall file in this docket copies of the FAA temporary construction permits for any work activity involving construction cranes when they are received, but no later than seven days prior to crane deployment.

(55) The Applicant shall use NVG (night vision) compatible lighting for at least turbines 10, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 40, and 41 that are within the military aviation training route.

(56) The Applicant shall only construct a Vestas V136 with a tip height of 492 feet at turbine 3, in order to avoid interference with the non-directional beacon runway approach at Seneca County Airport.

(57) Provide in this docket, prior to construction proof of a resolution/letter from the Sandusky County Regional Airport authority indicating that it concurs with the construction of turbines 1, 2, 3, and 10 as these turbines would otherwise exceed the 14 CFR Part 77.17(a)(2) surface of the Sandusky County Regional Airport.

(a) An independent and registered surveyor, licensed to survey within the state of Ohio, shall determine the exact locations and worst-case Fresnel zone dimensions of all known microwave paths or communication systems operating within the project area, including all paths and systems identified by the electric service providers that operate within the project area. In addition, the surveyor shall determine the center point of all turbines within 1,000 feet of the worst-case Fresnel zone of each system, using the same survey equipment.

(b) Provide the distance in feet between the nearest rotor blade tip of each surveyed turbine identified within section (a) above and the surveyed worst-case Fresnel zone of each microwave system path.

(c) Provide a map of the surveyed microwave paths, center points, and boundaries at a legible scale.

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(57) Provide in this docket, prior to construction proof of a resolution/letter from the Sandusky County Regional Airport authority indicating that it concurs with the construction of turbines 1, 2, 3, and 10 as these turbines would otherwise exceed the 14 CFR Part 77.17(a)(2) surface of the Sandusky County Regional Airport.

OHIO DEPARTMENT OF TRANSPORTATION
Mike DeWine, *Governor* Jack Marchbanks, Ph.D., *Director*

Office of Aviation
2829 West Dublin-Granville Rd. Columbus, OH 43235
614-793-5040
transportation.ohio.gov

July 18, 2019

Andrew Conway, P.E.
Public Utilities Commission of Ohio
Rates and Analysis Department
Siting, Efficiency, and Renewable Energy Division
180 East Broad Street
Columbus, Ohio 43215

Sent via electronic mail: Andrew.Conway@puco.ohio.gov

Subject: Application for certification of Republic Wind Farm Project
(Case No. 17-2295-EL-BGN)

Dear Mr. Conway,

Pursuant to Ohio Revised Code (ORC) §4561.341, the Ohio Department of Transportation, Office of Aviation (ODOT) has reviewed the application for certification submitted by Apex Clean Energy for the Republic Wind Farm to determine whether the proposed facility will constitute an obstruction to air space. Our office reviewed the fifty (50) aeronautical studies for the subject Case, all of which are wind turbine generators filed for a height of 606 feet above ground level (AGL). The structures have been assigned FAA aeronautical study numbers (ASNs) as detailed on the attached chart. The FAA issued a Determination of No Hazzard for all fifty structures on June 26, 2019.

ODOT ANALYIS OF IMPACT OF THE FIFTY WIND TURBINE GENERATORS:

The location and height of all 50 wind turbine structures would exceed 499 feet above ground level (AGL) and would constitute an obstruction to air navigation by exceeding the 14 C.F.R. Part 77.17(a)(1) surface by 107 feet.

Additionally, the location and height of four (4) of the wind turbine structures, specifically structures T1, T8, T48 and T49, would constitute an obstruction to air navigation by exceeding the 14 C.F.R. Part 77.17(a)(2) surface of the Sandusky County Regional Airport (S24) by heights between 139 feet and 221 feet. The specific impacts are detailed on the attached chart.

Finally, the location and height of thirty-three (33) of the structures would constitute an obstruction to air navigation by exceeding 14 C.F.R. Part 77.17(a)(3) for various Instrument Flight Rule (IFR) procedures for Seneca County Airport (16G) and Fostoria Metropolitan Airport

(FZI), which would result in an increase in various IFR terminal minimum altitudes. These impacts are identified in detail in the FAA's Determination of No Hazard and are identified generally in the attached chart. Structure T1 specifically impacts the Non-Directional Beacon (NDB) runway (RWY) 24 approach at 16G by 37 feet and would require an increase to the straight-in approach to RWY 24 and Category Aircraft (CAT) A, B, C and D circling Minimum Descent Altitude (MDA) from 1460 feet to 1500 feet above mean sea level (AMSL).

PUBLIC COMMENT:

Public comment was received by the FAA and reviewed by ODOT. Seneca County Airport (see attached letter from airport manager Brad Newman) specifically objects to the impacts which reduce the utility of their airport. Although Sandusky Airport has told us verbally that they have no objection to the proposed heights and location of these wind turbine generators, they have not submitted this in writing despite our request for them to do so.

ODOT DETERMINATION:

Pursuant to ORC 4561.341, "...if the office [of aviation] determines that the facility constitutes or will constitute an obstruction to air navigation, it shall provide, in writing, this determination and either the terms, conditions, and modifications that are necessary for the applicant to eliminate the obstruction or a statement that compliance with the obstruction standards may be waived."

Our office and the FAA have identified the same impacts of these structures. The difference is that the FAA makes their determination of no hazard based on a "no substantial adverse effect" standard whereas the ORC §4561.34 states "[T]he consideration of safety shall be paramount to considerations of economic or technical factors. In making a determination ... the department may consider findings and recommendations of other governmental entities and interested persons...".

Structure T1: Based upon the above, if written concurrence with the FAA determination of no hazard can be obtained from the Sandusky County Regional Airport Authority in the form of either a board resolution or signed letter stating that the board is willing to accept the impact to the navigable airspace, the reduction of the height of T1 by 37 feet to the no effect height of 1299 AMSL is necessary to eliminate this obstruction and its impact to 16G. Compliance with the remaining obstruction standards may be waived as long as the conditions of the FAA are complied with.

If a written statement is not submitted by the Sandusky County Regional Airport Authority, the elimination of T1 from the project or the reduction of the height of T1 by 176 feet is necessary to eliminate this obstruction and its impacts to S24 and 16G. If the height of this structure is reduced as indicated, compliance with the remaining obstruction standards may be waived as long as the conditions of the FAA are complied with.

Structures T8, T48 and T49: Based upon the above, if written concurrence with the FAA determination of no hazard can be obtained from the Sandusky County Regional Airport Authority in the form of either a board resolution or signed letter stating that the board is willing to accept the impact to the navigable airspace, compliance with the obstruction standards may be waived as long as the conditions of the FAA are complied with.

