

FILE

PUCO EXHIBIT FILINGDate of Hearing: November 13, 2019Case No. 17-2295-EL-BGN

PUCO Case Caption: 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 Seneca and Sandusky Counties, Ohio

Volume IV

List of exhibits being filed:Applicant Exhibits 33, 37, 38Staff Exhibit 4Reporter's Signature: Carolyn M. BurkeDate Submitted: 12/4/2019

2019 DEC - PM 1:11

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BEFORE THE OHIO POWER SITING BOARD

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

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PROCEEDINGS

before Mr. Jay S. Agranoff and Ms. Anna Sanyal,
Administrative Law Judges, at the Ohio Power Siting
Board, 180 East Broad Street, Room 11-B, Columbus,
Ohio, called at 9:00 a.m. on Wednesday, November 13,
2019.

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VOLUME V

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ARMSTRONG & OKEY, INC.
222 East Town Street, Second Floor
Columbus, Ohio 43215-5201
(614) 224-9481 - (800) 223-9481

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On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio

An Addendum to the Ohio Department of Natural Resource's Voluntary Cooperative Agreement

The following protocols are meant to establish a standardized framework in which pre- and post-construction surveying should be conducted at proposed commercial wind turbine facilities within the state of Ohio. The Ohio Department of Natural Resources (ODNR) will assess the level of surveying effort required within the project area boundary limits (henceforth referred to as the "site"), based upon the information provided from section 1.(a) of the Cooperative Agreement, the habitat characteristics within the site (determined through a site visit by ODNR Division of Wildlife biologists and GIS analysis), and its proximity to focal points of bird and bat activity. Additional surveys for species other than birds and bats may be requested based upon a review of the ODNR Division of Natural Areas and Preserves' natural heritage database. These studies are meant to document the level and timing of species activity, diversity and abundance. Results of the studies outlined within this document will allow the ODNR Division of Wildlife to assess the potential impact that a proposed turbine facility may have either directly through mortalities or indirectly through avoidance behaviors, on Ohio's wildlife resources. Post-construction mortality estimates will be used to validate or refute pre-construction predictions, and to determine if the use of mitigation measures is warranted in order to minimize impacts to wildlife. By having consistent study methodology among projects, over time a regional assessment may be formed for adjusting the methods or duration of the studies recommended.

The type of surveying recommended will be at the discretion of the ODNR Division of Wildlife, and will be tailored to the specific site, but may fit generally into one of the categories listed below. These survey types are to be cumulative, meaning if the "moderate" level of surveying is required, the survey techniques described in the "minimum" level must also be conducted. While this document is intended to serve as a guide for wind developers as they plan projects and determine the level and type of wildlife monitoring that is likely to be recommended, the ODNR Division of Wildlife reserves the right to be flexible in the application of these surveys based on site-specific or project-specific conditions.

- **Minimum**

These areas are large tracts of agricultural lands that do not come within 500 meters of a woodland ≥ 10 hectares, wetlands ≥ 3 hectares, or large water body (i.e., rivers, lakes or reservoirs).

- **Moderate**

Primarily agricultural or grasslands, with patches of forests, wetlands, and/or other habitat.

- **Extensive**

These include those areas within proximity to migratory corridors, staging areas, Audubon Important Bird Areas (IBAs), or the Lake Erie shoreline (3-mile buffer) (Fig. 1).

In an effort to standardize information collected among projects, data should be recorded on forms provided for each of the various types of recommended surveys for all pre- and post-construction monitoring activities. Completed forms should be returned to the ODNR Division of Wildlife at the conclusion of surveying. Weather data should be recorded during all types of surveying (e.g. temperature, relative humidity, cloud cover, wind speed and direction).

1. Minimum Surveying Effort

1.1. *Breeding birds*

While breeding birds in the eastern United States have not been shown to be at high risk of mortality from turbines within their territories, it is important to identify what species may be impacted through habitat disturbance or avoidance. Therefore, point-counts should be conducted at all proposed turbine locations, with 2 points established for each turbine. The first set of points should be ~ 100-meters from the turbine or any adjacent proposed turbine locations. The second set of points will be between 125 to 300-meters (distance assigned by ODNR on a site by site basis) from any proposed turbines. The 100-meter point will be used to assess those species that may be directly affected by construction of the turbine; the second point will be used to assess indirect impacts such as avoidance. Effort should be made to place all points in nearby undisturbed habitat that will remain post-construction. Habitat for the point-counts should be similar to that of the turbine location. Because of increased detectability, points within grassland habitats may be placed at every other turbine. If turbine locations have not yet been determined, 2 point-count locations should be established for the maximum number of turbines proposed. These points should be randomly stratified across the site relative to the proportion of individual habitat types. Generally, active agricultural fields are not considered suitable nesting habitat for most species of birds; thus, surveys do not need to be conducted at any point that falls within these areas. Point-count locations (GIS coverage and/or GPS coordinates) should be provided to the ODNR Division of Wildlife. Three 10-minute point-count surveys should be conducted at each point: 1 in May, and 2 in June.

Certain bird species do not frequently sing until later in the breeding season; given this reduced detectability, 1 additional point-count is required in July for sites with suitable habitat for the Henslow's sparrow, dickcissel, and/or sedge wren. These additional point-counts should be conducted on sites that contain or are directly adjacent to >50 hectares of contiguous grassland (for all 3 species) or >1 hectare of wet meadow or freshwater marsh (for sedge wren only).

All surveys should begin at approximately dawn and not extend past 10:00 a.m. EST. Surveys should be conducted by experienced personnel who are able to distinguish Ohio breeding bird species by sight and sound. All birds detected during surveys should be identified to species and their behavior, indications of breeding activity (refer to breeding bird atlas codes¹), estimated distance, and direction (bearing) should be recorded. Birds flying overhead that do not land or originate within 200-meters of the center of the point should be listed as “fly over.” Observations should be recorded using appropriate alpha species codes². Incidental observations of state and federal threatened or endangered species (Table 1) should be noted regardless of whether detected with the given survey time or while at a point-count location. Due to reduced detectability, surveys are not to be conducted on mornings of heavy wind (>5 meters/second), prolonged periods of rain (>20 minutes), or fog. To assess avoidance of the project area after construction, surveys should be conducted 1 year prior to and 1 year post-construction.

For wind energy development projects proposed by Voluntary Agreement cooperators on sites deemed to pose minimum risk to wildlife resources only, breeding bird surveying can occur prior to construction and after submission of the associated permit application to the Ohio Power Siting Board (OPSB). Under these conditions, the ODNR Division of Wildlife will certify to the OPSB that these data are not required prior to evaluating the potential ecological impacts at the site of the proposed project. Submission of survey results to the ODNR Division of Wildlife must occur prior to construction, and post-construction monitoring, as noted above, is still required.

1.2. *Raptor nest searching*

One early season (1 February – 31 March) survey should be conducted on and within 1 mile of the proposed site. A 2-mile buffer should be used if the site is within 1 mile of large water bodies (lakes, rivers, or reservoirs) or wetlands >5 hectares as these areas have a higher potential for use by threatened or endangered species of raptors. The species and locations of nest sites should be marked on USGS 1:24,000 topographic quadrangles.

1.2.1. *Raptor nest monitoring*

Monitoring should be conducted to assess the daily movement patterns of any species of protected raptor whose nest is located within 2 miles of the proposed site. During the incubation and rearing stage the location of adult birds should be tracked for at least 4 hours twice per week until consistent activity patterns are established. Alternate monitoring strategies that assess the degree to which nesting raptors use the proposed turbine facility will be considered (contact ODNR Division of Wildlife). Information collected

¹ <http://www.ohiobirds.org/obba2/uploads/Handbook%20Body.pdf>

² <http://www.pwrc.usgs.gov/bbL/manual/sname.htm>

will be used to document how frequently the birds enter the proposed turbine facility and whether particular turbines may pose a more substantial risk.

1.3. *Bat acoustic monitoring*

With the expansion of wind turbines into the eastern United States, incidences of bat mortalities have become increasingly more common. Initially, these issues were limited to forested sites within the Appalachian Mountains. Now, unfortunately, they have been documented on agricultural sites as well. As a result, bat activity levels should be assessed at all proposed wind turbine facilities. For sites deemed to pose minimum risk to wildlife resources only, bat acoustic monitoring can be waived for Voluntary Agreement cooperators if the permit application for the wind turbine facility is conditioned such that turbines will not operate at wind speeds ≤ 4 meters/second (as measured within the rotor swept area) from dusk to dawn, July 1 to October 31 annually. Under these conditions, post-construction acoustic data will not be required unless unacceptable mortality rates are detected.

At least 1 full season (15 March – 15 November) of acoustic monitoring should be conducted. This can be accomplished by attaching AnaBat (either SD1 or those equipped with CF ZCAIMS) units to all meteorological towers, with 1 unit positioned at 5 meters of the ground, and 1 unit within or as close as possible to the rotor swept area. In an effort to standardize results among study sites, the AnaBat's sensitivity should be adjusted to detect a calibration tone³ at 20 meters. AnaBat units must monitor from 0.5 hour before sunset until 0.5 hour after sunrise. A "pass" will be defined as any file with ≥ 2 echolocation pulses. When possible, detections should be identified to species or species group (e.g., big brown/silver-haired) within AnaLook. Copies of original and identified detections should be provided to the ODNR Division of Wildlife. In an effort to assess both potential attractant issues, and to correlate the number of detections with bat mortalities, acoustic monitoring should continue through the conclusion of post-construction monitoring.

2. **Moderate surveying effort**

2.1. *Passerine migration*

Numerous incidences exist of nocturnally migrating songbirds colliding with tall structures such as lighthouses, cell phone towers, and tall buildings. It is unclear what the cumulative impact of potentially 100s of turbines on the landscape will be to migrating birds. In an effort to gauge the amount of use a particular site receives during bird migration, point-counts should be conducted in the spring and fall. One point-count location should be established for every 100 hectares of

³ Unlike most ultrasonic pest repellers, this product produces a constant ultrasonic sound and should be used to calibrate AnaBat units. <http://home.earthlink.net/~nevadabat/BatChirp/index.html>

combined forest, shrub, and wooded wetland; however if the site would require <5 survey points, the ODNR Division of Wildlife will consider eliminating this survey requirement after a field review of habitat quality. Points should be established in patches of the aforementioned habitats, and should be stratified across the extent of the site. Surveys should be conducted once weekly from 1 April to 31 May, and from 15 August to 15 November. All surveys should begin at approximately dawn and not extend past 10:00 a.m. EST. Observers should record every bird seen or heard, during a 10-minute period at each point. Birds flying overhead that do not land or originate within 200 meters of the center of the point should be listed as "fly over." The direction (bearing) and estimated distance of the bird from the observer should also be recorded.

2.2. *Diurnal bird/raptor migration*

Though modern turbines seem to pose less of a threat to birds during the day, surveys should still be undertaken to minimize possible wildlife/wind turbine interactions. Day-long (9:00 a.m. to 4:00 p.m.) surveys should be conducted 3 times a week, during seasonally favorable weather for migration (southerly winds in spring, northerly winds in fall). Due to species-specific differences in migration timing, surveying should be conducted from 15 March to 1 May, and 1 September to 31 October. The number of sample points will vary with the size and configuration of the proposed facility.

