Exhibit Y. Emergency Action Plan

Republic Wind, LLC

Preliminary

EMERGENCY ACTION PLAN ("EAP")

January 2018

Republic Wind, LLC *Preliminary* **Emergency Action Plan**	APEX CLEAN ENERGY

INTRODUCTION

Apex Clean Energy US recognizes that site personnel have the right and need to know the procedures to follow in the event of an emergency. With this policy, Apex Clean Energy intends to ensure the transmission of necessary information to site personnel regarding emergency action.

This Emergency Action Plan ("EAP") is maintained to ensure the safety of all site personnel at Apex Clean Energy facility in the event of a **major** emergency which could occur within our facility or at the fields in which we work. The EAP includes provisions for:

1. medical emergency
2. building evacuation
3. building utility failure
4. fire
5. earthquake
6. adverse weather
7. hazardous material spill
8. crime / violent behavior / civil disturbance
9. bomb threat
10. turbine fire

The EAP is established to:

1. Identify alarm and emergency evacuation procedures.
2. Identify procedures to be followed by site personnel who remain to operate critical business operations before they evacuate.
3. Identify rescue and medical duties for all site personnel following emergency evacuation.
4. Identify persons who can be contacted for further information or explanation of duties under this plan.
5. Establish training guidelines for site personnel regarding this plan and what they need to know in order to protect themselves.

Responsibility

The responsibility for maintaining this Plan has been assigned to the **Facility Manager**.
Herein the term "Manager" or "Management" shall mean any Manager or Supervisor, unless otherwise specified.

Site personnel Training

New site personnel will be oriented to the EAP via a copy and review of this document in combination with their orientation to other Apex Clean Energy safety policies.

Beyond new hire orientation, the Facility Manager, or the persons direct supervisor shall be responsible for providing training

A copy of this Emergency Action Plan ("EAP") is provided to each site person and is to be available at all times for all site personnel to review.

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Emergency Organization Chart

EMERGENCY RESPONSE (ALL SITE PERSONNEL)			
First Aid/Survival	**Security**	**Maintenance**	**Communications**
• Evacuation • Emergency supplies • Injury assessment • First aid • Light search and rescue • Vehicles and other heavy equipment for rescue • Light firefighting • Site personnel shelter	• Security personnel to protect lives and property (e.g., equipment lock-up, sentry posting) • Signage, plywood and plastic sheeting, security ribbons, flares • Property damage assessment (physical threats; structural damage)	• Utilities control (building utilities shut-off; field high-voltage procedures) • Hazardous materials decontamination • Debris removal • Auxiliary power equipment	• Operate communications equipment (PA, phones, pagers, field radio) • Compile and relay disaster information as needed (site personnel roll call, injury lists) • Notify outside emergency services • Deploy messengers • Set-up message board

MANAGEMENT GROUP		
Preparation	**Response in an Emergency**	**Business Recovery**
• Develops and maintains overall emergency plan and policies • Reviews recommendations for mitigative measures and training; makes necessary decisions; authorizes use of finances • Ensures site personnel training on policies and procedures • Maintains supply of emergency cash • Develops, maintains and distributes forms, maps, personnel assignment flowcharts, etc.	• Overall coordination and personnel deployment • Declares existence of an emergency based on status and damage assessment reports from teams • Authorizes evacuation when necessary • Interfaces with local utility companies • Interfaces with area Emergency Operation Centers regarding extent of disaster and availability of mass shelter • Responds to media and public inquiries	• Responsible for business recovery • Maintains documentation necessary to resume business • Determines value and estimates damages • Handles insurance claims • Handles loan applications • Interfaces with Apex Clean Energy US corporate entities

II. LISTS

EMERGENCY CONTACTS LIST

Emergency Medical Services
Seneca County Emergency Medical Services
81 Jefferson Street, Tiffin, Ohio 44883
419-448-1111 or 911

Sandusky County Emergency Medical Services
2100 Countryside Place, Fremont, Ohio 43420
419-332-7313 or 911

Medical Helicopter
Life Flight
2213 Cherry Street, Toledo, Ohio 43608
1-800-241-5433

Hospital
The Bellevue Hospital
1400 West Main Street
Bellevue, Ohio 44811
Phone: 419-483-4040 or 911

Police
Seneca County Sheriff's Office
3040 S. State Route 100, Tiffin, Ohio 44883
419-447-3456

Sandusky County Sheriff's Office
2323 Countryside Drive, Fremont, Ohio 43420
419-332-2613

Ohio State Highway Patrol
Fremont Patrol Post
2181 W. Bypass Route 20, Fremont, OH 43420
419-332-8246

Federal Bureau of Investigation (FBI) Sandusky Resident Agency
6100 Columbus Avenue, Sandusky, Ohio 44870
419-626-8383

Occupational Safety and Health Administration (OSHA) Toledo Area Office
420 Madison Avenue, Suite 600, Toledo, Ohio 43604
419-259-7542

ERCOT: Real-Time Desk
Phone: (512) 248-3101

APEX & O&M EMERGENCY CONTACT LIST

Owner's Rep: Apex Asset Management
Address: 310 4th St. NE, Ste 200 Charlottesville, VA 22902
Ph #: (434) 282-2119

VP of Asset Management: Andrea Miller
Office Ph #: 434-282-2119
Cell Ph # (434) 906-1123

Health and Safety Manager: John Boyle
Office Ph#: 219-771-9534

Director of Operations: Neil James
Office Ph#: 432-599-5515

Communications Manager Dahvi Wilson
Office Ph #: (434)-220-6351
Cell Ph # 434-326-3502

Facility Manager: To Be Determined

Deputy Facility Manager: To Be Determined

Apex Remote Operations Control Center (ROCC)
ROCC Ph# 434-328-2305
Additional Line 844-442-4752

III. EMERGENCY RESPONSE PROCEDURES

CORPORATE EMERGENCY RESPONSE

In an event of a crisis or an emergency at the site, the site manager will have support from the corporate office.

All Wind Farm Emergencies require a response from the corporate office with essential personnel. The essential staff identified includes the Safety Manager, a staff engineer, Operations Directors and possible public relations support. This team is to be used at the discretion of the Site Manager. At any time during a crisis or an emergency, the Site Manager can request additional support or stand down the responding essential corporate personnel. At the corporate level, all emergency responses will be operations driven managed by Vice President of Asset Management.

EMERGENCY COMMUNICATION OPERATIONS

ALL FIELD SITE PERSONNEL SHALL CARRY OR HAVE ACCESS TO COMMUNICATIONS MEDIA, AND IS IDENTIFIED BY HIS/HER SITE PERSONNEL NAME/NUMBER. SUBCONTRACTORS OFTEN CARRY THEIR OWN COMMUNICATIONS MEDIA AND ARE IDENTIFIED BY NAME.

COMMUNICATIONS MEDIA IS USED FOR COMMUNICATION BETWEEN THE SITE PERSONNEL IN THE FIELDS AND THE OFFICE PERSONNEL FOR THE PURPOSESOF:

Field status reports
Power outage coordination
Emergency conditions
Other daily work performance

IT IS ABSOLUTELY NECESSARY THAT EVERYONE HAVE COMMUNICATIONS MEDIA AT ALL TIMES DURING WORKING HOURS.

Power Outage Coordination:

When communications media is being used to coordinate power outages for transformer maintenance or substation maintenance, you will need to know which fields are affected so as to call the appropriate offices for clearance of their field personnel.

Call-In Report a Field Injury:

1. Confirm the severity of injury; are emergency personnel required?
2. Obtain an Accident Report Form and ask all of the questions thereon of the caller. Fill out the form as you talk.
3. Confirm that someone from the field will meet emergency personnel at the appropriate rendezvous point.

4. Have the completed Accident Report in hand and contact 911 to relay the information.

FIELD INJURY PROCEDURE

A. FIRST PERSON AT THE ACCIDENT SCENE

Upon arriving at the scene of an injury related accident, the first person shall survey the scene (is it safe?), then notify management personnel of the following:

1. Severity of the victim(s) injury.
2. Emergency personnel "are" or "are not" required.

B. ACCIDENT REPORT

If emergency personnel are required, the management personnel shall:

1. Obtain an "Accident Report"
2. Copy information received via radio to the form.
3. Ensure that all areas of the form are completed.
4. Continue to monitor communications for further developments.

C. CALL 911

The designated 911-call person shall:

1. Dial 911 immediately.
2. Relay all of the information on the accident form to the 911 operator.

D. NOTIFY THE FOLLOWING PERSONS

After the call to 911, the designated 911 call person shall notify all of the following personnel (if possible):

1. Plant Manager
2. Remote Operations Control Center - ROCC
3. Director of Plant Operations
4. Safety Officer

MEDICAL EMERGENCY

Medical cases generally fall under the following categories:

1. **Minor Medical Case –** Medical cases requiring minimal lay care and presenting no disability potential. Frequently do not require professional medical care.
2. **Urgent Medical Case –** Medical cases that are not life threatening and not likely to result in permanent or serious disability. Require professional medical care.
3. **Emergency Medical Case –** Those medical cases that, if not properly attended to, could result in serious injury or death. Permanent disability is possible. Require professional medical care.