If a written statement is not submitted by the Sandusky County Regional Airport Authority, the elimination of T8, T48 and T49 from the project or the reduction of the height of T8 by 139 feet, T48 by 200 feet and T49 by 221 feet is necessary to eliminate these obstructions and their impact to S24. If the heights of these three structures are reduced as indicated, compliance with the remaining obstruction standards may be waived as long as the conditions of the FAA are complied with.

All other Structures: Compliance with the obstruction standards may be waived as long as the conditions of the FAA are complied with.

If you have any questions regarding this review and determination, please do not hesitate to contact our office.

Respectfully,

ODOT Office of Aviation
2829 W. Dublin Granville Road
Columbus, OH 43235

Attach: Republic Wind Summary, FAA Determination, Public Comments

Republic Wind Farm (OPSB Case No. 17-2295-EL-BGN)

FAA ASN	Structure Type	Structure Name	Status	Structure Height (AMSL)	Structure Height (AGL)	Latitude	Longitude	77.17(a)(1) Impact (ft)	77.17(a)(1) NEH (AMSL)	77.17(a)(2) Impact (ft)	77.17(a)(2) NEH (AMSL)	77.17(a)(3) Impact (ft)	77.17(a)(3) NEH (AMSL)
2018-WTE-11673-OE	Wind Turbine	T1	DET-DNH	1336	606	41-12-37.25N	83-04-03.47W	107	1229	176	1160	37	1299
2018-WTE-11674-OE	Wind Turbine	T10	DET-DNH	1412	606	41-10-45.43N	83-00-21.83W	107	1305	N/A	N/A	12	1400
2018-WTE-11675-OE	Wind Turbine	T11	DET-DNH	1428	606	41-10-26.99N	83-00-17.02W	107	1321	N/A	N/A	28	1400
2018-WTE-11676-OE	Wind Turbine	T12	DET-DNH	1494	606	41-08-33.95N	82-57-57.68W	107	1387	N/A	N/A	94	1400
2018-WTE-11677-OE	Wind Turbine	T13	DET-DNH	1472	606	41-09-23.84N	82-57-58.08W	107	1365	N/A	N/A	72	1400
2018-WTE-11678-OE	Wind Turbine	T14	DET-DNH	1490	606	41-08-13.29N	82-57-48.84W	107	1383	N/A	N/A	90	1400
2018-WTE-11679-OE	Wind Turbine	T15	DET-DNH	1468	606	41-08-59.01N	82-57-47.94W	107	1361	N/A	N/A	68	1400
2018-WTE-11680-OE	Wind Turbine	T16	DET-DNH	1496	606	41-08-32.55N	82-57-43.53W	107	1389	N/A	N/A	96	1400
2018-WTE-11681-OE	Wind Turbine	T17	DET-DNH	1456	606	41-09-56.42N	82-57-05.85W	107	1349	N/A	N/A	56	1400
2018-WTE-11682-OE	Wind Turbine	T18	DET-DNH	1456	606	41-10-19.54N	82-57-05.90W	107	1349	N/A	N/A	56	1400
2018-WTE-11683-OE	Wind Turbine	T19	DET-DNH	1458	606	41-10-13.78N	82-56-54.00W	107	1351	N/A	N/A	58	1400
2018-WTE-11684-OE	Wind Turbine	T2	DET-DNH	1400	606	41-11-35.43N	83-01-42.77W	107	1293	N/A	N/A	N/A	N/A
2018-WTE-11685-OE	Wind Turbine	T20	DET-DNH	1448	606	41-10-19.37N	82-56-41.92W	107	1341	N/A	N/A	48	1400
2018-WTE-11686-OE	Wind Turbine	T21	DET-DNH	1478	606	41-09-25.77N	82-56-38.69W	107	1371	N/A	N/A	78	1400
2018-WTE-11687-OE	Wind Turbine	T22	DET-DNH	1436	606	41-11-10.90N	82-56-05.13W	107	1329	N/A	N/A	36	1400
2018-WTE-11688-OE	Wind Turbine	T23	DET-DNH	1460	606	41-09-30.74N	82-56-00.47W	107	1353	N/A	N/A	60	1400
2018-WTE-11689-OE	Wind Turbine	T24	DET-DNH	1434	606	41-10-21.62N	82-55-55.84W	107	1327	N/A	N/A	34	1400
2018-WTE-11690-OE	Wind Turbine	T25	DET-DNH	1480	606	41-09-28.09N	82-55-46.14W	107	1373	N/A	N/A	80	1400
2018-WTE-11691-OE	Wind Turbine	T26	DET-DNH	1434	606	41-11-36.25N	82-55-37.06W	107	1327	N/A	N/A	34	1400
2018-WTE-11692-OE	Wind Turbine	T27	DET-DNH	1450	606	41-10-23.14N	82-55-29.26W	107	1343	N/A	N/A	50	1400
2018-WTE-11693-OE	Wind Turbine	T28	DET-DNH	1424	606	41-11-38.57N	82-54-58.92W	107	1317	N/A	N/A	24	1400
2018-WTE-11694-OE	Wind Turbine	T29	DET-DNH	1428	606	41-11-47.60N	82-54-51.93W	107	1321	N/A	N/A	28	1400
2018-WTE-11695-OE	Wind Turbine	T3	DET-DNH	1390	606	41-11-24.59N	83-01-38.02W	107	1283	N/A	N/A	N/A	N/A
2018-WTE-11696-OE	Wind Turbine	T30	DET-DNH	1422	606	41-12-25.06N	82-54-43.03W	107	1315	N/A	N/A	22	1400
2018-WTE-11697-OE	Wind Turbine	T31	DET-DNH	1424	606	41-12-02.13N	82-54-38.80W	107	1317	N/A	N/A	24	1400
2018-WTE-11698-OE	Wind Turbine	T32	DET-DNH	1426	606	41-11-40.37N	82-54-34.99W	107	1319	N/A	N/A	26	1400
2018-WTE-11699-OE	Wind Turbine	T33	DET-DNH	1385	606	41-15-38.49N	82-54-24.34W	107	1278	N/A	N/A	N/A	N/A
2018-WTE-11700-OE	Wind Turbine	T34	DET-DNH	1380	606	41-15-56.46N	82-54-24.42W	107	1273	N/A	N/A	N/A	N/A
2018-WTE-11701-OE	Wind Turbine	T35	DET-DNH	1408	606	41-14-08.52N	82-54-18.88W	107	1301	N/A	N/A	8	1400
2018-WTE-11702-OE	Wind Turbine	T36	DET-DNH	1382	606	41-15-37.57N	82-54-06.43W	107	1275	N/A	N/A	N/A	N/A
2018-WTE-11703-OE	Wind Turbine	T37	DET-DNH	1462	606	41-10-14.57N	82-53-27.66W	107	1355	N/A	N/A	62	1400
2018-WTE-11704-OE	Wind Turbine	T38	DET-DNH	1466	606	41-09-58.14N	82-53-19.70W	107	1359	N/A	N/A	66	1400
2018-WTE-11705-OE	Wind Turbine	T39	DET-DNH	1382	606	41-14-50.37N	82-52-25.36W	107	1275	N/A	N/A	N/A	N/A
2018-WTE-11706-OE	Wind Turbine	T4	DET-DNH	1406	606	41-10-38.60N	83-01-19.26W	107	1299	N/A	N/A	6	1400
2018-WTE-11707-OE	Wind Turbine	T40	DET-DNH	1384	606	41-15-05.72N	82-52-19.26W	107	1277	N/A	N/A	N/A	N/A
2018-WTE-11708-OE	Wind Turbine	T41	DET-DNH	1380	606	41-14-55.91N	82-52-11.95W	107	1273	N/A	N/A	N/A	N/A
2018-WTE-11709-OE	Wind Turbine	T42	DET-DNH	1366	606	41-15-06.22N	82-52-00.06W	107	1259	N/A	N/A	N/A	N/A
2018-WTE-11710-OE	Wind Turbine	T43	DET-DNH	1380	606	41-14-55.74N	82-51-52.65W	107	1273	N/A	N/A	N/A	N/A
2018-WTE-11711-OE	Wind Turbine	T44	DET-DNH	1406	606	41-13-49.46N	82-51-06.32W	107	1299	N/A	N/A	6	1400
2018-WTE-11712-OE	Wind Turbine	T45	DET-DNH	1406	606	41-14-03.74N	82-51-04.28W	107	1299	N/A	N/A	6	1400
2018-WTE-11713-OE	Wind Turbine	T46	DET-DNH	1394	606	41-14-39.24N	82-51-04.55W	107	1287	N/A	N/A	N/A	N/A
2018-WTE-11714-OE	Wind Turbine	T47	DET-DNH	1392	606	41-14-48.98N	82-50-45.66W	107	1285	N/A	N/A	N/A	N/A
2018-WTE-11715-OE	Wind Turbine	T48	DET-DNH	1340	606	41-12-53.43N	83-04-09.64W	107	1233	200	1140	N/A	N/A
2018-WTE-11716-OE	Wind Turbine	T49	DET-DNH	1322	606	41-13-06.44N	83-04-09.61W	107	1215	221	1101	N/A	N/A
2018-WTE-11717-OE	Wind Turbine	T5	DET-DNH	1392	606	41-11-36.43N	83-01-18.76W	107	1285	N/A	N/A	N/A	N/A
2018-WTE-11718-OE	Wind Turbine	T50	DET-DNH	1436	606	41-10-25.58N	82-55-42.88W	107	1329	N/A	N/A	36	1400
2018-WTE-11719-OE	Wind Turbine	T6	DET-DNH	1394	606	41-11-24.61N	83-01-15.57W	107	1287	N/A	N/A	N/A	N/A
2018-WTE-11720-OE	Wind Turbine	T7	DET-DNH	1430	606	41-09-56.58N	83-00-36.58W	107	1323	N/A	N/A	30	1400
2018-WTE-11721-OE	Wind Turbine	T8	DET-DNH	1400	606	41-12-12.33N	83-00-36.22W	107	1293	139	1261	N/A	N/A
2018-WTE-11722-OE	Wind Turbine	T9	DET-DNH	1422	606	41-10-32.09N	83-00-31.46W	107	1315	N/A	N/A	22	1400