2.3. *Owl playback surveys*

These surveys should be conducted once monthly for the appropriate species: January (great horned), February (barred), and March (screech). One sample point should be created for every 100 hectares of contiguous forest. Points should be established within forest patches and be spaced >400 meters apart. Surveys should begin 0.5 hour after sunset. Owl calls should be played through a megaphone or portable radio. Three replications of 1 minute of calls, followed by 4 minutes of listening (15 minutes total per station) should be played at each point-count location. Playback calls should have a minimum of background noise, and equipment must be able to broadcast so that the sound pressure is 80-90 dB at 1 meter from the speaker.

2.4. *Bat mist-netting*

While acoustic monitoring may be able to provide a generalized activity level for the site, it can not discriminate distinct individuals nor indisputably determine species composition. Thus, mist-netting should be performed to determine species diversity and locate potential concentrations of activity. Also, the range of the federal and state endangered Indiana myotis (*Myotis sodalis*) is considered statewide within Ohio. This species is known to occur in a variety of habitats including stream and river corridors, forest canopy, and edges. Mist-net surveys

should be conducted in accordance with U.S. Fish & Wildlife Service guidelines⁴, and by an individual approved to handle Indiana myotis (contact U.S. Fish & Wildlife Service for list) and have obtained an ODNR issued scientific collectors permit. Prior to beginning mist-netting activities, project consultants must meet with ODNR Division of Wildlife and U.S. Fish & Wildlife Service staff on-site to review habitats within the project area. Two netting stations should be established per square kilometer of forested area. In order to better assess the bat species community, each station should consist of a minimum of 4 net sets, with at least 1 set being a high net (3 standard mist nets stacked on top of one another to create one set that is ~ 7.5 meters tall). Each site should be surveyed on 2, non-consecutive nights between 15 June – 31 July. Mist-netting should occur during the 5 hours following sunset. Documentation photos should be taken for all species encountered on site. To identify within night recaptures, a small (i.e., ~ 5 mm) mark of non-toxic water-soluble paint should be applied to one forearm of all captured bats. Due to concerns over White Nose Syndrome (WNS), equipment should be decontaminated following U.S. Fish & Wildlife Service protocols⁵.

If Indiana myotis, Rafinesque's big-eared bat, or eastern small-footed myotis⁶ are encountered during mist-netting surveys the ODNR Division of Wildlife must be notified within 24 hours and additional information must be collected. Each individual captured should have voucher photographs taken of the head, body, and species-specific identifiable features, such as the calcar, foot, or mask. Radio telemetry should be conducted on up to 4 Indiana myotis (3-4 females, no more than 1 male) and all Rafinesque's big-eared bats or eastern small-footed myotis. Home range (nightly locations taken every 5 minutes, for the life of the transmitter), roost trees, and maternity colonies should all be identified. If multiple maternity colonies of listed species are suspected to be located on or adjacent to the proposed site, additional transmitters may be requested. Photos, GPS location, tree species, dbh, site characteristics, and exit counts should be collected at each roost. If high densities (>15 of 1 species) of lactating females of the more common colonial species (e.g., big brown bat, little brown, or northern myotis) are captured within a night's trapping, radio telemetry should be used to identify the location of the maternity colony. A maximum of 10 transmitters should be allocated for this task, and their use should be stratified across the proposed facility. Maternity colonies represent an area of increased activity and thus greater risk if turbines were located in proximity to nightly travel routes. Additionally, Indiana myotis are known to occasionally share roosts with the more common little brown myotis. Banding (following U.S. Fish & Wildlife Service protocol⁷) should be done on Indiana myotis and Rafinesque's big-eared bat, but not eastern small-footed myotis due to entrapment concerns associated

⁴ <http://www.fws.gov/northeast/nyfo/es/2007Mistnetting.pdf>

⁵ <http://www.fws.gov/midwest/Endangered/mammals/BatDisinfectionProtocol.html>

⁶ Rafinesque's big-eared bat and the eastern small-footed myotis have each only been recorded once within the state. Though the likelihood of encountering these species is low, if one was captured it is important to maximize the opportunity to gather habitat information on these species.

with its over-wintering habitat. Bands will be provided by ODNR Division of Wildlife.

Finally, any possible hibernacula sites on or within 5 miles of the proposed site should be trapped during spring emergence and fall swarming to determine potential use. Monitoring should follow the current U.S. Fish & Wildlife Service protocol⁷. Surveys are to be conducted every 2 weeks from 15 March – 15 April, and 15 September – 15 November. More extensive monitoring may be requested if listed species of bat are detected during summer mist-net surveys. Nightly captures should be marked similar to those captured during mist-netting. Internal surveys are not recommended due to safety concerns, difficulty in determining species absence, and the potential transmission of WNS.

Where applicable (determined by ODNR)

2.5. Nocturnal marsh bird surveys

Ohio has lost >90% of its original wetland habitat. Accordingly, several species of marsh birds are protected within the state. For projects that contain or that are directly adjacent to ≥ 3 hectares of contiguous wetland, marsh bird surveys should be conducted. Playback surveys should be used to assess the presence of least bittern, sora, Virginia rail, king rail, and American bittern. Surveys are to be conducted weekly from 20 May to 15 June. One survey location should be established for every 50 hectares of contiguous wetland, or 1 location per wetland ≥ 3 hectares in size if there are multiple isolated patches of habitat. Points should be spaced >400 meters apart in appropriate habitat. Each survey should be conducted during a 2-hour period centered on either sunrise or sunset. Thirty seconds of territorial calls should be broadcast through either a portable radio or megaphone, followed by 30 seconds of listening, for each species. Playback calls should have a minimum of background noise, and equipment must be able to broadcast so that the sound pressure is 80-90 dB at 1 meter from the speaker. Due to interspecies competition, the sequence of the species calls should be played as they are listed above.

2.6. Barn owl surveys

Barn owls are a state listed threatened species in Ohio; thus, if suitable habitat exists additional effort should be taken to identify if individuals are nesting within the region. These surveys should be undertaken if the proposed site is within areas depicted in Fig. 2 and includes or is adjacent to ≥ 80 hectares of combined wet meadow, pasture, and grassland. Surveyors should contact property owners of lands that have either barns or barn owl nest boxes and inquire about whether barn owls are currently using these structures. Surveyors should also visit each suitable barn or nest box in the area once from 15 June to 15 July to look for whitewashing, pellet material, fresh pellets, feathers, or other indications of the

⁷ <http://www.fws.gov/Midwest/endangered/mammals/inba/DrftSrvyPrtcl.html>

presence of nesting barn owls. If barn owls are suspected of using a structure, playback calls should be used in an attempt to elicit begging responses from young that may be concealed in the rafters. Playback surveys should consist of broadcasting 1 minute of adult calls, followed by 2 minutes of listening for young. This procedure should be repeated 3 times per survey and should be conducted between 0.5 hour after sunset and midnight.

2.7. Sandhill crane migration

Sandhill cranes are listed as an endangered species in Ohio. If sandhill cranes are known to migrate within the vicinity of the proposed project (Fig. 2), additional surveys should be conducted. These surveys will be an extension of the weekly diurnal bird/raptor migration protocol to include the timing of sandhill crane migration, from 1 November to 15 December.

2.8. Waterfowl surveys

Ohio not only has a large migratory population of waterfowl, but also provides important over-wintering habitat for numerous species. If the site includes ≥ 3 hectares of wetlands, rivers, lakes, or agricultural fields where concentrations of waterfowl are known to feed, static or driving surveys of the waterfowl community should be conducted twice monthly, from 1 September – 1 April. The number of points will vary with the size and configuration of the water body. Consult with the ODNR Division of Wildlife for possible locations, survey times, or tracts.

2.9. Shorebird migration

The Lake Erie basin provides important stopover habitat for migratory shorebirds. Twice monthly point-counts (15 April to 31 May, and 15 July to 15 October) should be conducted in appropriate habitat such as beaches, flooded fields and mudflats. A minimum of 10 minutes should be spent at each point; additional time may be spent to accurately assess the number and species composition of the flock. The number of points will vary with the habitat surveyed as well as the size and configuration of the site. Consultation with ODNR Division of Wildlife is strongly recommended.

3. Extensive

3.1. Radar monitoring

Marine radar should be used to monitor nightly passage rates, 5 nights a week from 15 April to 31 May, and 15 August to 31 October. Surveys should begin at sunset and continue until sunrise. Information on estimated numbers/density, direction, hourly changes in activity and altitudes should be included. Preferably 2 radar units should be operated simultaneously; to assess target density and

altitudes concurrently; if that is not logistically possible, the radar unit should be alternated between the vertical and horizontal position every 20 minutes. Hourly weather data should also be recorded in order to correlate passage rates with climatic factors. Due to reduced detectability, monitoring should not be conducted on nights of heavy rain or fog.

Interpretation of pre-construction survey results

Upon completion of surveys, a summary report of all findings should be presented to the ODNR Division of Wildlife. Once permitting applications have been filed with the OPSB, these reports will be made available to the public. Construction should not commence prior to review of these data and findings by ODNR Division of Wildlife (and U.S. Fish & Wildlife Service for federal listed species). A pre-construction meeting to review monitoring results and discuss potential concerns with respect to turbine locations and wildlife resources will be scheduled with ODNR staff, the developer, and project consultants before construction of the facility begins and before official agency comments are provided for any permits pending. Based on survey results, the ODNR Division of Wildlife may recommend 1 or several of the following:

- a) The project should be constructed without altering the initial design.
- b) Changes are needed regarding the number or micro-siting of turbines, auxiliary structures, and/or access roads.
- c) Additional surveying is recommended based upon initial survey results.
- d) The project should not be constructed due to significant wildlife and/or related ecological concerns.

Facility design

Several measures are thought to decrease the likelihood of wildlife strikes at wind turbine facilities. Accordingly, these measures should be incorporated into the design of all turbine facilities within Ohio.

Lighting

Passerines use celestial cues to aid in navigation during migration. Lights are known to disorient nocturnally migrating passerines; this may directly increase the mortality risk from collisions, or indirectly through exhaustion. Therefore, the number of lights on a site should be minimized. Turbines and meteorological towers should have the fewest number of lights permitted by the Federal Aviation Administration (FAA). Preferably these will be white lights with the minimum intensity, and number of flashes per minute (longest strobe) allowable by the FAA. Lights around substations or auxiliary structures should be down-shielded, equipped with motion sensors, or turned off when not in use.

Minimization of perches

New commercial wind turbine facilities have discontinued the use of lattice-work towers which were thought to contribute to the large numbers of raptor fatalities at sites such as Altamont, California. However, effort should still be made to reduce the number of perches available at a site. When possible all electrical cables connecting turbines to each other or to the substation should be buried.

Guyed structures

Guy wires seem to pose a particularly high threat to migratory birds as demonstrated by the large number of fatalities found at certain communication towers. Thus, to the degree possible, unguyed meteorological towers should be used to reduce possible mortalities from striking wires.

Tree removal

In order to reduce the potential for the incident take of bats that form large maternity colonies, including the federally endangered Indiana bat, tree clearing should be minimized and necessary clearing should be constrained to the dates suggested by U.S. Fish & Wildlife Service (1 October to 31 May).

Avoidance of nests for protected species of raptor

Raptor nests represent an area of increased activity and thus, turbines within close proximity may pose an increase risk. Therefore, the ODNr Division of Wildlife suggests a minimum setback of ½ mile from any nest of a protected species of raptor.