PROCEDURE:

1. Do not move victim unless safety dictates.
2. Notify "base" of the extent of the medical emergency and your location.

3. See "Field Injury – Emergency Operations Procedure".
4. If the injury appears to be life threatening, be prepared to give "base" as much information as possible so that they can relay the information to the professional (911) EMT's.
5. See "Accident Report".
6. If the injury is not life threatening or not likely to result in permanent disability, first aid care may be provided by a trained site personnel or the injured person will be transported to our industrial clinic by a supervisor.

LOCATION OF FIRST AID SUPPLIES:

1. Office: Large first aid kit
2. Each vehicle is equipped with an individual first aid kit.

BUILDING EVACUATION

SITE PERSONNEL GUIDELINES:

1. Building evacuation will occur upon instruction by Management personnel. Notification to building site personnel will be made via the telephone or intercom system.
2. Be aware of all marked exits from your area and building. Know the routes from your work area. Marked exit signs are installed in all buildings.
3. Take note of physically handicapped individuals in your area that may need assistance.
4. When instructed to evacuate, walk quickly to the nearest marked exit and ask others to do the same.
   DON'T: Run, lag behind, scream, stop to get personal belongings, smoke, leave any doors open, or return to the building until you are instructed to do so.
5. All personnel should meet at:

   SEE SECTION "V" FOR O & M BUILDING EVACUATION MAP

6. If it is safe, remain in this location until roll call has been taken by a Manager. Do not leave premises until accounted for and given permission to do so by Management. Valuable time could be wasted searching for personnel that have not followed correct procedures.
7. Keep fire lanes, hydrants and walkways clear for emergency crews and equipment.
8. During emergency situation, only personnel authorized by Management will be allowed in the building to perform such responsibilities as shutting down power, potentially hazardous equipment, heat sources, gases, machine and other electrical equipment.
9. Should you become trapped in a building, **DO NOT PANIC:**
   a. If a window is available, place an article of clothing outside the window as a marker for rescue crews.
   b. If there is no window, tap on the wall and shout at regular intervals to alert emergency crews.

BUILDING UTILITY FAILURE

SITE PERSONNEL GUIDELINES:
In the event of a major utility outage in an Apex Clean Energy US building during working hours, notify a member of Management.

If there is potential danger to the building occupants or if the utility failure occurs after hours, on the weekend, or a holiday, notify a member of Management.

Do not evacuate a building unless directed to do so by Management, the policy or fire department.

Do not return to an evacuated building unless directed to do so by Management personnel.

Electrical / Light Failure
It is advisable to have a flashlight nearby for emergencies.

Plumbing Failure / Flooding / Water Leak:
1. Cease using all electrical equipment.
2. Notify a Manager immediately.
3. Evacuate the immediate area to prevent injuries.

Natural Gas Leak:
1. Cease all operations.
2. Notify a Manager immediately.
3. Evacuate the area immediately.

****DO NOT SWITCH LIGHTS ON / OFF OR UNPLUG ANY ELECTRICAL EQUIPMENT – ELECTRICAL ARCING COULD TRIGGER AN EXPLOSION. ****

Ventilation Problems:
1. If smoke or odors come from the ventilation system, immediately notify a Manager.
2. If necessary, cease all operations and vacate the area.

****DO NOT RETURN TO AN EVACUATED AREA UNLESS THE "ALL CLEAR" SIGN IS GIVEN BY A MANAGER.****

FIRE

SITE PERSONNEL GUIDELINES:

1. Field personnel should notify Facility Manager to report the fire emergency. Someone at "Operations Building" will notify the Fire department. Office / Warehouse personnel should immediately dial "911" in the event of a fire.
2. Know the location of fire extinguishers, fire exits, and alarm systems in your area and know how to use them. If a minor fire can be controlled, site personnel may attempt to extinguish the fire using the fire extinguishers or other sources, such as water from a hose – only after "911" has been called.
3. A complete evacuation of the entire building or area will be performed in any fire emergency. All site personnel should proceed to the nearest exit. Last ones to exit should close doors behind them.
4. Seek out any handicapped personnel in the area and provide assistance when exiting.
5. Managers or site personnel will assist in the evacuation and will meet the Fire Department to direct them to the proper location. Once the Fire Department has arrived, the responding incident commander will take charge of all rescue operations and suppression activities.

   Office / Warehouse Muster Point
   O&M Front parking lot
6. Keep clear of fire lanes, hydrants, and walkways for emergency crews and vehicles.
7. Personnel should remain at this location until accounted for by Management. Do not leave premises until accounted for and given permission to do so. Valuable time could be wasted searching for personnel who have not followed correct procedures.
8. Only members of Management can declare the state of emergency over and give permission to re-enter.

Should you become trapped in a building during a fire:

a. If a window is available, place an article of clothing (shirt, coat, etc.) outside the window for the rescue crews.

b. If there is no window, stay near the floor where the air will be less toxic. Shout at regular intervals to alert emergency crews of your location. **DO NOT PANIC.**

c. If the door is warm, do not open it. If smoke is entering the room through cracks around the door, stuff something in the cracks to slow the flow.

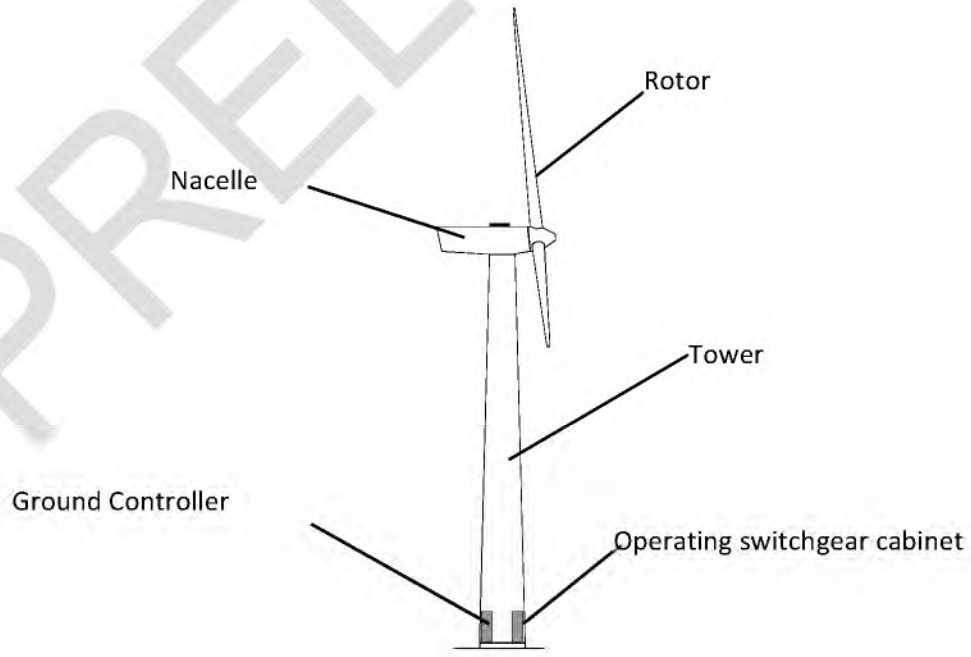
Turbine Fire

1. Dial 911
2. Notify Facility Manager and Remote Operations Control Center (ROCC)
3. Verify turbine affected is isolated from the electrical system.
4. Establish a sterile zone (approximately 100 ft) around the base of the turbine.
5. Allow fire debris to fall freely within controlled area.
6. Watch for fire debris to go beyond the controlled area.
7. Fire Department will manage the fire scene, site personnel will stand by to assist with isolation of additional turbines and electrical equipment if requested by the Fire Department Incident Commander.

Brush Fire

1. Dial 911
2. Notify Facility Manager and Remote Operations Control Center
3. Advise all site employees of the fire emergency and gather team at the muster location.
4. Work with local responders to address fire encroachment near the facility or turbines
5. In the event firefighting teams utilize helicopter or fixed wing aircraft near wind farm the Fire Department Incident Commander may request to pause the turbines for safety.
6. Fire Department will manage the fire scene, site personnel will stand by to assist with isolation of additional turbines and electrical equipment if requested by the Fire Department Incident Commander.
7. All safety requests from the Incident Commander shall be followed by the site team.