AMSL = Above Mean Sea Level
AGL = Above Ground Level
NEH = No Effect Height
N/A = Not Applicable

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2018-WTE-11673-OE

Issued Date: 06/26/2019

Dalton Carr
Republic Wind, LLC
310 4th St. N.E., Suite 300
Charlottesville, VA 22902

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Wind Turbine T1
Location:	Bellevue, OH
Latitude:	41-12-37.25N NAD 83
Longitude:	83-04-03.47W
Heights:	730 feet site elevation (SE)
	606 feet above ground level (AGL)
	1336 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure would have no substantial adverse effect on the safe and efficient utilization of the navigable airspace by aircraft or on the operation of air navigation facilities. Therefore, pursuant to the authority delegated to me, it is hereby determined that the structure would not be a hazard to air navigation provided the following condition(s) is(are) met:

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 L Change 2, Obstruction Marking and Lighting, white paint/synchronized red lights - Chapters 4,12&13(Turbines).

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

__X__ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

See attachment for additional condition(s) or information.

While the structure does not constitute a hazard to air navigation, it would be located within or near a military training area and/or route.

This determination expires on 12/26/2020 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is subject to review if an interested party files a petition that is received by the FAA on or before July 26, 2019. In the event a petition for review is filed, it must contain a full statement of the basis upon which it is made and be submitted to the Manager of the Airspace Policy Group. Petitions can be submitted via mail to Federal Aviation Administration, 800 Independence Ave, SW, Room 423, Washington, DC 20591, via email at OEPetitions@faa.gov, or via facsimile (202) 267-9328.

This determination becomes final on August 05, 2019 unless a petition is timely filed. In which case, this determination will not become final pending disposition of the petition. Interested parties will be notified of the grant of any review. For any questions regarding your petition, please contact Airspace Policy Group via telephone – 202-267-8783.

This determination is based, in part, on the foregoing description which includes specific coordinates and heights. This determination is valid for coordinates within one (1) second latitude/longitude and up to the approved AMSL height listed above. If a certified 1A or 2C accuracy survey was required to mitigate an adverse effect, any change in coordinates or increase in height will require a new certified accuracy survey and may require a new aeronautical study.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

Additional wind turbines or met towers proposed in the future may cause a cumulative effect on the national airspace system. All information from submission of Supplemental Notice (7460-2 Part 2) will be considered the final data (including heights) for this structure. Any future construction or alteration, including but not limited to changes in heights, requires separate notice to the FAA.

Obstruction marking and lighting recommendations for wind turbine farms are based on the scheme for the entire project. ANY change to the height, location or number of turbines within this project will require a reanalysis of the marking and lighting recommendation for the entire project. In particular, the removal of previously planned or built turbines/turbine locations from the project will often result in a change in the marking/lighting recommendation for other turbines within the project. It is the proponent's responsibility to contact the FAA to discuss the process for developing a revised obstruction marking and lighting plan should this occur.