Post-construction monitoring (all sites)*Wildlife monitoring*

Several monitoring studies should be continued through the post-construction monitoring period. These studies will be used to assess potential behavioral changes in wildlife due to the presence of wind turbines. While avoidance behavior has been noted in species of grouse, it is unclear whether other species of grassland or forest-dwelling birds will avoid areas with wind turbines. Thus, breeding bird surveys should be continued to examine any species-specific threshold distances. Alternately, the high number of bat mortalities at turbine facilities in the eastern U.S. suggests the possibility that bats are actually being attracted to the site post-construction. In order to assess attraction and to potentially correlate bat mortality with detection frequency, acoustic monitoring should also be continued throughout the post-construction monitoring phase.

Mortality searches

One initial year (1 April to 15 November) of daily mortality searches will be recommended to the OPSB for each site with an optional second season depending on the first year results. The results of the mortality searches should be submitted to ODNR Division of Wildlife and U.S. Fish and Wildlife Service for review. Depending on the results of the first year, ODNR Division of Wildlife will determine if post-construction monitoring of mortality in the second year can be waived, reduced (i.e., focused on time periods when higher numbers of fatalities were detected), or continued for a full year.

The number of turbines searched will depend on the number of turbines at the facility.

- ≤10: all searched.
- 11-40: 1/2 searched, minimum of 10.
- >40: 1/4 searched, minimum of 20.
- All meteorological towers.

Turbines to be searched will be randomly selected but may include specific turbines in areas of concern if so noted by the ODNR Division of Wildlife or U.S. Fish & Wildlife Service based on pre-construction monitoring results. Recommendations for monitoring during any second year may differ, as noted above, both in terms of time period, specific turbines and number of turbines searched to address potential wildlife impacts.

Transect area and design

At each searched turbine, north-south oriented transects should be established every 5 meters. The length of these transects, and the perpendicular distance that transects should extend from the turbine base should be equal to twice the blade length of the turbine being searched. Transects should not venture into hazardous areas, such as steep slopes or high water. Vegetation mapping should be done for each of the searched turbines 3 times a year (spring, summer, and fall), given that vegetation influences carcass detectability. Mapping will consist of recording the GPS location, vegetation height and percent cover (1-meter transect) every 10 meters for each transect. Additional points should be taken at abrupt transition zones such as the edge of a road. An estimate of searchable area also should be provided for each searched turbine. If turbines are within agricultural regions, developers should encourage landowners to plant areas within 60 meters of the turbine in either soybean or wheat crops to increase the probability of detecting carcasses.

Searcher efficiency and Scavenging rates

In order to compensate for carcasses that are scavenged or those missed by observers, searcher efficiency and scavenging rates should be determined for each site using the

procedure described below. These indices should be calculated for each year of post-construction monitoring.

Searcher efficiency

Search efficiency trials consist of placing test carcasses at locations chosen at random to assess an individual's ability to detect turbine mortalities. These surveys should be conducted by someone who is not actively involved in the searches, and carcasses should be placed unbeknownst to the searchers. Individual trials should be conducted randomly at least 200 times each year (a trial consists of the placement of an individual carcass). Carcasses may be used for multiple trials throughout the season. Each carcass should be placed at a turbine, with distance (within the searched area) and direction selected at random. Each carcass should be discreetly marked to identify it as a trial individual. Carcasses must be similar to those expected to be encountered during the search and should vary in both species composition and stage of decomposition. After a searcher has finished his or her survey, the individual conducting the efficiency trial should attempt to recover any missed carcasses to ascertain whether they were scavenged prior to the beginning of the search.

Scavenging rate

In an effort to assess how quickly carcasses are removed from the site by scavengers, a minimum of 50 carcasses per year should be placed at random distances and directions. Several carcasses should be placed each month, since rates are likely to change throughout the year. These carcasses should be checked daily for the first week, then every 2 days until the carcass is removed or completely decomposed. Preferably, carcasses used for scavenging rate estimation will be those collected from the site, and not surrogate species such as pigeons, starlings, or house sparrows since these have been found to be scavenged less frequently. Characteristics that should be recorded for each placed carcass include: the GPS location, vegetation height, percent cover, distance/direction from turbine, and species.

Turbine site searches

Each day searches should begin approximately at first light; this reduces the number of carcasses removed by diurnal scavengers and increases the likelihood of recovering live individuals. The appropriate number of surveyors should be hired to completely search the allotted turbines by 1:00 p.m. The initial start and stop time should be recorded for each survey. Searchers should walk slowly, scanning ~ 2.5 meters on either side of the transect. When a bird or bat is encountered, the distance when the observer first detected it should be recorded. The searcher should then assess whether the individual is alive or dead. If the individual is alive, efforts should be made to release or take the animal to a

licensed rehabilitator⁸. If successful rehabilitation is not likely, then the individual should be humanely euthanized through cervical dislocation⁹. For each individual (regardless of dead or alive), the site should be flagged, and returned to after the turbine search has been completed. Once relocated, a photograph should be taken of the carcass before it is moved. The carcass should be collected in individual re-sealable plastic bags, and the carcass identification number written in pencil on a piece of write-in-the-rain paper enclosed with the carcass. All information on the "Fatality Reporting Form" should be recorded. Mortalities encountered outside the bounds of an official search should be collected, and the above information recorded, but "Incidental" should be written into the notes area. These will not be used in the calculation of site mortality rates, but may (depending on species) be used in searcher efficiency or carcass removal trials. Bats within the *Myotis* family are difficult to differentiate, and should not be used for scavenging rate or searcher efficiency trials. These carcasses should be frozen and given to the ODNR Division of Wildlife at a prearranged date. If a state or federal threatened or endangered species is located, the ODNR Division of Wildlife and U.S. Fish & Wildlife Service must be contacted within 48 hours. At that time arrangements will be made for turning over the carcass to the appropriate agency. If a larger than expected mortality event occurs, ODNR Division of Wildlife and the U.S. Fish & Wildlife Service must be notified within 24 hours. For our purposes a significant mortality event will be defined as >5 birds/bats at an individual turbine, and/or >20 birds and/or bats across the entire facility.

Note: ODNR suggests individuals involved in collecting mortalities under turbines take the same precautions as those individuals handling live bats during mist-netting operations (i.e., leather gloves and maintain up-to-date rabies vaccinations).

Mitigation measures

The ODNR, Division of Wildlife (DOW) recognizes that it is unreasonable to expect wind turbine facilities in Ohio to have no impact on wildlife; however, wildlife impacts from wind energy and other "green" development projects should be minimized. Ultimately, the DOW will use Ohio-specific data from wind energy facilities to define typical or expected versus unacceptable levels of mortality to wildlife from the operation of land-based wind turbines. Those data, however, do not exist at this time. Thus, the DOW will review all available post-construction mortality data from regional wind energy facilities in landscapes with habitats similar to what is found in Ohio's commercially viable wind resource areas. Data from sites and studies deemed relevant to Ohio, as determined by the DOW, will be used to define mortality rates for birds and bats that will be considered acceptable, of concern, and unacceptable.

⁸ Contact the Ohio Division of Wildlife District office nearest to the site for area wildlife rehabilitators (Fig. 3)

⁹ If the species in question is a state or federally protected species the appropriate agency must be contacted before the individual is euthanized.

If operation of wind turbines at a permitted facility in Ohio results in mortality rates at or below the regional average for comparable landscapes, the DOW will not recommend additional post-construction monitoring or use of mitigation measures. When mortality rates are within 1 standard deviation (SD) above the regional average, mitigation measures should be employed to curtail impacts to Ohio's wildlife resources and bring the mortality rate for the facility to the regional average or below. While the DOW will require the facility to take action and monitor the results, specific mitigation measures will not be mandated. Rather, the DOW will work collaboratively with the facility operators to develop an economically tenable mitigation strategy with a reasonable likelihood of reducing mortality rates to the regional average or below. Mitigation measures for consideration include, but are not limited to, those listed within the National Wind Coordinating Collaborative's Mitigation toolbox¹⁰. The collection of additional data to better define the spatial or temporal extent of observed mortality rates or test specific mitigation measures may be considered as part of an overall mitigation strategy. If mortality rates exceed the regional average by more than 1 SD, mitigation measures must be employed to curtail impacts to Ohio's wildlife resources and bring the mortality rate for the facility to the regional average or below. The DOW will require that unacceptable mortality to bats, at a minimum, must include seasonal curtailment as defined under Section 1.3 (*Bat acoustic monitoring*), unless the DOW and facility operators agree to an alternative strategy based on site-specific conditions showing that the temporal and/or spatial distribution of mortality can be reduced effectively with the application of other mitigation measures or new technologies in a more economically viable manner for the facility.

Future definition of normal or acceptable mortality rates for birds and bats due to operation of commercial-scale wind energy facilities in Ohio, as well as mortality rates of concern and those that are unacceptable, will be based on Ohio-specific data. If revised trigger points are more favorable for operators of wind energy facilities in Ohio, we will also apply them to all previously permitted sites. If revised trigger points become more stringent, the trigger points in use at the time a facility was permitted will continue to be applied to that site during its operating lifetime.

Neither the federal Migratory Bird Treaty Act nor the Ohio Revised Code differentiates between the taking of species of migratory non-game birds based upon abundance; thus, relative abundance of impacted bird species will not be a factor in the application of trigger points noted above. However, any mortality to federal or state-listed wildlife species attributed to operation of wind energy facilities in Ohio will require development and implementation of mitigation measures in cooperation with the DOW (and U.S. Fish & Wildlife Service for federal trust species).

¹⁰ http://www.nationalwind.org/publications/wildlife/Mitigation_Toolbox.pdf

Finally, while the currently accepted metric for defining mortality at wind energy facilities is number of birds (or bats) killed per turbine (or megawatt, MW) per year, the use of this metric does not imply that the need for mitigation and its application will be targeted at individual turbines within a permitted facility. Rather, just as an entire facility is proposed for permitting, and pre-construction wildlife monitoring recommendations are based on the landscape containing the proposed facility, a mortality rate for birds and similar rate for bats will be calculated using all relevant data for the entire facility. Unless the average mortality rate for the entire facility is of concern or unacceptable, mitigation measures will not be recommended or required. Thus, it is possible that a subset of individual turbines could have uncharacteristically high mortality rates while the overall rate for the permitted facility is within the acceptable or “normal” range for similar sites in Ohio or the region. We would expect the facility operator to exercise good faith in dealing with mortality rates in such situations. On the other hand, if a facility’s mortality rate for birds, bats or both is of concern or unacceptable, we will use the best available data to define the temporal and spatial extent of the problem and work with the facility operators to target mitigation measures to the individual turbines and/or time periods that contribute disproportionately to the overall rate. Where possible, the goal is to find a workable solution for minimizing mortality to wildlife while having as small an impact on the site’s economic viability as possible.