Acciona Wind Power 3000 Wind turbine



Internal Sources of Danger

Internal sources of danger	Place	Causes
Fire or arc flash	Wind turbine base wiring	· Short circuit in wiring
	Ground controller	· Short circuit
	Transformer	· Short circuit in wiring
	Tower	· Short circuit in wiring
Fire	Nacelle	· Short circuit in wiring · Short circuit in switchboard · Short circuit in generator · Rotor rotation with brake on
Explosion	Ground controller	· Capacitor explosion
	Operating switchgear cabinet	· Short circuit

External Sources of Danger

External sources of danger	Place	Causes
Fire	Wind turbine surrounding area	· Grass fire not caused by farm's activity · Work with cutting or abrasive tools · Short circuit in maintenance tasks
Lightning	Outdoor part of wind turbine	· Electrical storm
Injured person	Wind turbine surrounding area	· Various causes

EARTHQUAKE (OFFICE / WAREHOUSE)

GUIDELINES FOR OFFICE / WAREHOUSE / SHOP PERSONNEL:

1. Stay in the building. Many injuries occur while people run through the building to the outside. It is possible to be hit by flying objects, falling plaster or other debris.
2. Assist any handicapped persons in the area and find a safe place for them.
3. Drop, cover, and hold. Try to take cover under a table or other sturdy furniture. Kneel, sit, or stay close to the floor. Hold onto furniture legs for balance. Be prepared to move with your cover. Face away from windows.
4. Doorways may not be the safest location for protection. Violent motion could cause doors to slam against your body, crush your fingers, or inflict other serious injuries. More importantly, you could become a target for flying objects.
5. You could kneel, sit, or stay close to the floor, next to a structurally sound interior wall. Place your hands on the floor for balance, as the ground may move violently for several minutes.
6. Try to avoid airborne objects. Move away from overhead fixtures, windows, bookcases, file cabinets, etc.
7. If you are outside, go to a clear area away from buildings, trees, and powerlines.
8. Keep calm. Do not move. Wait for emergency instructions from Management.

IMMEDIATELY AFTER THE QUAKE:

1. Be prepared for aftershocks. Although usually less intense than the main quake, they can cause further structural damage.
2. Gas leaks might be present. Do not use lanterns, torches, lighted cigarettes, or open flames.
3. Open windows, if possible, to ventilate the building. Watch out for broken glass.
4. If fire is caused by the earthquake, implement the fire procedures.
5. If evacuation is ordered:
    a. Evacuate as instructed.
    b. Provide assistance to any handicapped personnel.
    c. Beware of falling debris and electrical wires as you exit.
    d. Personnel should meet at:

SEE SECTION "V" FOR O & M BUILDING EVACUATION MAP

6. If it is safe, remain in this location until accounted for by Management or Communications personnel. Do not leave premises until accounted for and given permission to do so. Valuable time could be wasted searching for personnel that have not followed correct procedures.
7. Keep fire lanes, hydrants, and walkways clear for emergency crews and equipment.
8. Only members of Management can declare the state of emergency over and give permission to re-enter.

Should you become trapped in building, DO NOT PANIC:

a. If window is available, place an article of clothing outside the window as a marker for rescue crews.

b. If there is no window, tap on the wall and shout at regular intervals to alert emergency crews.

LOCATION OF FIRST AID SUPPLIES:

1. Shop: At eye wash station by double doors.

EARTHQUAKE (FIELD) GUIDELINES

FOR FIELD SITE PERSONNEL

DURING AN EARTHQUAKE:

1. Move to an open area away from turbine towers, power lines, and poles.
2. Get low to the ground and balance yourself. The ground may move violently for several minutes. 3. If there is no open area, seek available shelter (such as your vehicle) to avoid falling objects. Stay in your vehicle if electrical wires fall on it. Wait for professional help – wires may still be live and you could be electrocuted if you stepped outside.

IMMEDIATELY AFTER THE EARTHQUAKE:

1. Be prepared for aftershocks. Although usually less intense than the main quake, they can cause further damage.
2. Use any communication means necessary to notify your supervisor of your status and position.
3. If you feel safe in doing so, attempt to evacuate to your rendezvous location.

SEE SECTION "V" FOR WIND FARM EVACUATION MAP

4. Remain at your designated rendezvous location until you have answered to a roll call by a Manager. Do not leave the premises until accounted for and given permission to do by a Manager. Valuable time could be wasted searching for personnel that have not followed correct procedures.
5. You may be directed to return to the Apex Clean Energy US office location. This does not give you permission to go elsewhere.
6. Only members of Management can declare the state of emergency over and give permission to leave the designated rendezvous location or the Apex Clean Energy US shelter area.

LOCATION OF FIRST AID SUPPLIES:

1. Service trucks

ADVERSE WEATHER

SITE PERSONNEL GUIDELINES:

A serious weather "watch" indicates that conditions for bad weather exist. During a "watch" status, maintain a normal routine. Management will monitor available information report. A "warning" is more serious. The following is a list of emergency situations, definitions of these conditions, and general emergency instructions which should be followed:

Severe Thunderstorms:

Winds exceeding 55 miles per hour and heavy lightning and thunder. Lightning is the greatest danger during a severe thunderstorm.

Special Precautions:

1. Remain indoors.
2. Stay away from open doors, windows, metal pipes, or electrical appliances.
3. Prepare for flash flooding.
4. Follow Management instructions.

Working in Adverse Weather – Lightning

In addition to the General Safety Policy and General Safety Rules of the IIPP, the following shall apply:

1. Morning safety meetings shall cover forecasted weather conditions for the day.
2. Lightning warnings shall reflect a fifty (50) mile radius as an initial advisement to technicians that a storm is in the area, and a thirty (30) mile radius will indicate an immediate weather stand down. Technicians will be required to immediately stop working and head to their vehicles until the storm passes.
3. Stand down directions will be clear. The message "STOP WORK- weather stand down is in effect" shall be communicated when a storm reaches a thirty (30) mile radius from the turbine.
4. Site supervision will confirm all employees are accounted for and down tower. At that time they will be directed to return to the shop or stay in the field until the lightning passes.
5. Lines of communications shall include radios as a primary source.

This policy effects all locations and the procedures are consistent throughout each wind farm.
The seemingly random nature of thunderstorms cannot guarantee the individual or group absolute protection from lightning strikes, however, being aware of, and following lightning safety guidelines can greatly reduce the risk of injury or death

General Information:

During late spring to the summer months, in certain parts of the country, thunderstorms are common. Because of this, all service technicians who work in these areas need to be aware of the possible lightning conditions that may occur on our wind turbine projects during these thunderstorms. Before, during, and after thunderstorms all affected site personnel need to be aware of what to do and where to report.
Safer Locations during Thunderstorms and Locations to Avoid:
No place is absolutely safe from the lightning threat; however, some places are safer than others. Large enclosed structures (substantially constructed buildings) tend to be much safer than smaller or open

Structures. The risk of lightning injury depends on whether the structure incorporates lightning protection, construction materials used, and the size of the structure. Avoid contact with metal or conducting surfaces outside or inside the structures.

Generally speaking, if an individual can see lightning and/or hear thunder he/she is already at risk. Louder or more frequent thunder indicates that lightning activity is approaching and increasing. If the time delay between seeing the flash (lightning) and hearing the bang (thunder) is less than 30 seconds, the individual should be in or seek a safer location. Be aware that this method of ranging has severe limitations in part due to the difficulty of associating the proper thunder to the corresponding flash.

High winds, rainfall, and cloud cover often act as precursors, to actual cloud-to-ground strikes by notifying individuals to take action. Many lightning casualties occur in the beginning, as the storm approaches, because people ignore the precursors. Also, many lightning casualties occur after the perceived threat has passed. Generally, the lightning threat diminishes with time after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area but not overhead, the lightning can exist even when it is sunny, not raining, or when clear sky is visible.

When available, pay attention to weather warning devises such as weather radio and/or credible lightning detection systems. However, do not let this information override good common sense as isolated storms are common.

Lightning Safety:
Avoid being in or near wind turbine and communications towers, other high places, open fields, isolated trees, light poles, metal fences, and open water (ocean, lakes, rivers, etc.). After the storm has passed, all site personnel shall wait at least one (1) hour before approaching any equipment. If you hear a hissing or crackling sound, this may be a sign of the wind turbine holding a charge. If these sounds are present, DO NOT TOUCH THE MACHINE.

When inside a building avoid use of the telephone, washing your hands, or any contact with conductive surfaces with exposure to the outside such as metal door or window frames, electrical wiring, telephone wiring, cable TV wiring, plumbing, etc.

When in vehicles during lightning you must not be touching any metallic objects referenced to the outside of the car. Door and window handles, radio dials, CB microphones, gearshifts, steering wheels, and other inside-to-outside metal objects should be left alone during close-in lightning events. If you are driving and get caught in a lightning storm, pull off to the side of the road in a safe manner (in a low area, not on a hill), turn on the emergency blinkers, turn off the engine, put your hands in your lap, and wait out the storm.

Heavy equipment like boom trucks, cranes, backhoes, bulldozers, loaders, graders, scrapers, mowers, etc. which employ an enclosed rollover systems canopy (ROPS) are safe in nearby electrical storms. The operator should shut down the equipment, close the doors, and sit with hands in lap, waiting out the storm. In no circumstances, during close-in lightning, should the operator attempt to step off the equipment to ground in an attempt to find another shelter. If operating a boom truck or crane, make sure to retract the boom and place in the boom rack.