In order to ensure proper conspicuity of turbines at night during construction, all turbines should be lit with temporary lighting once they reach a height of 200 feet or greater until such time the permanent lighting configuration is turned on. As the height of the structure continues to increase, the temporary lighting should be relocated to the uppermost part of the structure. The temporary lighting may be turned off for periods when

they would interfere with construction personnel. If practical, permanent obstruction lights should be installed and operated at each level as construction progresses. An FAA Type L-810 steady red light fixture shall be used to light the structure during the construction phase. If power is not available, turbines shall be lit with self-contained, solar powered LED steady red light fixture that meets the photometric requirements of an FAA Type L-810 lighting system. The lights should be positioned to ensure that a pilot has an unobstructed view of at least one light at each level. The use of a NOTAM (D) to not light turbines within a project until the entire project has been completed is prohibited.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

This aeronautical study considered and analyzed the impact on existing and proposed arrival, departure, and en route procedures for aircraft operating under both visual flight rules and instrument flight rules; the impact on all existing and planned public-use airports, military airports and aeronautical facilities; and the cumulative impact resulting from the studied structure when combined with the impact of other existing or proposed structures. The study disclosed that the described structure would have no substantial adverse effect on air navigation.

An account of the study findings, aeronautical objections received by the FAA during the study (if any), and the basis for the FAA's decision in this matter can be found on the following page(s).

If we can be of further assistance, please contact Paul Holmquist, at (206) 231-2990, or paul.holmquist@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2018-WTE-11673-OE.

Signature Control No: 391750637-409836735 (DNH -WT)
Mike Helvey
Manager, Obstruction Evaluation Group

Attachment(s)
Additional Information
Map(s)

Additional information for ASN 2018-WTE-11673-OE

Abbreviations

AGL - above ground level | AMSL - above mean sea level | RWY - runway
VFR - visual flight rules | IFR - instrument flight rules | NM - nautical mile
ASN- Aeronautical Study Number | CAT - category aircraft | NEH - no effect height
MDA - minimum descent altitude | DA - decision altitude
W/2C - With the submission of an FAA 2C accuracy survey
TPA - traffic pattern altitude
Part 77 - Title 14 Code of Federal Regulations (CFR) Part 77, Safe, Efficient Use and Preservation of the Navigable Airspace

For the sake of efficiency, the 50 proposed wind turbines in this project that have similar impacts to Part 77 standards are included in this narrative.

1. LOCATION OF PROPOSED CONSTRUCTION

The proposed Republic Wind LLC wind turbine project lies approximately between 4.8 NM southwest to 10.5 NM south, southeast to 10.0 NM east of the Airport Reference Point (ARP) for the Sandusky County Regional Airport (S24), near Fremont, OH. The S24 elevation is 665 AMSL.

The 50 proposed wind turbines' described heights and locations are expressed in AGL/AMSL and latitude/ longitude.

ASN	Structure Name	AGL/AMSL	LAT/LONG
2018-WTE-11673-OE	T1	606 / 1336	41-12-37.25N / 83-04-03.47W
2018-WTE-11674-OE	T10	606 / 1412	41-10-45.43N / 83-00-21.83W
2018-WTE-11675-OE	T11	606 / 1428	41-10-26.99N / 83-00-17.02W
2018-WTE-11676-OE	T12	606 / 1494	41-08-33.95N / 82-57-57.68W
2018-WTE-11677-OE	T13	606 / 1472	41-09-23.84N / 82-57-58.08W
2018-WTE-11678-OE	T14	606 / 1490	41-08-13.29N / 82-57-48.84W
2018-WTE-11679-OE	T15	606 / 1468	41-08-59.01N / 82-57-47.94W
2018-WTE-11680-OE	T16	606 / 1496	41-08-32.55N / 82-57-43.53W
2018-WTE-11681-OE	T17	606 / 1456	41-09-56.42N / 82-57-05.85W
2018-WTE-11682-OE	T18	606 / 1456	41-10-19.54N / 82-57-05.90W
2018-WTE-11683-OE	T19	606 / 1458	41-10-13.78N / 82-56-54.00W
2018-WTE-11684-OE	T2	606 / 1400	41-11-35.43N / 83-01-42.77W
2018-WTE-11685-OE	T20	606 / 1448	41-10-19.37N / 82-56-41.92W
2018-WTE-11686-OE	T21	606 / 1478	41-09-25.77N / 82-56-38.69W
2018-WTE-11687-OE	T22	606 / 1436	41-11-10.90N / 82-56-05.13W
2018-WTE-11688-OE	T23	606 / 1460	41-09-30.74N / 82-56-00.47W
2018-WTE-11689-OE	T24	606 / 1434	41-10-21.62N / 82-55-55.84W
2018-WTE-11690-OE	T25	606 / 1480	41-09-28.09N / 82-55-46.14W
2018-WTE-11691-OE	T26	606 / 1434	41-11-36.25N / 82-55-37.06W
2018-WTE-11692-OE	T27	606 / 1450	41-10-23.14N / 82-55-29.26W
2018-WTE-11693-OE	T28	606 / 1424	41-11-38.57N / 82-54-58.92W
2018-WTE-11694-OE	T29	606 / 1428	41-11-47.60N / 82-54-51.93W