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Table 1. Endangered and threatened birds and bats of Ohio*

Endangered

Indiana myotis ^E	<i>Myotis sodalis</i>
American bittern	<i>Botaurus lentiginosus</i>
Northern harrier	<i>Circus cyaneus</i>
King rail	<i>Rallus elegans</i>
Sandhill crane	<i>Grus Canadensis</i>
Piping plover ^E	<i>Charadrius melodus</i>
Common tern	<i>Sterna hirundo</i>
Black tern	<i>Chlidonias niger</i>
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>
Bewick's wren	<i>Thryomanes bewickii</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Golden-winged warbler	<i>Vermivora chrysoptera</i>
Kirtland's warbler ^E	<i>Denroica kirtlandii</i>
Lark sparrow	<i>Chondestes grammacus</i>
Trumpeter swan	<i>Cygnus buccinator</i>
Snowy egret	<i>Egretta thula</i>
Cattle egret	<i>Bubulcus ibis</i>

Threatened

Upland sandpiper	<i>Bartramia longicauda</i>
Black-crowned night-heron	<i>Nycticorax nycticorax</i>
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>
Barn owl	<i>Tyto alba</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Hermit thrush	<i>Catharus guttatus</i>
Least bittern	<i>Ixobrychus exilis</i>
Least flycatcher	<i>Empidonax minimus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Peregrine falcon	<i>Falco peregrinus</i>
Osprey	<i>Pandion haliaetus</i>

^E Federally listed endangered

*Updated 13 May 2008.

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Figure 1. Survey effort.



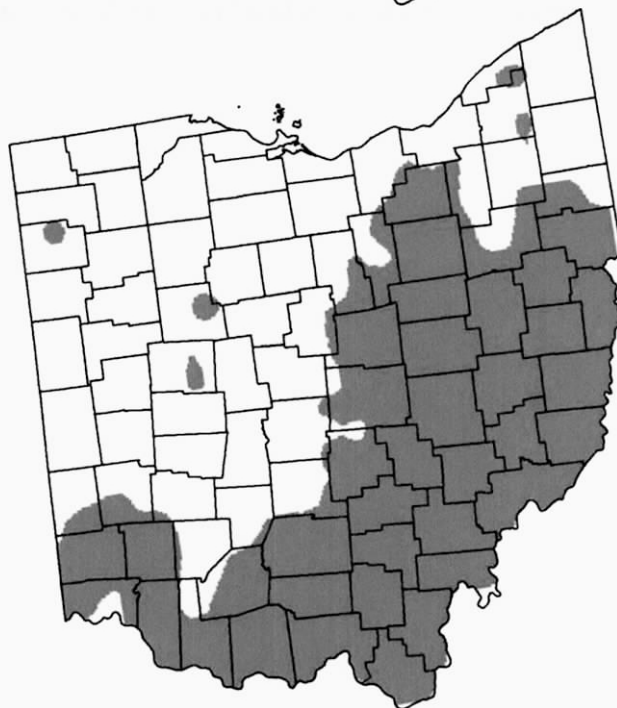
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Figure 2. Counties or areas where additional surveying for either sandhill cranes or barn owls may be recommended.

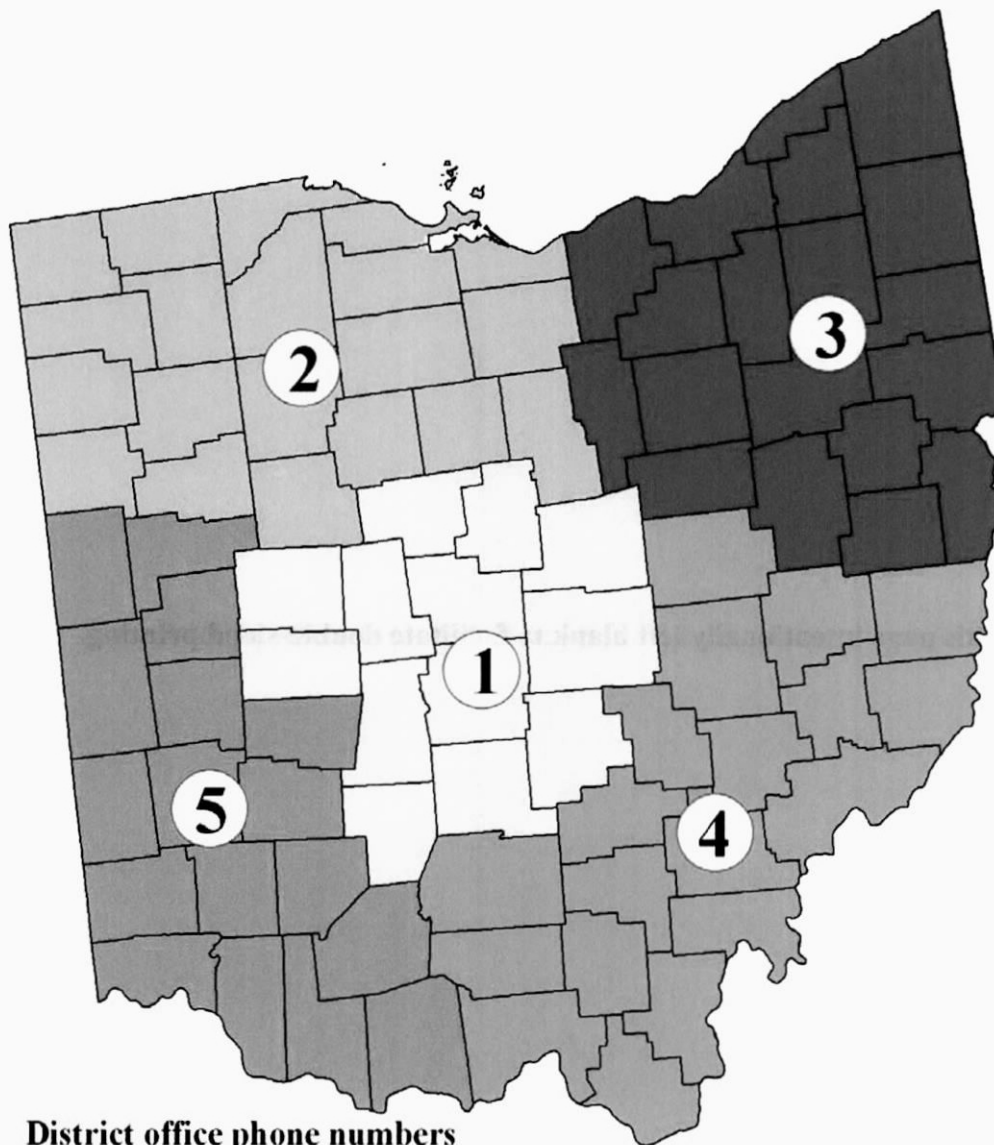
Sandhill crane



Barn owl



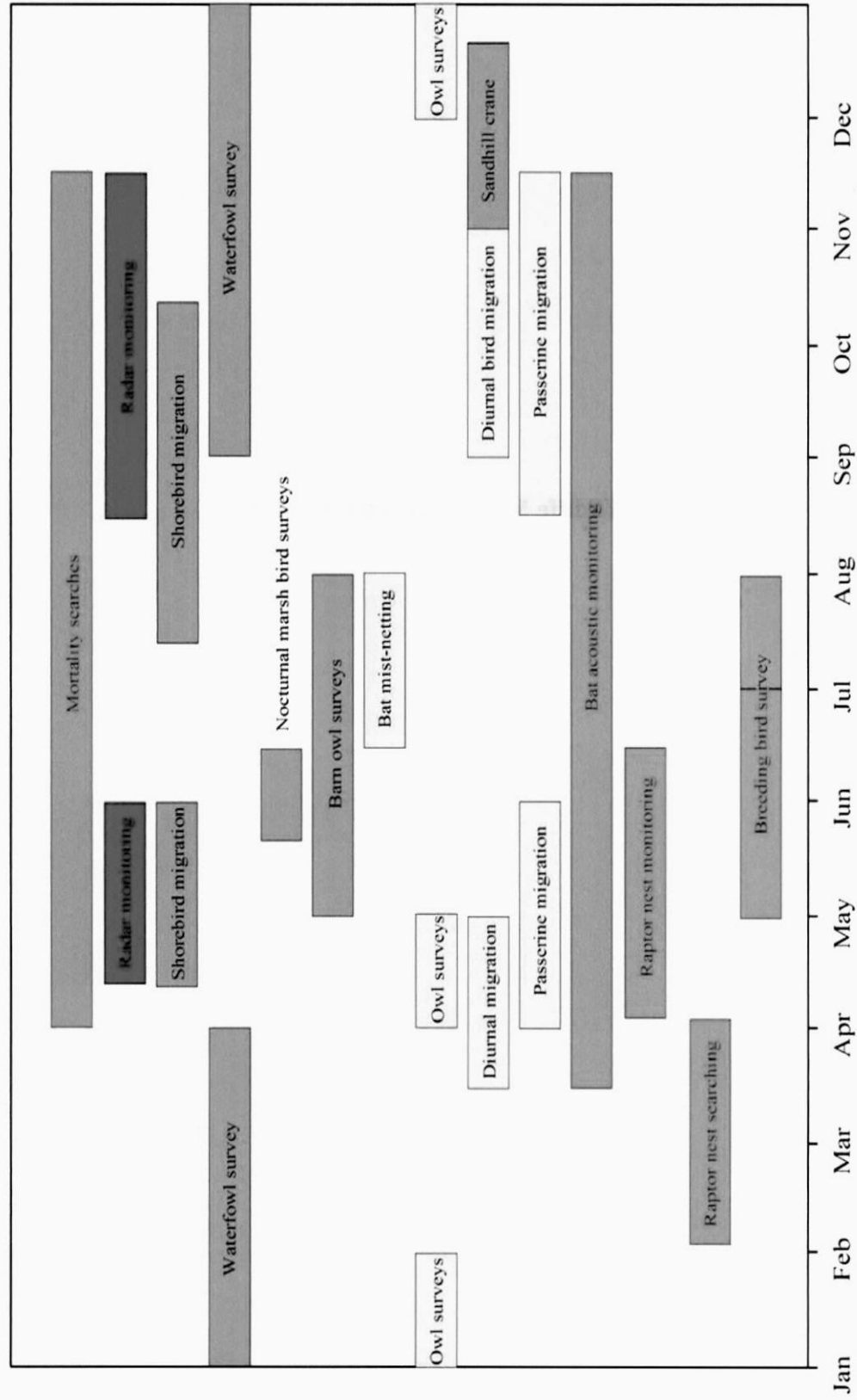
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Figure 3. Ohio Department of Natural Resources district offices.**District office phone numbers****District**

- | | |
|---|----------------|
| 1 | (614) 644-3925 |
| 2 | (419) 424-5000 |
| 3 | (330) 644-2293 |
| 4 | (740) 589-9930 |
| 5 | (937) 372-9261 |

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Appendix A. Timing of surveying effort. Colors correspond to the general effort categories; minimum (green), moderate (yellow), where applicable (orange), and extensive (red).



Wildlife Monitoring Survey Forms

[illegible]

Company: _____ Project name: _____ Date: _____ Point number: _____

Survey period: Morning Afternoon Evening Start time: _____ End time: _____

Weather Temp (°C): _____ Wind speed (m/s): _____ Cloud cover _____ %

Observer: _____ Notes: _____

#: Number in flock or kettle.
Heights: 1) 0-40m, 2) 40-180m, 3) > 180m.
Direction: Compass direction the bird is heading (e.g. SSW).