****NOTE – EMERGENCY WORK CAN BE CONDUCTED IN THE SUBSTATION. ONLY QUALIFIED AND TRAINED PERSONNEL WILL BE ABLE TO CONDUCT WORK. A JSA MUST BE COMPLETED AND RISK ASSESSMENT SHOULD REFLECT THE WEATHER AND ITS HAZARDS****

First Aid Recommendations for Lightning Victims:
Most lightning victims can actually survive their encounter with lightning, especially with timely medical treatment. Individuals struck by lightning do not carry a charge and it is safe to touch them to render medical treatment. Follow these steps to try to save the life of a lightning victim:

1. **First:** Call 911 to provide directions and information about the likely number of victims.
2. **Response:** The first priority of emergency care is "make no more casualties". If the area where the victim is located is in a high-risk area (mountain top, isolated wind turbine, open field, etc.) with a continuing thunderstorm, the rescuers may be placing themselves in significant danger.
3. **Evacuation:** It is relatively unusual for victims who survive a lightning strike to have major fractures that would cause paralysis or major bleeding complications unless they have suffered a fall or been thrown a distance. As a result, in an active thunderstorm, the rescuer needs to choose whether evacuation from very high-risk areas to an area of lesser risk is warranted and should not be afraid to move the victim rapidly if necessary. Rescuers are cautioned to minimize their exposure to lightning as much as possible.
4. **Resuscitation:** If the victim is not breathing, start mouth-to-mouth resuscitation. If it is decided to move the victim, give a few quick breaths prior to moving them. Determine if the victim has a pulse by checking the pulse at the carotid artery (side of the neck) or femoral artery (groin) for at least 20 – 30 seconds. If no pulse is detected, start cardiac compressions as well. In situations that are cold and wet, putting a protective layer between the victim and the ground may decrease the hypothermia that the victim suffers which can further complicate the resuscitation.

Location: To Be Determined

Plan Supervisor: To Be Determined

Designated Meeting Place: To Be Determined

O&M Building, SEE SECTION "V" FOR SITE MAP

Back up Designated Meeting Place: To Be Determined

SEE SECTION "V" FOR O & M BUILDING MAP

Note: The persons named above shall be trained in the procedures to follow and have full authority to perform said duties. Training shall be performed annually or when the plan changes. A copy of this plan shall be available to all site personnel. The location manage shall maintain the master copy of this plan and forward a copy to the corporate Safety Officer. A map of any evacuation routes shall be posted and kept up to date by the plan supervisor.

Flooding:

CONCERNS of the Office / Warehouse:

1. Top-off any underground tanks. Make tank access caps water tight, plug vents, and seal off pumping lines.
2. Plug all floor drains and sanitary lines.
3. If possible, disconnect electric motors and store in dry place.
4. Move chemicals to a high shelf.
5. If possible, put merchandise on pallets.
6. Shut off main power and valves.

CONCERNS of the Field:

1. Down power lines.
2. De-energize substation.
3. Open KPF's.
4. Transformers down, exposing primary/secondary lines.
5. Cracks in dikes, exposing primary/secondary lines.
6. Control panels down, exposing secondary lines.
7. Towers over, exposing secondary lines.

Working in Adverse Weather – Tornados

General:
In addition to the General Safety Policy and General Safety Rules of the IIPP, the following shall apply: This policy effects all locations that see annual weather situations. Although we have several types of wind turbines in these areas, the procedures are the same.

Definitions:

Tornado Watch – A tornado watch means that conditions are favorable for tornados to develop.

Tornado Warning – A tornado warning means that either official spotters have sighted a tornado or Doppler Radar has reported a developing tornado. A tornado warning is typically issued for a small area (possibly a county or two) for less than an hour.

Fujita – Pearson Tornado Scale:

1. F-0: 40 – 72 mph, chimney damage, tree branches broken.
2. F-1: 73 – 112 mph, mobile homes pushed off foundation or overturned.
3. F-2: 113 – 157 mph, considerable damage, mobile homes demolished, trees uprooted.
4. F-3: 158 – 205 mph, roofs and walls torn down, trains overturned, cars thrown.
5. F-4: 207 – 260 mph, well-constructed walls leveled.
6. F-5: 261 – 318 mph, homes lifted off foundation and carried considerable distances, autos thrown as far as 100 meters.

Republic Wind, LLC *Preliminary* **Emergency Action Plan**	APEX CLEAN ENERGY

General Information:

During late spring to the summer months in certain parts of the country, tornados are commons. Because of this, all service technicians who work in these areas need to be aware of the possible tornado conditions that may occur on our wind turbine projects.

When a tornado is coming, you have only a short amount of time to make life-or-death decisions. Advance planning and quick response are the keys to surviving a tornado. This is why it is so important to conduct tornado drills before and during each tornado season.

When a tornado watch is issued in your area, stay tuned to a weather radio, commercial radio, and/or television to stay informed of changing weather conditions. Remain alert for approaching storms and remember that tornados can occur with little to no warning. Be prepared to take cover on short notice.

When a tornado warning is issued, local EMS will take, as a minimum, the following precautions to alert the public:

1. Sound local sirens (know what is the sequence in your area)
2. Activating the Emergency Alert System (EAS) to interrupt radio and television broadcasts to provide instructions and information to the public

Tornado Safety:

Tornado danger signs (learn and know these tornado danger signs):

1. An approaching cloud of debris can mark the location of a tornado even if a funnel is notvisible.
2. Before a tornado hits, the wind may die down and the air may become verystill.
3. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

Take the following protective actions when a tornado watch has been issued in your area:

1. Have a person designated to monitor a radio ortelevision
2. Notify all affected site personnel of the tornado watch and assure that they are in immediate contact if an emergency arises.
3. If the weather is extreme, remove all site personnel from the field and prepare for the safety of all site personnel.

Take the following protective actions when a tornado warning has been issued in your area:

1. Go at once to a windowless, interior room; storm cellar; basement; or lowest level of the building.
2. Go to an inner hallway or a small inner room without windows, such as a bathroom or closet.
3. Stay away from windows, doors, and outside walls (most deaths occur from flying debris)

If outdoors:

1. If possible, get inside a building.
2. If shelter is not available or there is no time to get indoors, lie in a ditch or a low-lying area or crouch near a strong building. Be aware of the potential forflooding.
3. Use arms to protect head and neck.

If in a car:

1. Never try to out drive a tornado in a car or truck. Tornadoes can change direction quickly and can lift up a car or truck and toss it through the air.
2. Get out of the car immediately and take shelter in a nearby building.
3. If there is no time to get indoors, get out of the car and lie in a ditch or low-lying area away from the vehicle. Be aware of the potential for flooding.

After a tornado, be aware of your surroundings. Also:

1. Turn on radio or television to get the latest emergency information
2. Use the telephone only for emergency calls.
3. Watch for downed power and telephone lines (do not use the phone unless calling 911)
4. Around the projects watch for falling debris, exposed power lines, and chemical spills.
5. Give first aid when appropriate. Don't try to move the seriously injured unless they are in immediate danger of further injury.
6. Stay out of damaged buildings. Return only when authorities say it is safe.
7. Clean up spilled medicines, bleaches, gasoline, or other flammable liquids immediately. Leave the buildings if you smell gas or chemical fumes.

Location: To Be Determined

Plan Supervisor: To Be Determined

Designated Meeting Place: To Be Determined

O&M Building, SEE SECTION "V" FOR SITE MAP

Back up Designated Meeting Place: To Be Determined

SEE SECTION "V" FOR O & M BUILDING MAP

Note: The persons named above shall be trained in the procedures to follow and have full authority to perform said duties. Training shall be performed annually or when the plan changes.A copy of this plan shall be available to all site personnel. The location manager shall maintain the master copy of this plan and forward a copy to the corporate Safety Officer. A map of an evacuation routes and shelters shall be posted and kept up to date by the plan supervisor.

Cold Weather Safety:

The purpose of this Safety Document is to provide the site personnel with the basic knowledge needed to work safely in conditions where the possibility of cold exists. At the end of this period of instruction the site personnel should:

a. Be able to identify the conditions and circumstances that can lead to cold injury.
b. Know the signs of cold injury.
c. Explain the first aid treatment for cold injury.

The Cold Environment

The human body can experience a loss of functionality, damage, or death from the cold environment. Temperature is not the only factor resulting in cold injury. Immersion and wind speed can also contribute to the severity of cold injuries.

Immersion can cause a significant and rapid loss of body heat. In water temperatures that are well above freezing, a person can quickly become immobilized and drown.