2018-WTE-11695-OE	T3	606 / 1390	41-11-24.59N / 83-01-38.02W
2018-WTE-11696-OE	T30	606 / 1422	41-12-25.06N / 82-54-43.03W
2018-WTE-11697-OE	T31	606 / 1424	41-12-02.13N / 82-54-38.80W
2018-WTE-11698-OE	T32	606 / 1426	41-11-40.37N / 82-54-34.99W
2018-WTE-11699-OE	T33	606 / 1385	41-15-38.49N / 82-54-24.34W
2018-WTE-11700-OE	T34	606 / 1380	41-15-56.46N / 82-54-24.42W
2018-WTE-11701-OE	T35	606 / 1408	41-14-08.52N / 82-54-18.88W
2018-WTE-11702-OE	T36	606 / 1382	41-15-37.57N / 82-54-06.43W
2018-WTE-11703-OE	T37	606 / 1462	41-10-14.57N / 82-53-27.66W
2018-WTE-11704-OE	T38	606 / 1466	41-09-58.14N / 82-53-19.70W
2018-WTE-11705-OE	T39	606 / 1382	41-14-50.37N / 82-52-25.36W
2018-WTE-11706-OE	T4	606 / 1406	41-10-38.60N / 83-01-19.26W
2018-WTE-11707-OE	T40	606 / 1384	41-15-05.72N / 82-52-19.26W
2018-WTE-11708-OE	T41	606 / 1380	41-14-55.91N / 82-52-11.95W
2018-WTE-11709-OE	T42	606 / 1366	41-15-06.22N / 82-52-00.06W
2018-WTE-11710-OE	T43	606 / 1380	41-14-55.74N / 82-51-52.65W
2018-WTE-11711-OE	T44	606 / 1406	41-13-49.46N / 82-51-06.32W
2018-WTE-11712-OE	T45	606 / 1406	41-14-03.74N / 82-51-04.28W
2018-WTE-11713-OE	T46	606 / 1394	41-14-39.24N / 82-51-04.55W
2018-WTE-11714-OE	T47	606 / 1392	41-14-48.98N / 82-50-45.66W
2018-WTE-11715-OE	T48	606 / 1340	41-12-53.43N / 83-04-09.64W
2018-WTE-11716-OE	T49	606 / 1322	41-13-06.44N / 83-04-09.61W
2018-WTE-11717-OE	T5	606 / 1392	41-11-36.43N / 83-01-18.76W
2018-WTE-11718-OE	T50	606 / 1436	41-10-25.58N / 82-55-42.88W
2018-WTE-11719-OE	T6	606 / 1394	41-11-24.61N / 83-01-15.57W
2018-WTE-11720-OE	T7	606 / 1430	41-09-56.58N / 83-00-36.58W
2018-WTE-11721-OE	T8	606 / 1400	41-12-12.33N / 83-00-36.22W
2018-WTE-11722-OE	T9	606 / 1422	41-10-32.09N / 83-00-31.46W

2. OBSTRUCTION STANDARDS EXCEEDED

The following proposed turbines would exceed Part 77 standards as described below.

a. Section 77.17(a)(1): The surface above 499 feet AGL, in which an object would be an obstruction to aircraft operating under VFR conditions in the en route phase of flight established under 77.17, 77.19, or 77.23.

All of the turbines listed in Section 1 of this narrative exceed the surface by 107 feet.

b. Section 77.17(a)(2): A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

ASN	Exceeds Section 77.17(a)(2) for S24 by (feet)
2018-WTE-11673-OE	176
2018-WTE-11715-OE	200

2018-WTE-11716-OE	221
2018-WTE-11721-OE	139

c. Section 77.17(a)(3) -- A structure that causes less than the required obstacle clearance within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area resulting in increases to an IFR terminal minimum altitude.

2018-WTE-11673-OE At 1336 AMSL Seneca County (16G) Tiffin OH. NDB RWY 24 increase S-24 MDA from 1460 to 1560 No Effect Height (NEH) 1289 AMSL. With the submission of a 2C accuracy survey (W/2C) 1460 to 1500 NEH 1299 AMSL. Increase CAT A/B/C/D circling MDA from 1460/1460/1460/1460 to 1560 NEH 1289 AMSL W/2C 1460/1460/1460/1460 to 1500 NEH 1299 AMSL.

2018-WTE-11674-OE At 1412 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11675-OE At 1428 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11676-OE At 1494 AMSL Seneca County (16G) Tiffin OH. NDB RWY 24 increase procedure turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11677-OE At 1472 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11678-OE At 1490 AMSL Seneca County (16G) Tiffin OH. NDB RWY 24 increase procedure turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11679-OE At 1468 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11680-OE At 1496 AMSL Seneca County (16G) Tiffin OH. NDB RWY 24 increase procedure turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11681-OE At 1456 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11682-OE At 1456 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11683-OE At 1458 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11685-OE At 1448 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11686-OE At 1478 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11687-OE At 1436 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11688-OE At 1460 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11689-OE At 1434 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11690-OE At 1480 AMSL Seneca County (16G) Tiffin OH. NDB RWY 24 increase procedure turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11691-OE At 1434 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11692-OE At 1450 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11693-OE At 1424 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11694-OE At 1428 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11696-OE At 1422 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11697-OE At 1424 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude

(MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11698-OE At 1426 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11701-OE At 1408 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11703-OE At 1462 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11704-OE At 1466 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11706-OE At 1406 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11711-OE At 1406 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11712-OE At 1406 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11718-OE At 1436 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11720-OE At 1430 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24

increase Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

2018-WTE-11722-OE At 1422 AMSL Seneca County (16G) Tiffin OH. RNAV (GPS) RWY 6 increase missed approach holding altitude at VOBRY from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 24 increase initial segment ELIJA to VOBRY and Hold-in-Lieu-of Procedure Turn Minimum Descent Altitude (MDA) from 2400 to 2500 NEH 1400 AMSL. /// NDB RWY 24 increase procedure turn MDA from 2400 to 2500 NEH 1400 AMSL. ### Fostoria Metropolitan (FZI) Fostoria OH. RNAV (GPS) RWY 9 increase missed approach holding altitude at ROPPE from 2400 to 2500 NEH 1400 AMSL. /// RNAV (GPS) RWY 27 increase Hold-in-Lieu-of Procedure Turn MDA from 2400 to 2500 NEH 1400 AMSL.

3. EFFECT ON AERONAUTICAL OPERATIONS

a. The impact on arrival, departure, and en route procedures for aircraft operating under VFR: No significant adverse effect.: all of the proposed wind turbines would exceed Part 77 Section 77.17(a)(1) by 107 feet and would exceed Section 77.17(a)(2) by a maximum of 221 feet as described in section 2 of this narrative. No issues were raised during the public comment period.

There are no effects on the VFR traffic pattern.

The effects on any existing or proposed arrival, departure, or en route IFR/VFR minimum flight altitudes: No significant adverse effect. .: all of the proposed wind turbines would exceed Part 77 Section 77.17(a)(1) by 107 feet and would exceed Section 77.17(a)(2) by a maximum of 221 feet as described in section 2 of this narrative. No issues were raised during the public comment period.

Effects on any airspace and routes used by the military. All of the proposed structures would be located within the confines or near a military training route or military training area. The United States Department of Defense has determined this would not create a substantial adverse effect on their operations at this time.

b. The impact on arrival, departure, and en route procedures for aircraft operating under IFR: See section 2 of this narrative. No significant adverse effect. Affected procedures will be adjusted upon notification of construction of the proposed structures.

c. The impact on all planned public-use airports and aeronautical facilities: None.

d. The cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures: None.

RADAR

Analysis indicates that the proposed turbines in this project would be in the line of sight for the Mansfield, OH Airport Surveillance Radar-8 (ASR-8), the Toledo, OH Airport Surveillance Radar-9 (ASR-9) the Brecksville, OH (QBD) Common Air Route Surveillance Radar (CARSR however, Air Traffic has determined this would not create a substantial adverse impact on their operations at this time.