NIGHTLY BAT SURVEY SUMMARY FORM

Project Name: _____ Date: _____

Surveyors: _____

Survey Type: Hibernacula Summer

Site description: _____

Time and Weather

	Time	Temp (°C)	Wind speed (m/s)	Cloud cover (%)
Start				
End				

Notes: _____

Trap type and location

Set #	Trap type (harp trap or mist net)	Size (note if stacked mist nets)	Location (UTM NAD83 Zone 17N)	
			Easting	Northing
1				
2				
3				
4				
5				
6				
7				

Total net area: _____

Notes: _____

FORM WD04 OHIO DEPARTMENT OF NATURAL RESOURCES
6/27/08 DIVISION OF WILDLIFE

Project Name: _____

Date: _____

Capture summary

Species	Adult		Juvenile		Subtotal
	Male	Female	Male	Female	
Big brown					
Evening					
Silver-haired					
Eastern red					
Hoary					
Tri-colored bat					
Little brown					
Northern					
Small-footed					
Indiana					
Rafinesque's big-eared					
Other:					
Total:					

Notes:

BAT SURVEY FORM

Project Name:

Date:

[illegible]

Species code: Big brown (EPFU), Silver-haired (LANO), Red (LABO), Hoary (LACI), Tri-colored (PESU), Rafinesque's big-eared (CORO)^{1,2}, Little brown (MYLU), Northern (MYSE), Small-footed (MYLE)¹, and Indiana (MYSO)^{1,2}. Radio-telemetry, and documentation photographs required¹. Banding required².

Carcass ID:	Carcass #		Transect Information				From Turbine
Time	Turbine #		Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Distance (m)	Bearing
Species	Age	Sex	Condition	Estimated time on ground			
			Euthanized	Yes / No			
GPS file:			Scavenged	Yes / No	Veg. Height	% Cover	
Photo ID	Notes						

Carcass ID:		Transect Information			From Turbine	
Time	Turbine #	Carcass #	Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Bearing
Species	Age	Sex	Condition	Estimated time on ground		
GPS file:			Euthanized	Yes / No		
			Scavenged	Yes / No	Veg. Height	% Cover
Photo ID			Notes			

Carcass ID:		Transect Information				From Turbine	
Time	Turbine #	Carcass #	Transect #	Perp. Dist. (m)	Obs. Dist. (m)	Distance (m)	Bearing
Species	Age	Sex	Condition	Estimated time on ground			
			Euthanized				
GPS file:			Scavenged	Veg. Height		% Cover	
Day/Photo ID			Notes				

SEARCHER EFFICIENCY FORM

Carcass ID	Date	Species	Easting ¹		Northing		Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction		Photo ID				

Carcass ID	Date	Species	Easting		Northing		Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction		Photo ID				

Carcass ID	Date	Species	Easting		Northing		Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction		Photo ID				

Carcass ID	Date	Species	Easting		Northing		Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction		Photo ID				

¹ Coordinates should be recorded in UTM NAD83, Zone 17 North. Do not use Lat/Lon.

Carcass ID	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

Carcass ID	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

Carcass ID	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

Carcass ID	Date	Species	Easting	Northing	Veg. height	Percent cover	Detected (yes/no)
Turbine #:		Distance (m)	Direction	Photo ID			

EXHIBIT A



Amendment to the On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio



In 2009, the Ohio Department of Natural Resources (ODNR), Division of Wildlife developed the *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* (dated May 4, 2009). Standardized procedures within this document have and will continue to allow the Division of Wildlife to make comparisons among proposed on-shore wind energy facilities throughout the state. Since the development of the 2009 protocol, the wind industry has expanded throughout the Midwest and the country. Accordingly, there have been several wind facilities that have conducted post-construction evaluations examining the potential impacts wind energy facilities have on wildlife. Several different methodologies have been utilized and suggested in post-construction monitoring of wind energy facilities; some have been more efficient and more statistically accurate than others. Given the importance of being adaptive to the new science provided by the existing monitoring, and evaluations of protocols, as well as a need for a more efficient methodology, the ODNR Division of Wildlife has recently reviewed the Mortality Search section of the *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* (dated May 4, 2009) and amended this section of the protocol.

The objectives of the post-construction monitoring in Ohio are to determine if wind energy facility operations are causing an unacceptable level of impact on wildlife, as well as evaluate potential rare events. Results from monitoring will enable ODNR Division of Wildlife to make recommendations on additional minimization or mitigation measures that, if needed, can be employed. Additionally, the ODNR Division of Wildlife will assess the predictive value of pre-construction monitoring by comparing those results with post-construction mortality, and ultimately provide Ohio-specific data to define typical or expected versus unacceptable levels of mortality to wildlife from wind energy facilities within Ohio.

The amended protocol provides the developers with two options (Options A and B) for standardized post-construction mortality search protocols. Option A includes daily searches and search distances that are twice the blade length, as specifically detailed in the *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* dated May 4, 2009. Option B methodology includes a smaller sample of turbines searched using the Option A protocol, and a double-sampling protocol that consists of searches on cleared plots that are sampled every 3 days and a roads and pads search that is sampled weekly (outlined in Table 1). ODNR Division of Wildlife will review site-specific data for each wind facility, when determining if the facility is eligible for both (Options A and B) post-construction monitoring protocols. Facilities requiring an HCP, have significant wildlife concerns, or areas with boundaries that encompass greater than 50% red areas (i.e., extensive

monitoring) from ODNR pre-construction monitoring maps, will likely be ineligible for Option B.

One of the two standardized protocols must be followed for a minimum of the first two years of post-construction monitoring, no other variation will be considered until there is sufficient data to evaluate the protocols. For both options, post-construction monitoring should commence immediately (within 2 weeks) following date of first operation, if operation is initiated during 1 April to 15 November. In this circumstance, the first year of post-construction monitoring may be extended over 2 calendar years (e.g., start monitoring 1 July 2011 continue to 15 November 2011, resume monitoring 1 April 2012 to 30 June 2012). If the facility begins operation during 16 November to 31 March, monitoring will begin on 1 April and continue to 15 November.

Depending on the results of the first year, ODNR Division of Wildlife will determine if post-construction monitoring will continue into the second year or be reduced (i.e., focused on time periods when higher numbers of fatalities were detected). A similar assessment and determination will be provided after the second year, if a continuation is deemed necessary.

The number of turbines searched will depend on the number of turbines at the facility, as well as the protocol option chosen (Table 1). Turbines to be searched will be randomly selected, but may include specific turbines in areas of concern if so noted by the ODNR Division of Wildlife or U.S. Fish & Wildlife Service based on pre-construction monitoring results. Turbines randomly selected should be assessed and approved by ODNR Division of Wildlife prior to initiation of post-construction monitoring. Recommendations for monitoring during additional years following may differ, as noted above, both in terms of time period, specific turbines and number of turbines searched to address potential wildlife impacts.

The results of the mortality searches should be submitted to ODNR Division of Wildlife and U.S. Fish and Wildlife Service for review. All original data forms and electronic data detailing all raw data from post-construction monitoring will be provided to ODNR Division of Wildlife. ODNR will provide a standardized blank electronic database that should be used for all Ohio post-construction projects.

Sample size and search protocols

Table 1. A comparison of the amended ODNR Division of Wildlife mortality search protocol options for the *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio*.

Protocol	Search time interval	Search distance from turbine (m) ^c	Sample size (# turbines searched)	Plots cleared ^a
Option A. 2009 ODNR ^a	daily (7d/wk)	twice blade length	Facilities with ≤10 total turbines: all searched, 11-40 turbines: 1/2 searched, minimum of 10 turbines searched, or >40 turbines: 1/4 searched, minimum of 20. And all meteorological towers.	No
Option B. 2009 ODNR ^a	daily (7d/wk)	twice blade length	10% of the total turbines, or minimum of 5 and any meteorological tower with guy wires.	No
3-day, plots cleared ^a	every 3 days (3 day interval)	1.2 times the blade length or a minimum of 60 m	= the total number of turbines in Option A minus the number of turbines in the box immediately above (3-day search)	Yes
Roads and pads ^b	weekly	within 100 m of turbine	= remaining turbines in boundary that are not searched with another method	Yes

^aOption A (ODNR 2009 protocol) does not require clearing of searched plots, however in agricultural areas it is suggested that developers encourage landowners to plant areas within 60 meters of the turbine in either soybean or wheat crops to increase the probability of detecting carcasses. For Option B, the turbines in the 3-day search-interval sample should have the entire search plot cleared. Cleared will be defined as *vegetation maintained at a height of 4 inches or less, with less than 2% of interspersed vegetation no higher than 12 inches*. If mowing is used to clear and maintain plots, mowing should only occur within 12 hours of the last mortality search.

^bThe roads and pads searches are part of a double-sampling technique and must be used in conjunction with the cleared plot searches. Including the roads and pads weekly method allows sampling to occur at all the turbines, which could capture the variability for the entire facility. The double-sampling technique will use the data collected from cleared plots used as a correction factor for the data for the roads and pads searches. In the analyses, the double-sampling technique will be used to calculate a facility-wide mortality estimate.

^cAt each turbine search plot, north-south oriented transects should be established every 5 meters. The length of these transects, and perpendicular distance that transects should extend from the turbine base should be equal to 1.2 or 2 times the blade length of the turbine being searched (depending on the methods). Transects should not venture into hazardous areas, such as steep slopes or high water.

All searches should begin at first light; this reduces the number of carcasses removed by diurnal scavengers and increases the likelihood of recovering live individuals. The appropriate number of surveyors should be hired to completely search the allotted turbines by 1:00 p.m. The initial start and stop time should be recorded for each survey. Searchers should walk slowly, scanning ~ 2.5 meters on either side of the transect. When a bird or bat is encountered, the distance when the observer first detected it should be recorded. The searcher should then assess whether the individual is alive or dead. If the individual is alive, efforts should be made to release or take the animal to a licensed rehabilitator¹. If successful rehabilitation is not likely, then the individual should be humanely euthanized through cervical dislocation². For each individual (regardless of dead or alive), the site should be flagged, and returned to after the turbine search has been completed. Once relocated, a photograph should be taken of the carcass before it is moved. The carcass should be collected in individual re-sealable plastic bags, and the carcass identification number written in pencil on a piece of write-in-the-rain paper enclosed with the carcass. All information on the "Fatality Reporting Form" should be recorded. Mortalities encountered outside the bounds of an official search should be collected, and the above information recorded, but "Incidental" should be written into the notes area. These will not be used in the calculation of site mortality rates, but may (depending on species) be used in searcher efficiency or carcass removal trials. Bats within the *Myotis* family are difficult to differentiate, and should not be used for scavenging rate or searcher efficiency trials. These carcasses should be frozen and given to the ODNR Division of Wildlife at a prearranged date. If a state or federal threatened or endangered species is located, the ODNR Division of Wildlife and U.S. Fish & Wildlife Service must be contacted within 48 hours. At that time arrangements will be made for turning over the carcass to the appropriate agency. If a larger than expected mortality event occurs, ODNR Division of Wildlife and the U.S. Fish & Wildlife Service must be notified within 24 hours. For our purposes a significant mortality event will be defined as >5 birds/bats at an individual turbine, and/or >20 birds and/or bats across the entire facility.

Vegetation mapping

Vegetation mapping should be done for each of the searched turbines 3 times a year (spring, summer, and fall), regardless of search protocol. Mapping will consist of recording the GPS location, vegetation height and percent cover (1-meter transect) every 10 meters for each transect. Additional points should be taken at abrupt transition zones such as the edge of a road. An estimate of searchable area should be also provided for each searched turbine.