Immersion Survival Times

Water Temperature Degrees Fahrenheit	30	40	50	60	70
Time for 50% Deaths	15 min	20 min	50 min	2 hrs	Safe
Time for 100% Deaths	1 hr	2 hrs	4 hrs	Some Survive	Safe

In water temperatures as high as 60 degrees there is danger of people being overcome by the cold. Wind turbine sites are often located where there are lakes, rivers, creeks, or ponds. These are also areas where roads may become unstable. There is some chance of crashing into the water. Heavy rain can have the same effect as immersion. In the event a person should experience immersion the first step is to remove them from the cold, the second is to get them dry. As the need arises, use clothing to protect from getting wet.

Wind Chill

Just as exposure to wet and cold can rob heat faster than just temperature alone, so can strong winds. Strong winds enhance the effects of low temperatures.

Wind Speed (MPH)	Perceived Temperature											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148

Little Danger if Properly Clothed

Danger of Freezing Exposed Flesh

Great Danger of Freezing Exposed Flesh

This chart shows combinations of wind and temperature that can lead to cold injuries. In areas where these conditions exist, care should be taken to cover all exposed flesh or stay out of the weather. **Cold Injuries**

Hypothermia

The medical term for a drop in core body temperature is Hypothermia. As temperatures drop the human body adapts various strategies to keep the core temperatures at 98.6 degrees Fahrenheit. "Goose bumps" and shivering are the first signs of a drop in body temperature. The body may restrict flow of blood to the extremities making them more susceptible to freezing. As the extremities get colder there is loss of coordination. As a person gets colder they become apathetic and lose gross motor functions. At some point shivering will cease. The skin will be cold and waxy, muscles will be rigid, and the heart rate slows. As the core temperature drops, the pupils dilate and the person will go into a coma. At a core body temperature below 86 degrees Fahrenheit, there is a chance of cardiac arrest.

Local Cold Injury Local cold injury is commonly called "frost bite". Frost bite occurs when body tissue gets cold enough to freeze. It is most likely to affect the tips of the fingers, toes, ears, nose, cheek bones, and chin. While when first exposed to cold a body part will burn and sting, eventually as exposure time lengthens, there will be a loss of sensation. The skin may turn waxy grey or yellow. If the condition is allowed to continue, the tissue will freeze and cause permanent tissue damage.

Treatment

Prevention is always preferable to treatment. Heat is lost through the body by several means, not the least of which is radiation. It is important to cover all exposed areas of the body. Hands and head are often neglected when dressing for the cold environment. Head coverings should cover as much of the head, neck, and face as possible. Gloves should be insulated as should footwear. Clothes should be loose and layered. Clothing may need to be shed and donned several times during a work day. As one works, the clothes might need to be removed to keep from overheating. The clothes will need to be put on again during periods of inactivity.

Hypothermia

First priority in hypothermia / cold injury treatment is to remove the patient from the cold environment. Keep the person warm and dry. Use blankets, sleeping bags, etc. to cover exposed areas. Shelter the patient from the wind. If in the field, the cab of a vehicle with the heater running will provide a warm environment. If the patient is in advanced hypothermia (confused, no shivering) handle them gently and do not allow patient to exert themselves. There is possibility if cardiac arrest. Seek medical attention.

Local Cold Injury

In the event one suspects a local cold injury, remove the person from the cold. Never try to thaw any tissue if there is a possibility of it refreezing. Carefully remove any jewelry, wet or restrictive clothing. Leave the clothing if it frozen to the skin. Cover the skin with loose clothing or bandage to prevent friction or pressure. Never rub or massage the affected. If the area is hard and frozen, do not attempt to rewarm it by applying heat. Seek medical attention.

HAZARDOUS MATERIAL

SITE PERSONNEL GUIDELINES:
Material Safety Data Sheets (MSDS's) are kept on premises on all chemicals we use.

These data sheets are located: **ON SAFETY BOARD IN WAREHOUSE / SHOP AREA**
For spills, leaks, and incidents when a fire is not involved, the following steps should be taken, if appropriate:

1. Do not make contact with the chemical. Evacuate all personnel in the area immediately. Seal off the area if possible to prevent further contamination of others until someone from Management arrives.
2. Seek out any handicapped personnel in the area and provide assistance when exiting.
3. Report the incident immediately to anyone in Management.
    a. Type of incident. Are there any injuries?
    b. Name and quantity of the material, if known.
    c. Possible hazards to persons or the environment, if known.
    d. Be sure to state if you feel that the spill or its vapors may cause an immediate threat to human life so that evacuation procedures may be implemented.
4. Anyone who is contaminated by the spill should avoid contact with others as much as possible. Washing-off contamination and first aid should be started immediately.
5. Do not try to contain or clean up spills. This will be conducted be someone designated by Management.
6. If it is safe, remain in this location until accounted for by roll call by Management. Do not leave premises until accounted for and given permission to do so. Valuable time could be wasted searching for personnel that have not followed correct procedures.
7. Keep fire lanes, hydrants, and walkways clear for emergency crews and equipment.

Only members of Management can declare the state of emergency over and give permission to re-enter.

SPILL RESPONSE

These spill response guidelines shall be followed for all fluid spills that are utilized in the operation of the site including hydraulic oil, brake oil, gear box oil and de greaser cleaner.

1. Contact Apex Remote Control Operations Center (ROCC) and advise of the incident.
2. Utilized the spill response kits that located throughout the operations and maintenance building, trucks, and substation control room.
3. Isolate spill area from personnel exposure
4. Dike and contain the spill with the use of absorbent boom and pig mats. Determine quantity of material lost
5. Contact pre-qualified vendor to properly dispose of material
6. Provide an incident report to Apex Safety and Operations.
7. Apex Environmental Manager will determine if recordable criteria have been met and next steps.

CRIME / VIOLENT BEHAVIOR / CIVIL DISTURBANCE SITE

PERSONNEL GUIDELINES

How to report:
You may contact any Manager or call "911" yourself to access the police department.

Reporting Crimes in Progress:
If you are a victim or a witness to any in-progress criminal offense, report the incident as soon as possible, providing the following information:

1. Nature of the incident. MAKE SURE that the 911 dispatcher understands that the incident is IN PROGRESS!
2. Location of the incident.
3. A description of the suspect(s) involved.
4. A description of any weapons involved.
5. A description of any property involved.

Stay on the line with the dispatcher until a police officer arrives at the scene. Keep the dispatcher informed of any changes in the situation so that updated information can be relayed to the responding units. Even if you are the victim and unable to communicate further, try to keep the line open.

Reporting Crimes Not in Progress:
Even though it seems futile, all crime should be reported.
Be prepared to provide the following information to the investigating officer:

1. When the incident occurred.
2. If a property crime, what was taken or damaged.
3. The named and/or descriptions of any suspects or witnesses.

Civil Disturbance Response Plan
Any site personnel noting a possible civil disturbance should contact a Manager immediately. If necessary, all entrances and exits will be secured. Should unauthorized intruders gain access onto premises, refrain from any contact with the intruders. All site personnel should remain in the area, remain calm, and follow instructions from Management. Should intruders gain access into the building and damage property, site personnel should not interfere? The personal safety of our personnel is more important than the protection of our property.

BOMB THREAT

SITE PERSONNEL GUIDELINES:
All bomb threats must be treated as a serious matter and must be considered real until proven otherwise. The procedures described below should be implemented regardless of whether the bomb threat appears to be real or not.

Bomb Threats through Mail or Suspicious Packages:

1. Do not handle the envelope or package. Clear the area and call "911". In addition, contact any manager.
2. The building will not be evacuated until Management personnel or local authorities have given orders to do so.

Bomb Threats over the Phone:

1. Keep the caller on the line as long as possible and try to obtain the following information:
   a. When is the bomb going to explode?
   b. Where is the bomb located?
   c. What kind of bomb is it?
   d. What does it look like?
   e. Why did you place the bomb?
2. Also, try to record the following information:
   a. Time of call
   b. Age and sex of caller
   c. Speech pattern, accent, possibly nationality, etc.
   d. Emotional state of caller
   e. Background noise
3. Immediately notify your supervisor or a Manager. Await further instructions. The building will not be evacuated until Management personnel or local authorities have given orders to do so.

TURBINE FIRE

When a turbine on the site is on fire do the following:

- Call 911 so the fire department can be dispatched.
- Stay away from the danger area of falling debris.
- Set up a sterile zone and do not allow vehicles to park below the turbine.
- Direct all media inquiries to the Facility Manager.

Hurricane

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 knots 119-153 km/h	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 knots 154-177 km/h	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 knots 178-208 km/h	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 knots 209-251 km/h	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph-higher 137 knots higher 252 km/h	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Republic Wind Hurricane Procedure

1. Hurricane Procedure Policy

This plan is for all personnel working at the Republic Wind Farm.

It is our policy that safety of site personnel is the primary concern. Apex Clean Energy will activate this procedure well before a hurricane reaches the project to assure the safety of site personnel.