The Seneca County Airport (16G) Airport Master Record can be viewed/downloaded http:// www.gcr1.com/5010web/airport.cfm? Site=16G . It states there are 25 single-engine, 9 multi-engine, 1 jet, 0 helicopter, 0 military, 0 ultra- light and 0 glider aircraft based there with 60,165 operations for the 12 months ending 4 October 2018 (latest information). The 06/24 oriented IFR/VFR asphalt runway is 4000 feet long x 75 feet wide.

The Forstoria Metropolitan Airport (FZI) Airport Master Record can be viewed/downloaded http:// www.gcr1.com/5010web/airport.cfm? Site=FZI . It states there are 13 single-engine, 1 multi-engine, 1 jet, 0 helicopter, 0 military, 0 ultra- light and 0 glider aircraft based there with 7,950 operations for the 12 months ending 4 October 2018 (latest information).

The Sandusky County Regional Airport (S24) Airport Master Record can be viewed/downloaded http:// www.gcr1.com/5010web/airport.cfm? Site=S24 . It states there are 8 single-engine, 2 multi-engine, 0 jet, 2 helicopter, 0 military, 0 ultra- light and 0 glider aircraft based there with 5,616 operations for the 12 months ending 3 October 2018 (latest information).

4. CIRCULATION AND COMMENTS RECEIVED

The proposal was circulated for public comment on 22 April 2019 and public comment period closed on 29 May 2019. One comment was received by 29 May 2019.

This comment stated concern regarding the raising of approach minimum altitudes that would result in loss of flights in adverse weather at Seneca County Airport and that the proposed structures would restrict helicopter life flight emergency evacuation flights from landing at locations.

The aeronautical study disclosed that the proposed structures would have the adverse effect as described above on IFR procedures. The increase to the 16G Minimum Decent Altitude of 40 feet for the NDB straight in RWY 24 and all category aircraft circling procedure is not considered excessive and would have a negligible effect on loss of flights in adverse weather. There are currently IAPs to both ends of the current primary runway, RWY 06/24. These are more precise procedures, and the FAA considers them to be preferred over the NDB IAP. This is in keeping with efforts to modernize the National Airspace System and favor IAPs that are based upon newer technology than the NDB.

With regard to the potential impact to the 16G NDB RWY 24, data provided from the FAA Traffic Flow Management System Counts (TFMSC) counted 459 IFR arrivals at 16G for the period beginning 1 May 2018 and ending 30 April 2019. The airport is served by four (4) terminal area IFR approach procedures: straight in RNAV approaches to both runway 06 and 24, a VOR approach to runway 06 and the NDB approach to runway 24.

Performance Data Analysis and Reporting System (PDARS) IFR flight trajectory data provided by the Airborne Tactical Advantage Company (ATAC) showed that few if any full NDB published approaches were flown to 16G and shows nearly all IFR approaches as straight in. Some overflight of the NDB are depicted but the actual published terminal procedure flight approach trajectory is missing. Toledo Terminal Radar Approach Control (TRACON) could not provide data showing specific approaches to 16G but did provide comment that few aircraft use the NDB approach. Specific data to verify the number of aircraft using this approach could not be obtained.

The other effects on the IFR procedures to 16G and FZI increase initial approach segments, procedure turn altitudes, approach and missed approach holding altitudes. These do not affect the altitude an aircraft needs to descend to acquire the airport visually and therefore would not cause loss of flights due to adverse weather.

The FAA acknowledges the importance of life flight access to all locations, however the number of these types of flights to specific repeat locations do not constitute a significant adverse effect.

5. DETERMINATION - NO HAZARD TO AIR NAVIGATION

The FAA has determined the proposed construction would not have a substantial adverse effect on the safe and efficient use of the navigable airspace by aircraft or on any air navigation facility and would not be a hazard to air navigation provided the conditions set forth in this determination are met.

6. BASIS FOR DECISION

Study for possible VFR effect disclosed that the proposed structures would have no substantial effect on any existing or proposed arrival or departure VFR operations or procedures. Aeronautical study found that the proposed structures would not conflict with airspace required to conduct normal VFR traffic pattern operations at any other known public use or military airport. At 606 feet above ground level, the proposed structures would not have a substantial adverse effect on VFR en route flight operations as there were no issues raised during the public comment period. . There are no IFR effects as the affected airspace will be adjusted to mitigate the height of the structures and it was determined this would not have a substantial adverse effect.

The proposed structures must be appropriately obstruction marked and/or lighted to make them more conspicuous to airmen.

7. CONDITIONS

For the following studies as identified by their ASN, at least 10 days before the start of construction the proponent is required to file a FAA form 7460-2, Part 1, Actual Construction notification, at the OE/AAA website (http://oeaaa.faa.gov). This actual construction notification will be used to update published instrument flight procedures.