Searcher efficiency trials

Search efficiency trials consist of placing test carcasses at locations chosen at random to assess an individual's ability to detect turbine mortalities. Carcasses should be placed on search plots unbeknownst to the searchers and by someone who is not actively involved

¹ Contact the Ohio Division of Wildlife District office nearest to the site for area wildlife rehabilitators.

² If the species in question is a state or federally protected species the appropriate agency must be contacted before the individual is euthanized.

in the mortality searches. Individual trials should be conducted randomly at least 200 times each year (a trial consists of the placement of an individual carcass). For those facilities that are using Option B mortality searches, the number of random trials for each protocol (daily, 3-day cleared plots, and roads and pads) should be reviewed by ODNR Division of Wildlife as part of the facilities post-monitoring study plan. Carcasses may be used for multiple trials throughout the season. Each carcass should be placed at a turbine, with distance (within the searched area) and direction selected at random. Each carcass should be discreetly marked to identify it as a trial individual. Carcasses must be similar to those expected to be encountered during the search and should vary in both species composition and stage of decomposition. After a searcher has finished his or her survey, the individual conducting the efficiency trial should attempt to recover any missed carcasses to ascertain whether they were scavenged prior to the beginning of the search.

Scavenging rate trials

In an effort to assess how quickly carcasses are removed from the site by scavengers, a minimum of 50 carcasses per year should be placed at random distances and directions. Although the number of scavenging rates will be the same for both options (A and B), for those facilities that are using Option B mortality searches, the proportion for each protocol (daily, 3-day cleared plots, and roads and pads) should be reviewed by ODNR Division of Wildlife as part of the facilities post-monitoring study plan. Several carcasses should be placed each month, since rates are likely to change throughout the year. Each carcass should be discreetly marked to identify it as a trial individual. These carcasses should be checked daily for the first week, then every 2 days until the carcass is removed or completely decomposed. Preferably, carcasses used for scavenging rate estimation will be those collected from the site, and not surrogate species such as pigeons, starlings, or house sparrows since these have been found to be scavenged less frequently. Characteristics that should be recorded for each placed carcass include: the GPS location, vegetation height, percent cover, distance/direction from turbine, and species.

Wildlife monitoring

The amended searcher protocol does not impact the need for wildlife monitoring to include acoustic monitoring and breeding bird surveys. These survey methods should follow the *On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* (dated May 4, 2009).

Contact

Jennifer Norris, Wind Energy Wildlife Biologist
Ohio Division of Wildlife
2045 Morse Road, Building G
Columbus, OH
Office phone: 614-265-6349
Cell: 419-602-3141
E-mail: jennifer.norris@dnr.state.oh.us

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 ANALYSIS 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



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App. Ex. 37

(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(e)(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	41-10-36.99N	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	41-08-32.59N	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	41-09-28.08N	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	41-15-56.46N	82-54-24.42W	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	41-14-08.57N	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	41-15-05.71N	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	6	1400
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	N/A	N/A
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	N/A	N/A	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	41-10-32.08N	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:

- ☒ At least 10 days prior to start of construction (7460-2, Part 1)
☒ 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.gcrl.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.gcrl.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.gcrl.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

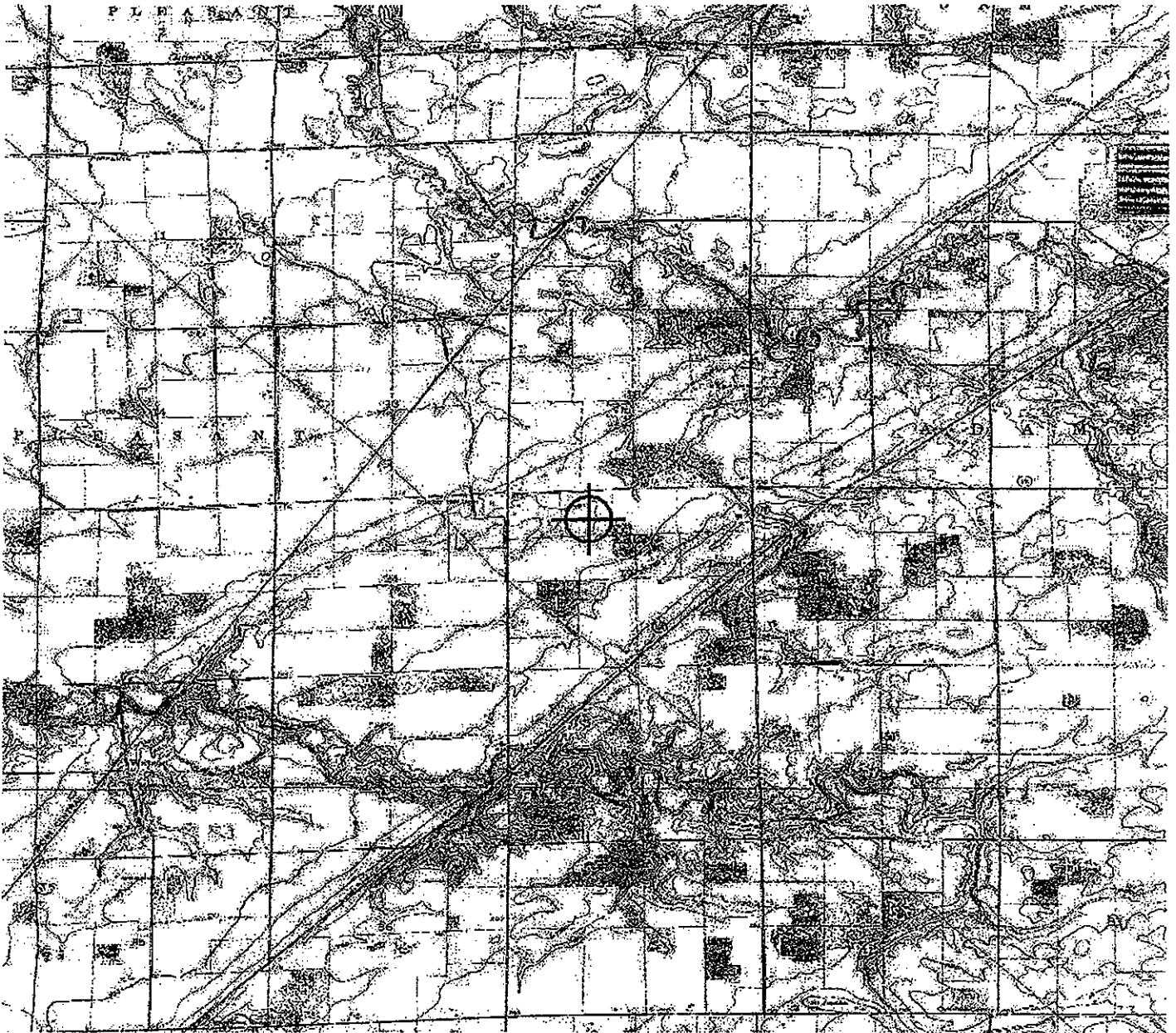
For the following studies as identified by their ASN, at least 10 days before the start of construction the proponent is required to file a FAA form 7460-2, Part 1, Actual Construction notification, at the OE/AAA website (<http://oeaaa.faa.gov>). This actual construction notification will be used to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

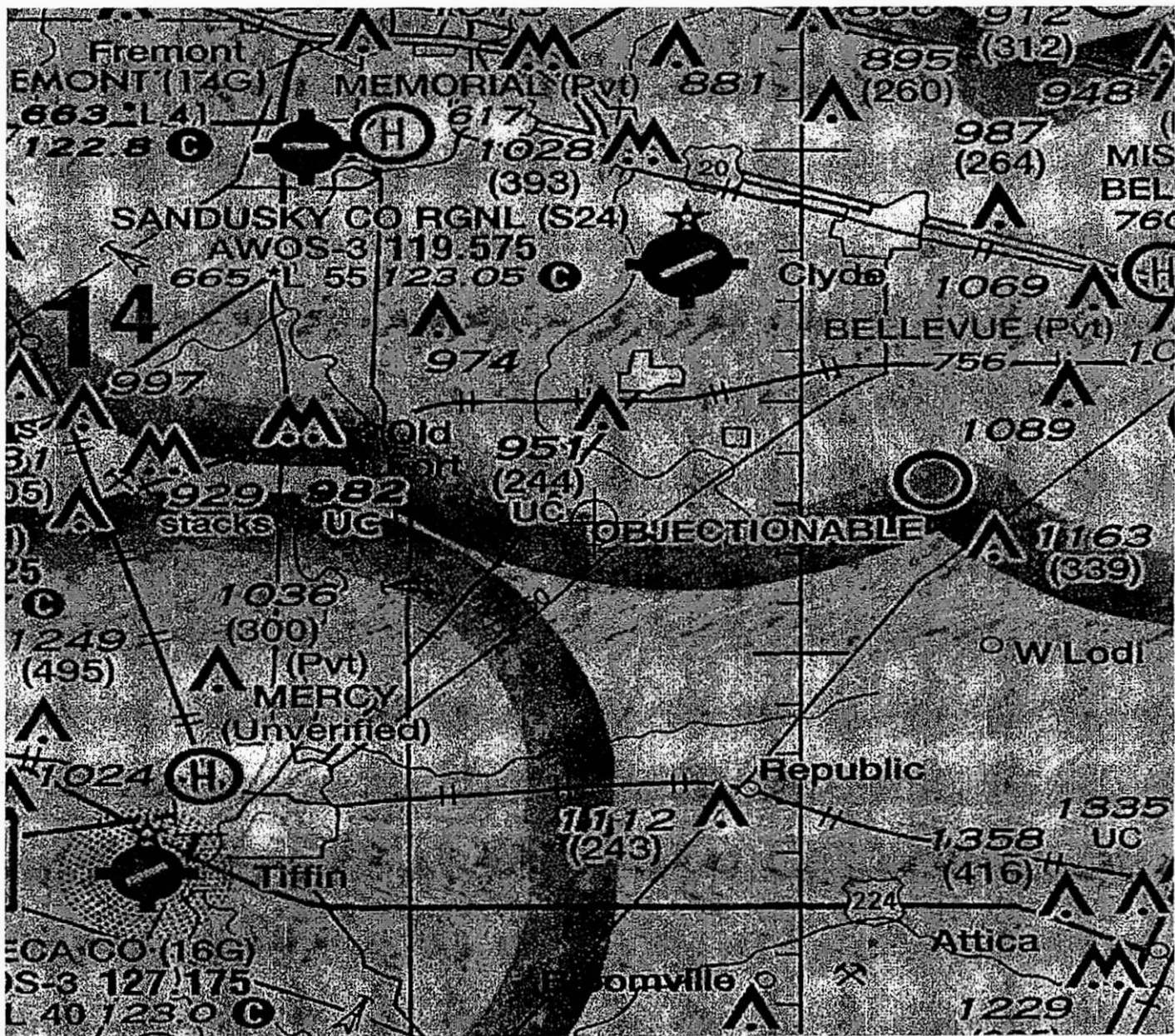
2018-WTE-11673-OE
2018-WTE-11674-OE
2018-WTE-11675-OE
2018-WTE-11676-OE
2018-WTE-11677-OE
2018-WTE-11678-OE
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2018-WTE-11704-OE
2018-WTE-11706-OE
2018-WTE-11711-OE
2018-WTE-11712-OE
2018-WTE-11718-OE
2018-WTE-11720-OE
2018-WTE-11722-OE

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.





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



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.



TIFFIN AIRE INC.