2. Notification

In the event of an approaching Hurricane the following people must be notified;
Republic Wind Farm Facility Manager: To Be Determined
Republic Wind Farm Deputy Facility Manager: To Be Determined
Apex Safety Manager: Office # 219-771-9534
Neil James, Apex Director of Operations: Cell phone# 432-599-5515
Apex ROCC: Office# 434-328-2305

3. Hurricane Procedure

48 HOURS FROM LANDFALL- About two days before a hurricane is expected to affect your location, begin implementing the following actions.

- Review the hurricane emergency action plan with all involvedpersonnel.
- Check building roofs. Make repairs to coverings and flashing as time allows.
- Remove all loose items from the roof, secure equipment doors and covers, and remove debris.
- Verify roof drains are clear of trash and other obstructions.
- Fill fuel tanks serving emergency generators and other vitalservices.
- Verify dewatering pumps are in service and working.
- Verify outside storm drains and catch basins are clean.
- Remove debris from outdoor areas that may become "missiles."
- Remove loose, outdoor, inactive equipment.
- Back up computer data.

36 HOURS FROM LANDFALL-– At 36 hours before anticipated landfall, time will be limited. Make sure you will have the staff needed to complete all of the following actions, and leave plenty of time to evacuate personnel.

- Protecting or relocating vital business records
- Removing all loose outdoor storage or equipment
- Anchoring portable buildings or trailers to the ground
- Securing outdoor storage or equipment that cannot be moved
- Installing manual protection systems (e.g. shutters, plywood covers and floodgates)
- Raising critical equipment off floors
- Moving critical equipment from basement and other below-ground areas

- Covering critical stock and equipment with waterproof tarpaulins
- Turning off fuel gas services
- Turning off non-essential electrical systems
- Verifying all fire protection systems are in service (e.g. water supplies, fire pumps, sprinklers, fire alarms and special extinguishing systems)
- Setting up flood barriers at all first floor doors and entrances
- Temporarily closing up buildings under construction to avoid entry of wind-driven rain_

24-32 HOURS BEFORE LANDFALL- **ALL PERSONNEL SHALL EVACUATE THE SITE**

DURING THE HURRICANE- **Personnel shall remain off site. ROCC will operate the site remotely.**

AFTER THE HURRICANE- Apex Facility Management will return to the site to conduct a safety assessment of the O&M building, warehouse, substation, and other critical components. When returning to the site, bring additional supplies and cameras to document conditions.

- Survey the site for hazards: Live electrical wires, broken glass and sharp metal, Leaking fuel gases or flammable liquids, damaged building features or contents that could shift or collapse, Paved or hardscape areas undermined by wave action and subject to collapse, Flammable atmosphere in vapor space of flammable storage tanks, etc.
- Verify the status of protection systems. Check water supplies, fire pumps, automatic sprinklers, fire alarms and security systems.
- Manage impairment for protection systems: or Expedite repairs, Post fire watch in area with impaired fire protection, Post security personnel in areas where building or site access is not suitably controlled.
- Survey the damage and initiate repairs immediately: Promptly notify contractors to avoid waiting in line for service.
- Establish repair priorities, including the building envelope, utilities and fire protection systems

AFTER THE HURRICANE HAZARD ASSESSMENT- If the site is deemed safe to return by the Apex Facility Manager, an ALL CLEAR will be issued and communicated to awaiting site personnel. Site personnel may return to the site once an ALL CLEAR is issued.

IV. FORMS

ACCIDENT REPORT

Involved site personnel and witnesses much complete a form ASAP following any accident or near miss. Give completed form to your immediate supervisor.

Republic Wind, LLC *Preliminary* Emergency Action Plan	APEX CLEAN ENERGY

Prepared By:		**Date:**	
Accident Date:		**Accident Location:**	

☐ Injury ☐ Non-Injury ☐ Fatality ☐ Material Damage ☐ Vehicle Damage

If Injury (or fatality), who was injured and what was the nature of the injury?

If vehicle/material damage, what was damaged?

If this form is being prepared by an injured site personnel:

☐ Yes ☐ No I refused medical treatment at this time.

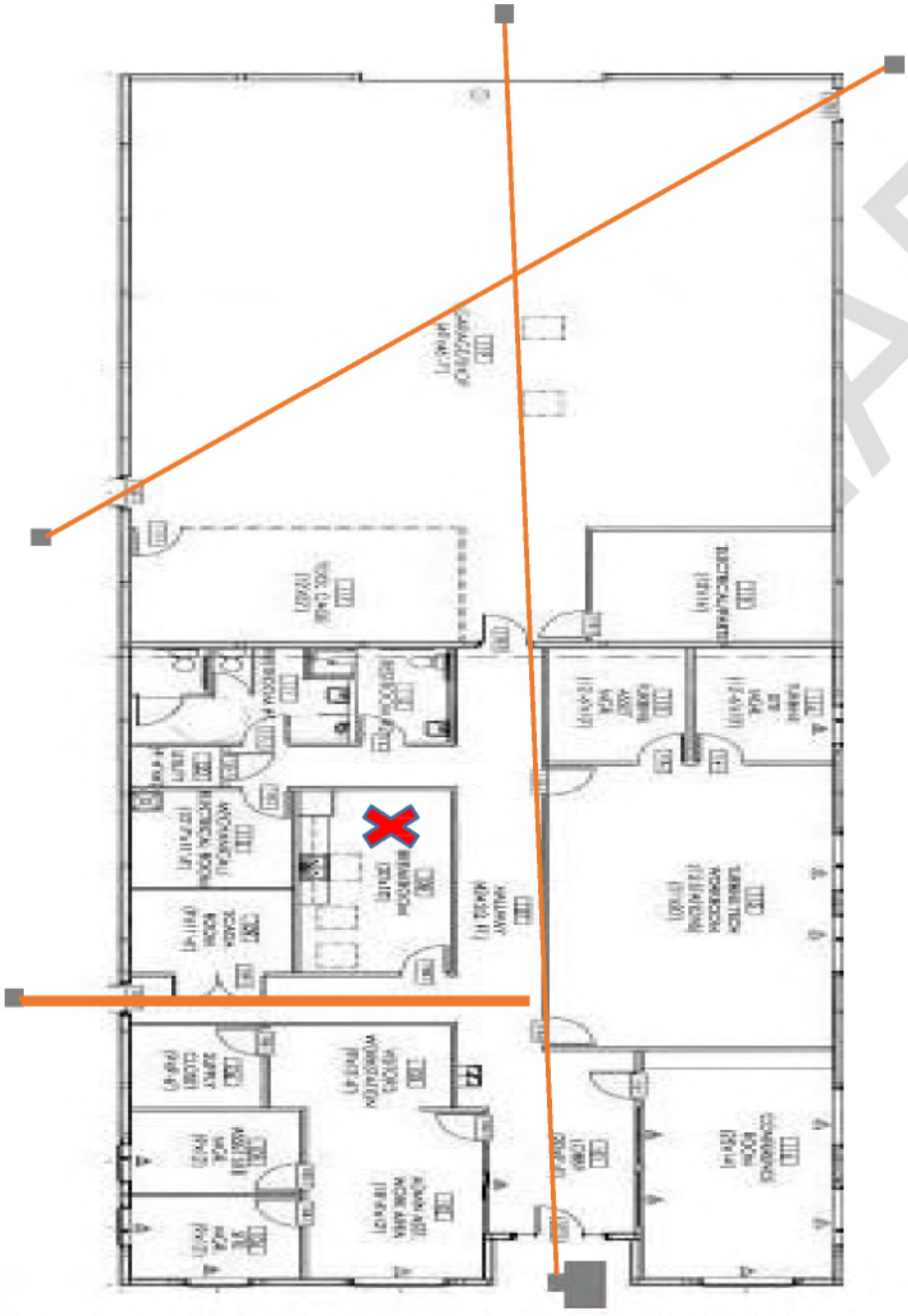
Names of all persons and witness involved	Employer

Brief description of the accident and what you believe was the cause:

Supervisor's Comments / Action Taken:			
Supervisor's Signature:		**Date:**	

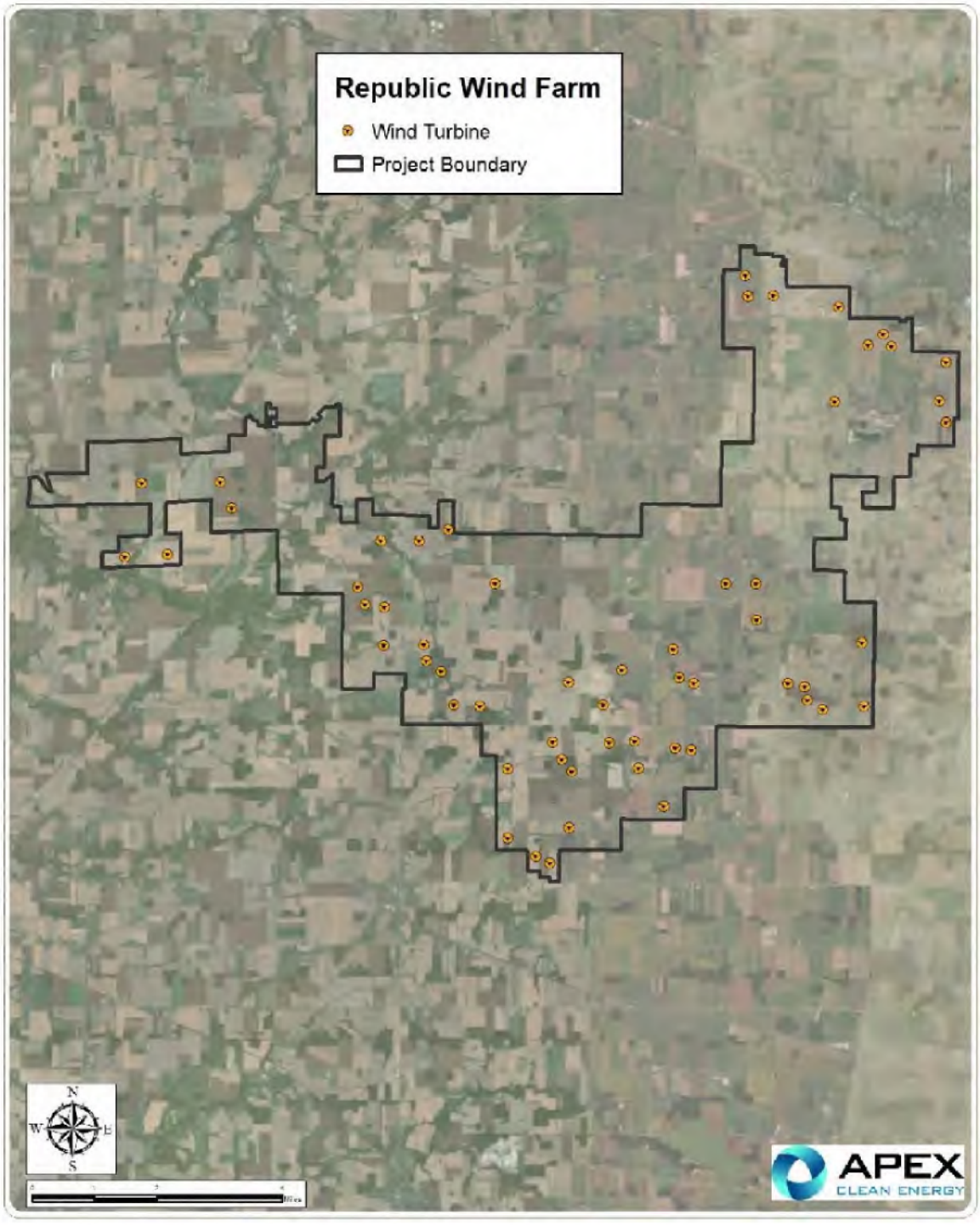
V. MAPS

O & M Building Evacuation Map



NOTES: Representative O&M Building Plan; To Be Updated with Republic O&M in Final EAP.
Exits Marked with Arrows – Muster Point (1) KITCHEN – Muster Point (2) Front Entrance – PARKING LOT

Site Map


Republic Wind Farm
Wind Turbine
Project Boundary
N
W
E
S
APEX
CLEAN ENERGY

Turbine Coordinates

NAME	Lat	Lon	Easting	Northing
A01	41.199379	-83.100573	323867	4563020
A02	41.199977	-83.087620	324955	4563060
A03	41.216287	-83.095699	324321	4564887
A04	41.216841	-83.071501	326351	4564900
A05	41.210777	-83.067886	326638	4564219
B01	41.134723	-82.982706	333587	4555609
B02	41.130708	-82.973941	334312	4555146
B03	41.129062	-82.969675	334666	4554956
B04	41.137257	-82.963849	335176	4555854
C01	41.150848	-82.982684	333629	4557399
C02	41.157082	-82.969139	334782	4558065
C03	41.153102	-82.966182	335020	4557618
C04	41.150242	-82.963021	335278	4557294
C05	41.157005	-82.951727	336243	4558024
C06	41.157335	-82.943907	336900	4558046
C07	41.151132	-82.942575	336996	4557355
C08	41.155913	-82.931480	337939	4557865
C09	41.155368	-82.926556	338351	4557795
C10	41.142396	-82.934886	337620	4556370
D01	41.175867	-83.007862	331581	4560225
D02	41.173280	-83.003380	331950	4559929
D03	41.165650	-82.999485	332257	4559075
D04	41.165330	-82.991410	332934	4559024
D05	41.171004	-82.964346	335219	4559602
D06	41.165883	-82.953539	336113	4559013
D07	41.173846	-82.947837	336611	4559886
D08	41.178768	-82.932125	337941	4560403
D09	41.172290	-82.930223	338085	4559680
D10	41.170870	-82.925868	338446	4559515
D11	41.171017	-82.896915	340876	4559478
D12	41.167112	-82.891104	341354	4559033
D13	41.165046	-82.886373	341746	4558795
D15	41.165737	-82.873539	342824	4558849
D50	41.170271	-82.891897	341295	4559386
E01	41.192769	-83.029100	329843	4562143
E02	41.188705	-83.026774	330028	4561687
E03	41.188152	-83.020874	330521	4561614
E04	41.179296	-83.021126	330477	4560632
E05	41.179513	-83.008820	331510	4560632
E06	41.203429	-83.022115	330456	4563313
E07	41.203457	-83.010272	331449	4563293

E08	41.206145	-83.001319	332207	4563574
E09	41.193593	-82.986867	333387	4562153
E10	41.193891	-82.916073	339324	4562052
E11	41.193916	-82.906975	340088	4562038
E12	41.185670	-82.906739	340087	4561122
E15	41.180418	-82.874205	342803	4560480
F01	41.265233	-82.910586	339959	4569963
F02	41.260500	-82.909734	340019	4569436
F03	41.260673	-82.901973	340669	4569441
F04	41.258137	-82.881985	342338	4569123
F05	41.249327	-82.872921	343076	4568128
F06	41.251792	-82.868067	343488	4568393
F07	41.248930	-82.865669	343683	4568071
F08	41.236110	-82.882933	342205	4566679
F09	41.245414	-82.848894	345080	4567650
F10	41.236344	-82.850870	344893	4566647
F11	41.231490	-82.848697	345063	4566104

VI. EMERGENCY ACTION PLAN RECEIPT

PLEASE SIGN BELOW AND RETURN THIS PAGE TO THE PLANT MANAGER.

Apex Clean Energy ("APEX CLEAN ENERGY) recognizes that its site personnel have the right and need to know the procedures to follow in the event of an emergency. With this policy, APEX CLEAN ENERGY intends to ensure the transmission of necessary information to site personnel regarding emergency action.

I have received a copy of the APEX CLEAN ENERGY EMERGENCY ACTION PLAN, and I have reviewed and understand its contents.

_____ _____

Signature of Site personnel Date

_____ _____

Site personnel Name (please print) Employee #

Republic Wind Farm

EXHIBIT Z. Communication Studies

EXHIBIT Z-1

Wind Power GeoPlanner™

Off-Air TV Analysis

Republic

Prepared on Behalf of
Apex Clean Energy, Inc.

December 7, 2018

COMSEARCH
A CommScope Company

Table of Contents

1. Introduction

Off-air television stations broadcast signals from terrestrially-based facilities directly to television receivers. Comsearch identified those off-air stations whose service could potentially be affected by the proposed Republic wind energy project in Seneca and Sandusky Counties, Ohio. Comsearch then examined the coverage of the stations and the communities in the area that could potentially have degraded television reception due to the location of the proposed wind turbines.

2. Summary of Results

The proposed wind energy project area and local communities are depicted in Figure 1, below.