2018-WTE-11673-OE
2018-WTE-11674-OE
2018-WTE-11675-OE
2018-WTE-11676-OE
2018-WTE-11677-OE
2018-WTE-11678-OE
2018-WTE-11679-OE
2018-WTE-11680-OE
2018-WTE-11681-OE
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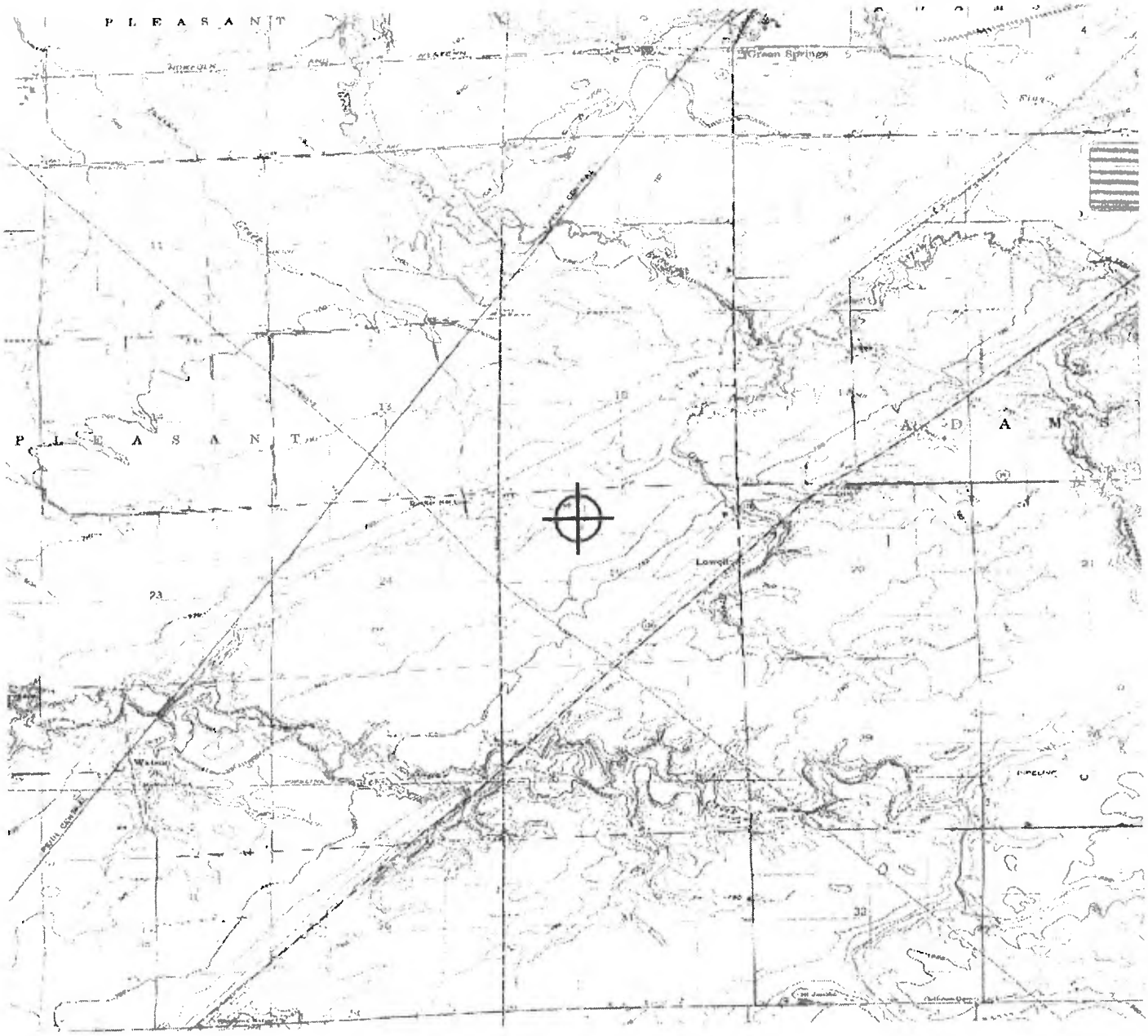
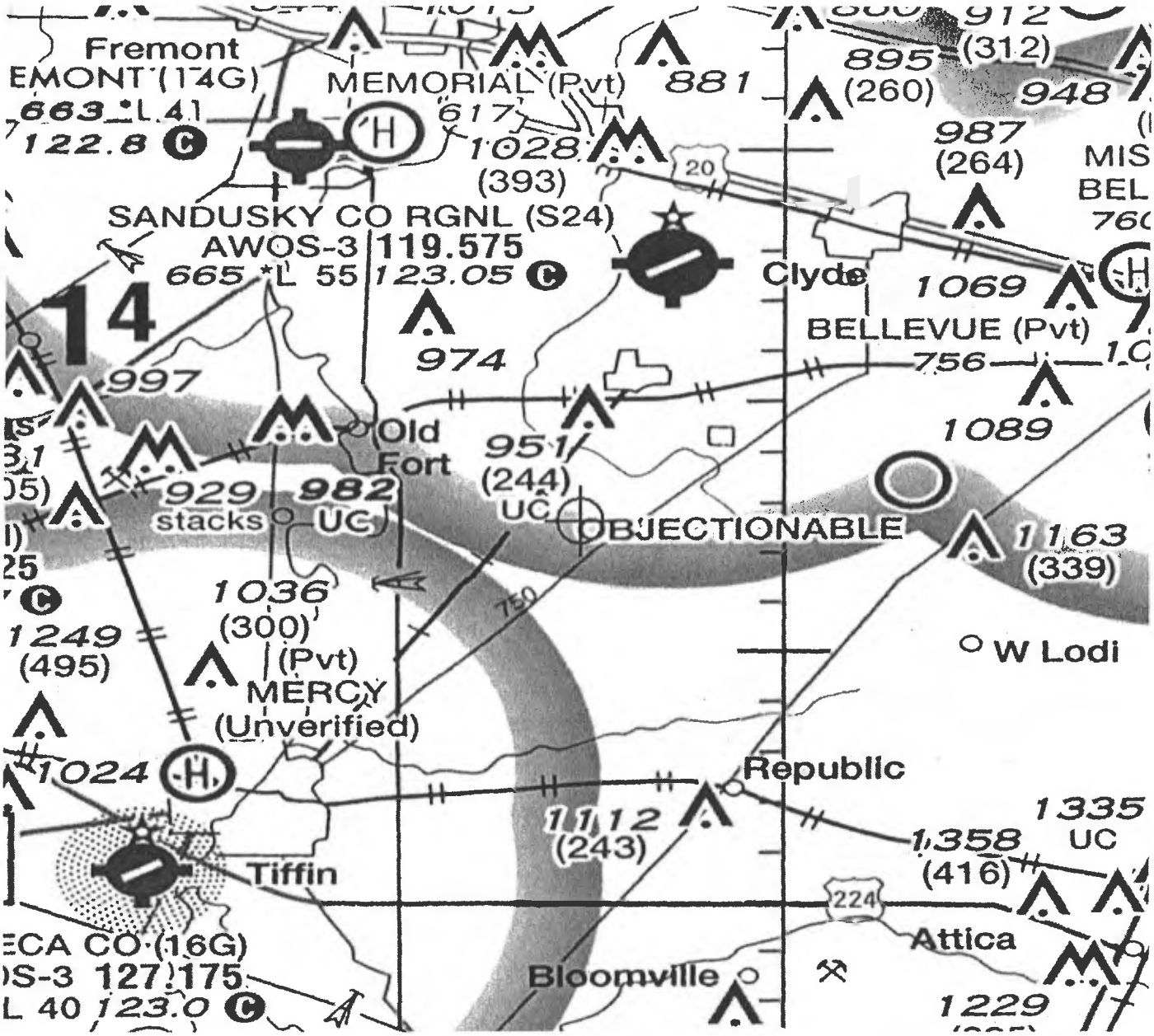
2018-WTE-11703-OE
2018-WTE-11704-OE
2018-WTE-11706-OE
2018-WTE-11711-OE
2018-WTE-11712-OE
2018-WTE-11718-OE
2018-WTE-11720-OE
2018-WTE-11722-OE

Within five days after each structure reaches its greatest height, the proponent is required to file a FAA form 7460-2, Actual Construction notification, at the OE/AAA website (http://oeaaa.faa.gov). This actual construction notification will be the source document detailing the site location, site elevation, structure height, and date structure was built for the FAA to map the structure on aeronautical charts and update the national obstruction database.