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



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

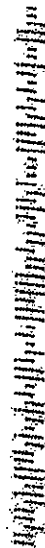
CLEVELAND OH 44110



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76177-152401





**Federal Aviation
Administration**

OE/AAA

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.

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**Federal Aviation
Administration**

OE/AAA

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

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Federal Aviation
Administration

OE/AAA

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.

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OHIO DEPARTMENT OF TRANSPORTATION
John R. Kasich, Governor

Jerry Wray, Director

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

November 8, 2018

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 Timber Road IV Wind Farm (Case No. 18-0091-EL-BGN)

Dear Mr. Conway,

Pursuant to Ohio Revised Code §4561.341, the Ohio Department of Transportation, Office of Aviation has reviewed the application for certification submitted by Paulding Wind Farm IV, LLC in order to determine whether the facility will constitute an obstruction to air space. Our office reviewed fifty-one (51) aeronautical studies for the subject Case, which includes the 51 permanent wind turbine structures and all temporary construction equipment. The structures have been assigned FAA and ODOT aeronautical study numbers (ASNs) as detailed on the attached chart. The FAA issued final determinations of No Hazard (DNH) for twenty-three (23) ASNs on July 11, 2018. The remaining twenty-eight (28) structures previously received DNH from the FAA, however they have been refiled under new ASNs and have not been issued determinations as of the date of this letter. In addition, there are three (3) proposed permanent meteorological evaluation towers (MET) that have not been filed with the FAA, and therefore have not been analyzed by our office. Any changes to the proposed locations or structure heights as a result of FAA review may require additional review by the Office of Aviation.

The location and height of all 51 wind turbine structures would exceed 499 ft above ground level and would constitute an obstruction to air navigation by exceeding the 14 C.F.R. Part 77.17(a)(1) surface by 100 feet. Sixteen (16) of the 23 structures that have received DNH from FAA impact either the minimum obstacle clearance altitude or minimum vectoring altitude of various en route airways or arrival procedures, all of which are 14 C.F.R. Part 77.17(a)(3) impacts.

Our office engaged several stakeholders throughout the state and solicited their input as part of the public comment period of the FAA process. No objections were communicated to our office and, as detailed in the determinations of no hazard, no comments were received by the FAA. In addition, none of the structures have any impact on any 14 C.F.R. Part 77 surface specific to any public use airport in Ohio. Finally, the FAA has determined that these structures will not create a substantial adverse impact on flight operations and will mitigate the impact of the structures' height by adjusting their procedures.



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App Ex. 38

Based upon the above, the Office of Aviation has determined that the facility will constitute an obstruction to air navigation; however, compliance with obstruction standards may be waived if the facility complies with all the conditions of the FAA determination.

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

Timber Road IV Wind Farm

	FAA ASN	ODOT ASN	FAA Status	Structure Height (AGL)	Structure Height (AMSL)	LAT	LON
1	2017-WTE-8955-OE	2018-DOT-149-OE	DNH	599	1338	41-07-49.93N	84-40-48.17W
2	2017-WTE-8972-OE	2018-DOT-166-OE	DNH	599	1336	41-04-25.51N	84-37-26.78W
3	2017-WTE-8982-OE	2018-DOT-176-OE	DNH	599	1349	41-02-09.29N	84-41-29.86W
4	2017-WTE-8986-OE	2018-DOT-180-OE	DNH	599	1345	41-03-04.08N	84-40-35.83W
5	2017-WTE-8993-OE	2018-DOT-187-OE	DNH	599	1336	41-04-46.22N	84-37-33.10W
6	2018-WTE-1978-OE	2018-DOT-1182-OE	DNH	599	1336	41-06-42.99N	84-41-41.58W
7	2018-WTE-1980-OE	2018-DOT-1183-OE	DNH	599	1332	41-09-12.33N	84-40-30.11W
8	2018-WTE-1981-OE	2018-DOT-1184-OE	DNH	599	1332	41-08-53.36N	84-39-52.05W
9	2018-WTE-1982-OE	2018-DOT-1185-OE	DNH	599	1331	41-08-39.50N	84-39-39.86W
10	2018-WTE-1986-OE	2018-DOT-1188-OE	DNH	599	1335	41-07-49.78N	84-42-08.86W
11	2018-WTE-1987-OE	2018-DOT-1189-OE	DNH	599	1336	41-07-32.68N	84-41-37.79W
12	2018-WTE-1991-OE	2018-DOT-1192-OE	DNH	599	1336	41-08-25.86N	84-41-00.32W
13	2018-WTE-1994-OE	2018-DOT-1194-OE	DNH	599	1352	41-02-12.10N	84-42-11.06W
14	2018-WTE-2006-OE	2018-DOT-1202-OE	DNH	599	1344	41-01-45.87N	84-39-52.44W
15	2018-WTE-2007-OE	2018-DOT-1203-OE	DNH	599	1347	41-01-24.42N	84-39-49.36W
16	2018-WTE-2010-OE	2018-DOT-1204-OE	DNH	599	1337	41-04-51.64N	84-39-05.13W
17	2018-WTE-2011-OE	2018-DOT-1205-OE	DNH	599	1337	41-04-53.49N	84-38-14.06W
18	2018-WTE-2015-OE	2018-DOT-1206-OE	DNH	599	1344	41-04-25.94N	84-41-45.76W
19	2018-WTE-2016-OE	2018-DOT-1207-OE	DNH	599	1343	41-04-23.94N	84-40-59.96W
20	2018-WTE-2019-OE	2018-DOT-1210-OE	DNH	599	1357	41-00-30.29N	84-41-58.56W
21	2018-WTE-2020-OE	2018-DOT-1211-OE	DNH	599	1337	41-04-24.56N	84-38-10.30W
22	2017-WTE-8962-OE	2018-DOT-156-OE	DNH	599	1332	41-08-23.35N	84-39-24.17W
23	2017-WTE-8967-OE	2018-DOT-161-OE	DNH	599	1341	41-06-7.78N	84-41-44.20W
24	2018-WTE-7736-OE	not assigned	In Progress	599	1332	41° 7' 33.672" N	84° 40' 20.445" W
25	2018-WTE-7738-OE	not assigned	In Progress	599	1335	41° 6' 44.04" N	84° 40' 31.99" W
26	2018-WTE-7740-OE	not assigned	In Progress	599	1333	41° 6' 55.707" N	84° 39' 27.909" W
27	2018-WTE-7744-OE	not assigned	In Progress	599	1329	41° 10' 7.379" N	84° 39' 47.835" W
28	2018-WTE-7743-OE	not assigned	In Progress	599	1329	41° 10' 2.220" N	84° 40' 27.734" W
29	2018-WTE-7741-OE	not assigned	In Progress	599	1328	41° 10' 16.407" N	84° 40' 29.675" W
30	2018-WTE-7742-OE	not assigned	In Progress	599	1327	41° 10' 16.528" N	84° 40' 39.459" W
31	2018-WTE-7735-OE	not assigned	In Progress	599	1333	41° 8' 34.354" N	84° 41' 49.128" W
32	2018-WTE-7748-OE	not assigned	In Progress	599	1347	41° 2' 59.601" N	84° 41' 25.427" W
33	2018-WTE-7749-OE	not assigned	In Progress	599	1348	41° 2' 39.094" N	84° 41' 27.666" W
34	2018-WTE-7746-OE	not assigned	In Progress	599	1348	41° 3' 25.327" N	84° 41' 4.115" W
35	2018-WTE-7753-OE	not assigned	In Progress	599	1349	41° 1' 51.614" N	84° 41' 53.267" W
36	2018-WTE-7754-OE	not assigned	In Progress	599	1350	41° 1' 48.216" N	84° 41' 26.489" W
37	2018-WTE-7755-OE	not assigned	In Progress	599	1348	41° 1' 44.509" N	84° 41' 7.616" W
38	2018-WTE-7756-OE	not assigned	In Progress	599	1347	41° 1' 32.103" N	84° 40' 35.463" W
39	2018-WTE-7759-OE	not assigned	In Progress	599	1352	41° 0' 52.867" N	84° 42' 8.458" W
40	2018-WTE-7758-OE	not assigned	In Progress	599	1350	41° 0' 53.161" N	84° 41' 2.115" W
41	2018-WTE-7762-OE	not assigned	In Progress	599	1354	41° 0' 2.478" N	84° 41' 52.605" W
42	2018-WTE-7747-OE	not assigned	In Progress	599	1346	41° 3' 25.351" N	84° 40' 56.855" W
43	2018-WTE-7751-OE	not assigned	In Progress	599	1349	41° 2' 24.43" N	84° 41' 2.56" W
44	2018-WTE-7750-OE	not assigned	In Progress	599	1347	41° 2' 45.86" N	84° 41' 1.37" W
45	2018-WTE-7752-OE	not assigned	In Progress	599	1346	41° 2' 11.71" N	84° 40' 33.04" W
46	2018-WTE-7760-OE	not assigned	In Progress	599	1335	41° 4' 8.61" N	84° 37' 9.33" W
47	2018-WTE-7745-OE	not assigned	In Progress	599	1343	41° 4' 9.15" N	84° 40' 56.14" W
48	2018-WTE-7757-OE	not assigned	In Progress	599	1351	41° 1' 29.09" N	84° 41' 57.41" W
49	2018-WTE-7761-OE	not assigned	In Progress	599	1341	41° 4' 27.06" N	84° 39' 45.61" W
50	2018-WTE-7739-OE	not assigned	In Progress	599	1333	41° 6' 58.35" N	84° 40' 49.59" W
51	2018-WTE-7737-OE	not assigned	In Progress	599	1333	41° 7' 25.44" N	84° 40' 30.19" W



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

September 27, 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 Hazard for all fifty structures on June 26, 2019.

Since the original determination letter issued by ODOT on July 18, 2019, a petition for discretionary review on the FAA determination was filed by the Airport Manager for Fostoria Metropolitan Airport. Although the petition was not accepted as valid by the FAA because it was received after the filing date, ODOT is willing to consider the comments provided and is amending our original determination.

ODOT ANALYSIS 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



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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.

Fostoria Metropolitan Airport (see attached letter dated August 1, 2019 from airport manager Dave Sniffen) specifically objects to 12 of the structures impacting the minimum vectoring altitudes for the runway 27 GPS instrument approach procedure.

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.

Structures T4, T7, T9, T10, T11, T13, T17, T18, T19, T20, T22 and T26: The elimination of these 12 structures from the project or the reduction of the height of these 12 structures to the no effect height of 1400 AMSL is necessary to eliminate these obstructions and their impacts to FZI. 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 T12, T14, T15, T16, T21, T23, T24, T25, T27, T28, T29, T30, T31, T32, T35, T37, T38, T50 : The elimination of these 17 structures from the project or the reduction of the height of these 18 structures to the no effect height of 1400 AMSL is necessary to eliminate these obstructions and their impacts to the NDB RWY 24 approach to 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.

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

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

FAA ASN	Structure Type	Structure Name	Status	Structure Height (ft)	Structure Height (ASL)	Latitude	Longitude	77.17(a)(1) Impact (ft)	77.17(a)(2) NEH (ft)	77.17(a)(3) Impact (ft)	77.17(a)(3) NEH (ft)
2018-WTE-11673-OE	Wind Turbine	T1	DET-DNH	1386	606	41-12-37.25N	83-04-03.47W	107	1229	176	1160
2018-WTE-11674-OE	Wind Turbine	T2	DET-DNH	1412	606	41-10-45.43N	83-00-21.83W	107	1305	N/A	N/A
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
2018-WTE-11676-OE	Wind Turbine	T22	DET-DNH	1484	606	41-08-33.95N	82-57-57.68W	107	1387	N/A	N/A
2018-WTE-11677-OE	Wind Turbine	T33	DET-DNH	1472	606	41-09-23.84N	82-57-58.08W	107	1365	N/A	N/A
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
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
2018-WTE-11680-OE	Wind Turbine	T16	DET-DNH	1495	606	41-08-32.55N	82-57-43.53W	107	1389	N/A	N/A
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
2018-WTE-11696-OE	Wind Turbine	T30	DET-DNH	1422	606	41-12-43.03N	82-54-43.03W	107	1315	N/A	N/A
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
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
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
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
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
2018-WTE-11702-OE	Wind Turbine	T36	DET-DNH	1382	606	41-15-37.57N	82-54-08.43W	107	1275	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
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
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
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
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
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
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
2018-WTE-11710-OE	Wind Turbine	T43	DET-DNH	1380	606	41-14-55.74N	82-51-51.65W	107	1273	N/A	N/A
2018-WTE-11711-OE	Wind Turbine	T44	DET-DNH	1406	606	41-13-49.46N	82-51-08.32W	107	1299	N/A	N/A
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
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
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
2018-WTE-11715-OE	Wind Turbine	T48	DET-DNH	1340	606	41-12-53.43N	83-04-09.64W	107	1233	200	1140
2018-WTE-11716-OE	Wind Turbine	T49	DET-DNH	1322	606	41-13-06.44N	83-04-09.61W	107	1215	221	1101
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
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
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
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
2018-WTE-11721-OE	Wind Turbine	T8	DET-DNH	1400	606	41-12-12.33N	83-00-36.22W	107	1293	139	1261
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

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:

- ☒ At least 10 days prior to start of construction (7460-2, Part 1)
☒ 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](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](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](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.

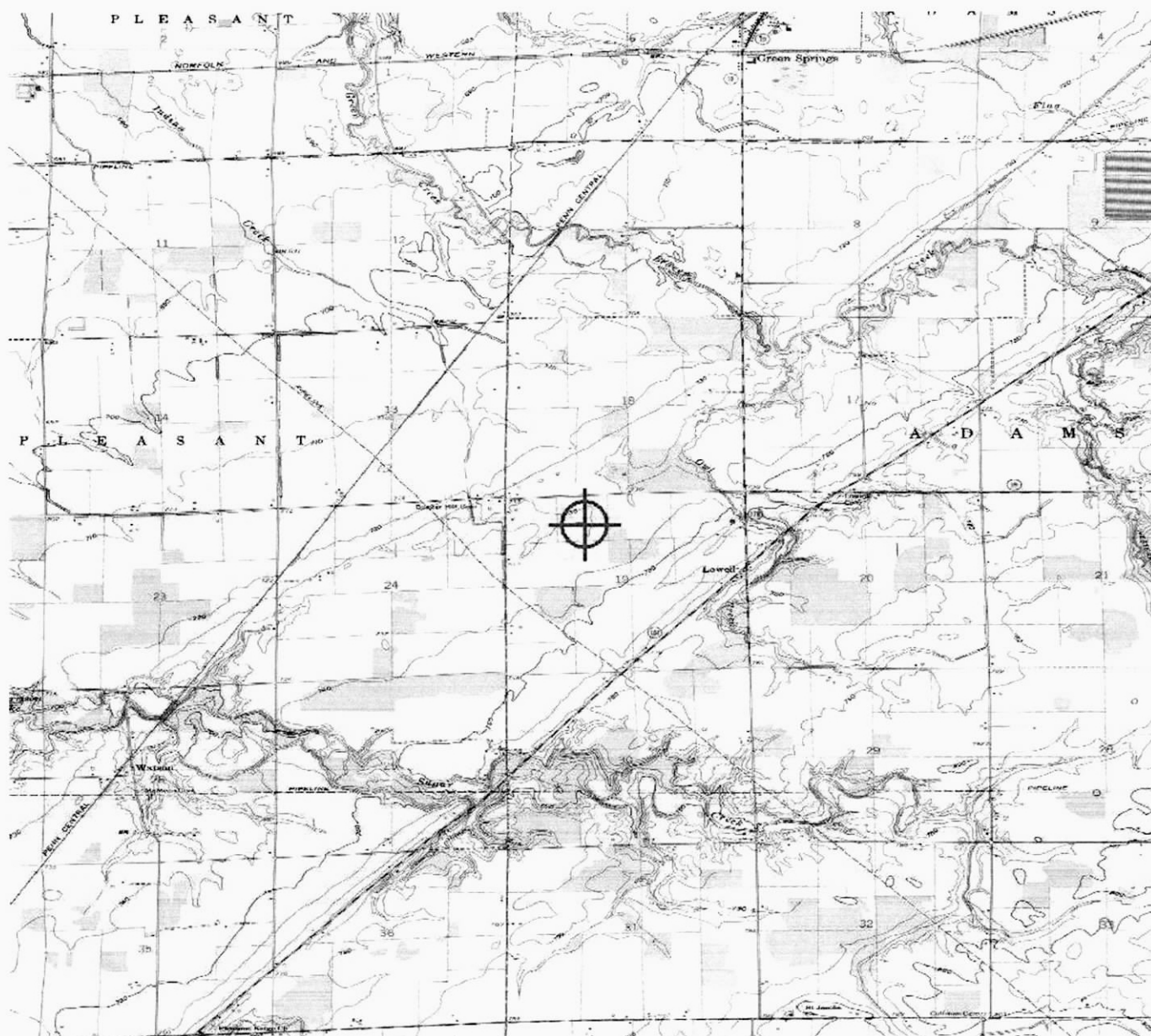
2018-WTE-11673-OE
2018-WTE-11674-OE
2018-WTE-11675-OE
2018-WTE-11676-OE
2018-WTE-11677-OE
2018-WTE-11678-OE
2018-WTE-11679-OE
2018-WTE-11680-OE
2018-WTE-11681-OE
2018-WTE-11682-OE
2018-WTE-11683-OE
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2018-WTE-11687-OE
2018-WTE-11688-OE
2018-WTE-11689-OE

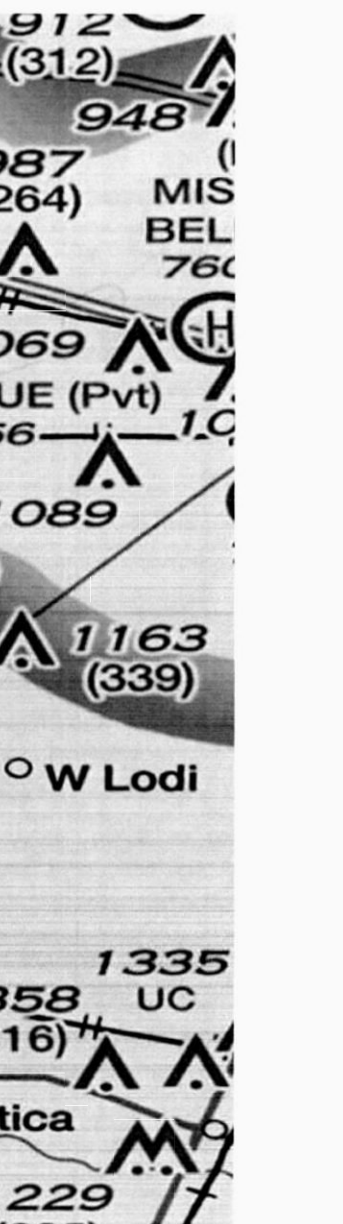
2018-WTE-11690-OE
2018-WTE-11691-OE
2018-WTE-11692-OE
2018-WTE-11693-OE
2018-WTE-11694-OE
2018-WTE-11696-OE
2018-WTE-11697-OE
2018-WTE-11698-OE
2018-WTE-11701-OE
2018-WTE-11703-OE
2018-WTE-11704-OE
2018-WTE-11706-OE
2018-WTE-11711-OE
2018-WTE-11712-OE
2018-WTE-11718-OE
2018-WTE-11720-OE
2018-WTE-11722-OE

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





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



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).

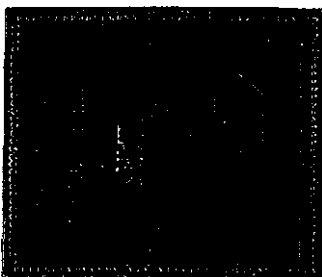
Respectfully Submitted,

Bradley W. Newman, President
Tiffin Aire, Inc.



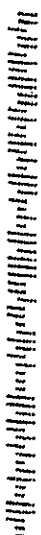
TIFFIN AIRE INC.

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

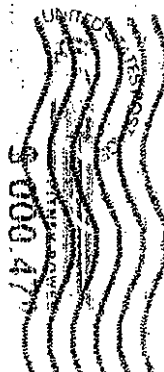


Mr. Paul Holmquist
Specialist, Air Traffic Certification Branch
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

76177-152401



CLEVELAND OH 440
12 APR 2000





**Federal Aviation
Administration**

OE/AAA

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.

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**Federal Aviation
Administration**

OE/AAA

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

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Readers & Viewers: PDF Reader | MS Word Viewer | MS PowerPoint Viewer | MS Excel Viewer | WinZip



**Federal Aviation
Administration**

OE/AAA

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.

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Date Aug. 1, 2019

RE: 2018-WTE-5607-OE

It has come to my attention that the Bloomville location was erroneously reported as Bloomfield. While Bloomfield does not impact us, certainly Bloomville may, so I am petitioning to reopen the study. The basis for my petition is No.1: Location change and No. 2: The uncertainty of the impact to the FZI airspace of said location change.

RE: 2018-WTE-11674-OE
2018-WTE-11675-OE
2018-WTE-11677-OE
2018-WTE-11681-OE
2018-WTE-11682-OE
2018-WTE-11683-OE
2018-WTE-11685-OE
2018-WTE-11687-OE
2018-WTE-11691-OE
2018-WTE-11706-OE
2018-WTE-11720-OE
2018-WTE-11722-OE

The minimum vectoring altitude for Fostoria Metropolitan Airport (FZI) by Toledo Approach is 2400 ft MSL, which coincides with the initial approach altitude of the GPS 27 approach. Frequently, the need to do the approach procedure is mitigated by the availability of doing the approach visually. On the surface it seems this is just a convenience issue, however, safety comes to the forefront, especially during the winter months. An aircraft approaching FZI, as a destination, is able to reduce the time spent in IMC Icing conditions because Toledo Approach is able to vector to final and ultimately descend the aircraft to 2300 ft MSL for the approach leg between ROPPE and SNIFN. Additionally, Bowling Green State University (BGSU) has 20+ aircraft that they use for instruction, including instrument instruction. Because of the instrument approaches available at FZI, the university uses the facility extensively for their instrument students. Any altitude increase to the instrument approaches requires them to spend more time in the icing conditions. Since 1971, the City of Fostoria has put significant effort and resources into the facility and surrounding airspace and is not in favor of relinquishing airspace protection, no matter how insignificant it may seem, to those who do not use the facility.

Respectfully Submitted,
Dave Sniffen,
Airport Manager
Fostoria Metropolitan Airport