OBSTRUCTION MARKING AND LIGHTING NOTE: A recommendation for white paint/synchronized red lights will be made for all turbines until such time as the proponent confirms that the layout is final (no changes, no additions, no removals) and all turbines can and will be built at their determined location and height. At that time, the proponent may contact this office and request a re-evaluation of the marking and lighting recommendations for the turbines within this project and a portion of the turbines may qualify for the removal of the lighting recommendation.

TOPO Map for ASN 2018-WTE-11673-OE

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From:	Steve Shuff
To:	Wheeler, Kent M (FAA)
Cc:	Perez, Cesar CTR (FAA); Holmquist, Paul (FAA)
Subject:	Aeronautical Study No. 2018-WTE-5607-OE and Study No. 2018-WTE-11673-OE
Date:	Friday, May 17, 2019 11:47:38 AM

I request this e-mail be submitted as a comment to these studies. I live in Eden Township, Seneca County, Ohio. I respectfully request the FAA oppose the construction of these industrial wind turbines in Seneca County. There are major issues that will adversely affect the Seneca County airport (16G) . Raising approach limits will result in loss of flights at the airport in adverse weather. The Seneca County airport is necessary for economic development of our area. The possible required changes of increases to an IFR terminal minimum altitude would result in less air traffic for our airport and the area businesses that rely on the airport . On a personal note , these industrial wind turbines (some 652 feet tall) will reduce the opportunity for life flight to land at locations to assist persons who need immediate medical care at a regional hospital. My daughter was one of these persons. She was able to be taken to Toledo by a life flight helicopter with life threatening injuries. That quick response probably saved her life. Thanks for your consideration of my comment.
Steve C. Shuff

TIFFIN AIRE INC.

April 11, 2018

Mr. Paul Holmquist
Specialist, Air Traffic Certification Branch
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Re: Aeronautical Study No. 2017-WTE-9117-OE

Mr. Holmquist:

Tiffin Aire, Inc./Seneca County Airport (16G)/Citizens who base their aircraft at 16G, submits the following comments in response to the Federal Aviation Administration's (FAA) Aeronautical Study No. 2017-WTE-9117-OE.

We, the aforementioned, are concerned about the impact of the proposed wind turbine project near Bellevue, OH. These wind turbines pose a threat to the safety and efficiency of the airspace in the large area where they are planned to be constructed. Two notable impacts have become apparent. First being the impact to the NDB RWY 24 approach at the Seneca County Airport (16G). This approach is the only ground-based approach to this runway and raising the minimums decreases the efficiency of the airport by requiring pilots to have better weather for landing. The second impact is to the amount of VFR traffic to 16G that is unfamiliar with the area. Seneca County Airport is also home to a popular propeller overhaul shop that draws customers from a large geographic area. The proposed turbines will be an additional obstruction and hazard to these transient pilots, as well as local pilots who use the area for training operations.

We appreciate the opportunity to submit comments on this proposed obstruction and urge the FAA to issue a finding of hazard to air navigation based on the impacts to the safety and efficiency to the aviation community and airspace of and around Sandusky Regional Airport (S24) and Seneca County Airport (16G).

Respectfully Submitted,

Bradley W. Newman, President
Tiffin Aire, Inc.

Seneca County Airport · 1778 West State Route 224
Tiffin, Ohio 44883
Phone (419) 447-4263 FAX (419) 447-4042

TIFFIN AIRE INC.

Seneca County Airport
1778 West State Route 224
Tiffin, Ohio 44883

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Mr. Paul Holmquist
Specialist, Air Traffic Certification Branch
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

76177-15240i

OE/AAA

Federal Aviation Administration

User: Brian Gibbs
Email: tai@tiffinaire.com
Date: 04/11/2018
Comment: This wind turbine would be detrimental to our aerial agricultural operation in the Seneca County, Ohio area. This aerial operation involves seeding and spraying of crops from an aircraft. The result would be loss of business for our company if we are unable to perform the job our customers have relied on us to do for 60 years.

OE/AAA

Federal Aviation Administration

User: Sarah Staudt
Email: sarah.staudt@aopa.org
Date: 04/11/2018
Comment: April 11, 2018

Mr. Paul Holmquist
Specialist, Air Traffic Certification Branch
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Re: Aeronautical Study No. 2017-WTE-9117-OE

Mr. Holmquist:

The Aircraft Owners and Pilots Association (AOPA), the world's largest aviation membership association, submits the following comments in response to the Federal Aviation Administration's (FAA) Aeronautical Study No. 2017-WTE-9117-OE.

AOPA is concerned about the impact the proposed wind turbine project proposed near Bellevue, OH. These wind turbines pose a threat to the safety and efficiency of the airspace in the large area where they are proposed. Two notable impacts have become known. The first is the impact to the NDB RWY 24 approach at the Seneca County Airport (16G). This approach is the only ground-based approach to this runway and raising the minimums decreases the efficiency of the airport by requiring pilots to have better weather for landing. The second impact is to the amount of VFR traffic to 16G that is unfamiliar with the area. Seneca County Airport is also home to a popular propeller overhaul shop that draws customers from a large geographic area. The proposed turbines will be an additional obstruction and hazard to these transient pilots, as well as to local operators such as agricultural aerial applicators and flight training.

We appreciate the opportunity to submit comments on this proposed obstruction and urge the FAA issue a finding of hazard to air navigation based on the impacts to the safety and efficiency to the aviation community and airspace of and around Sandusky Regional Airport (S24) and Seneca County Airport (16G).

Sincerely,

Sarah E. Staudt
Senior Aviation Technical Specialist
Sarah.Staudt@aopa.org
301-695-2130

OE/AAA

Federal Aviation Administration

User: Bradley Newman
Email: tai@tiffinaire.com
Date: 04/10/2018
Comment: As the airport manager of the Seneca County Airport, Tiffin, Ohio (16G) and FAA Certified Pilot Examiner, this wind turbine would seriously interfere with our NDB Runway 24 approach into the airport. The location of this wind turbine needs to be moved so as not to affect our operations. This would also interfere with the agricultural aviation operations, seeding and spraying, of vegetable and grain crops in our area. In our private pilot training course, this will also interfere with ground reference maneuvers required in this and the commercial pilot course.

Summary: Testimony of Benjamin M. Doyle on behalf of Republic Wind, LLC electronically filed by Teresa Orahood on behalf of Devin D. Parram