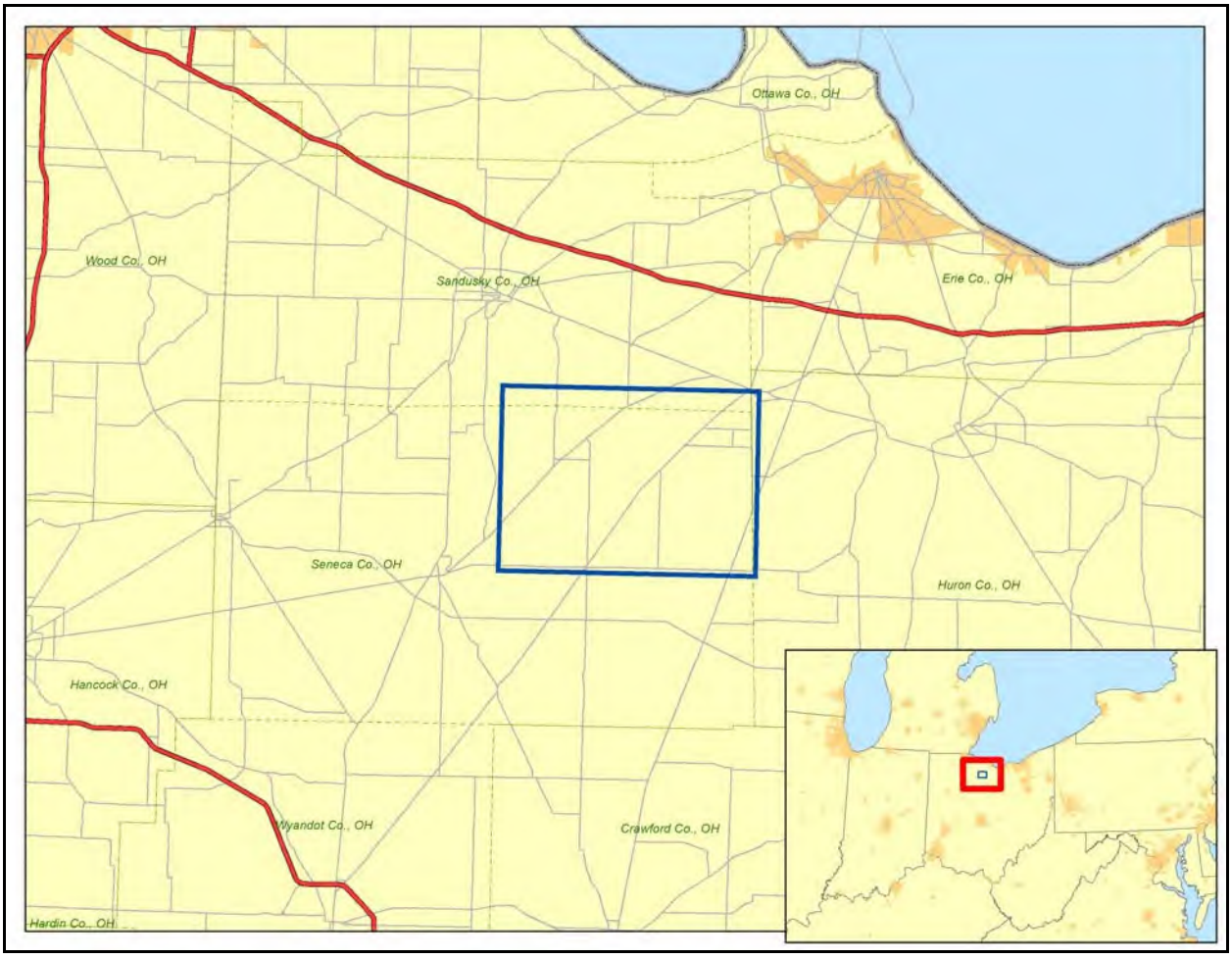


Figure 1: Wind Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all off-air television stations[1] within 150 kilometers of the project area of interest (AOI). TV stations at a distance of 150 kilometers or less are the most likely to provide off-air coverage to the project area and neighboring communities. These stations are listed in Tables 1 and 2, below, and a plot depicting their locations is provided in Figure 2. There are a total of 217 database records for stations within approximately 150 kilometers of the limits of the project AOI (204 in the United States and 13 in Canada). Of these stations, only 105 are currently licensed and operating, 41 of which are low-power stations or translators. Translator stations are low-power stations that receive signals from distant broadcasters and retransmit the signal to a local audience. These stations serve local audiences and have limited range, which is a function of their transmit power and the height of their transmit antenna.

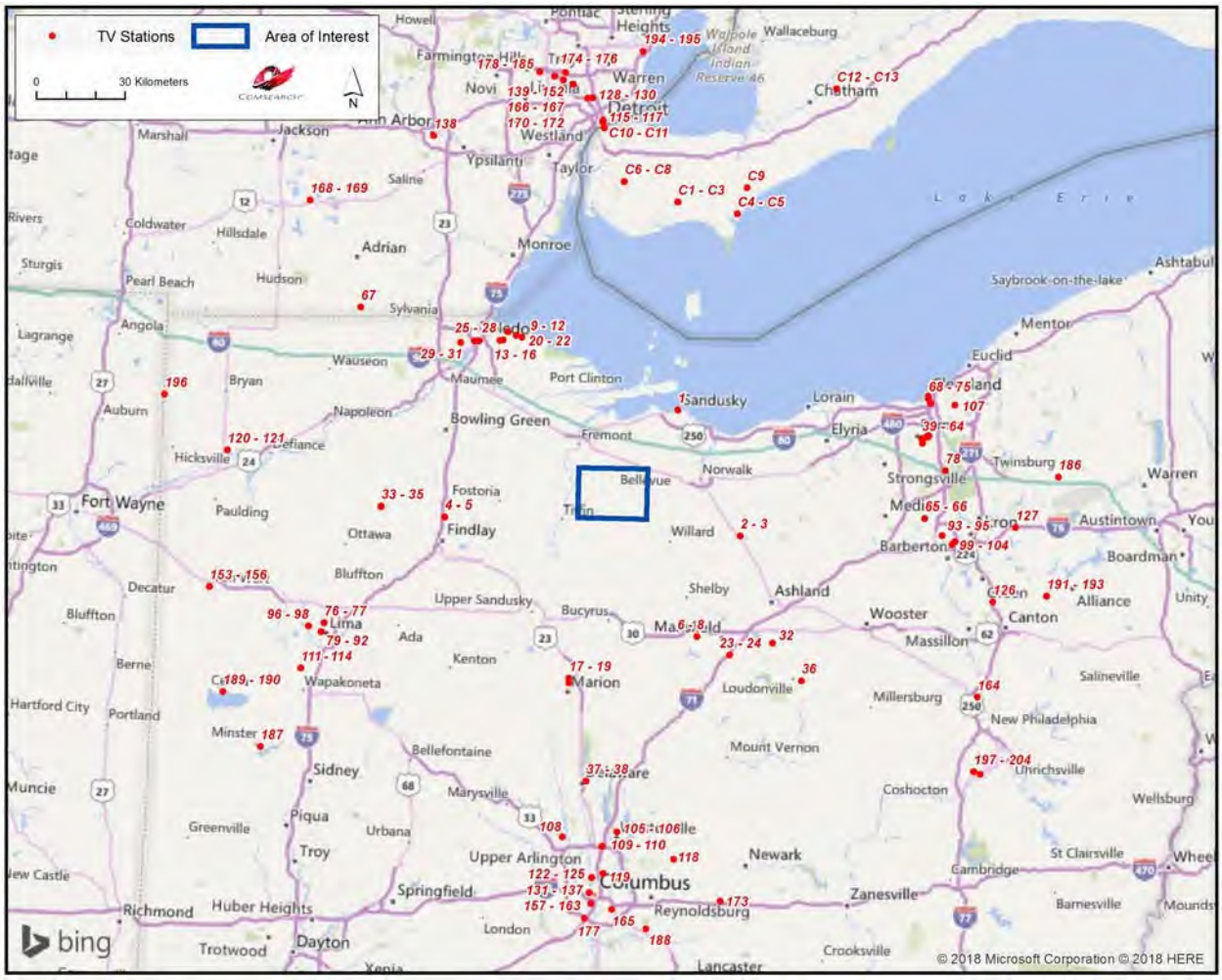


Figure 2: Plot of Off-Air TV Stations within 150 Kilometers of Project Area

[1] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the TV station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
1	W41AP	LIC	TX	41	10.0	41.455306	-82.713500	25.66
2	WGGN-TV	CP	DT	3	10.0	41.075083	-82.451111	37.80
3	WGGN-TV	LIC	DT	42	450.0	41.075083	-82.451111	37.80
4	WFND-LD	LIC	LD	19	15.0	41.111417	-83.647972	49.90
5	WFND-LD	LIC	LD	22	15.0	41.111111	-83.648333	49.94
6	WMFD-TV	LIC	DT	12	14.0	40.763889	-82.617778	50.16
7	WOHZ-CD	CP	DC	20	9.2	40.763889	-82.617778	50.16
8	WOHZ-CD	LIC	DC	41	15.0	40.763889	-82.617778	50.16
9	WNWO-TV	CP MOD	DT	23	275.0	41.667500	-83.356111	55.33
10	WNWO-TV	LIC	DT	49	105.0	41.667500	-83.356111	55.33
11	WTOL	LIC	DT	11	16.9	41.672778	-83.379722	56.73
12	WTOL	APP	DT	11	26.0	41.672778	-83.379722	56.73
13	WGTE-TV	LIC	DT	29	49.5	41.657222	-83.431944	57.39
14	WUPW	CP MOD	DT	26	65.0	41.656111	-83.444722	57.85
15	WUPW	LIC	DT	46	110.0	41.656111	-83.444722	57.85
16	WUPW	CP	DT	46	200.0	41.656111	-83.444722	57.85
17	WCBZ-CD	LIC	DC	28	7.5	40.627556	-83.129889	58.29
18	WXCB-CD	CP MOD	DC	25	15.0	40.612778	-83.130000	59.88
19	WXCB-CD	LIC	DC	45	15.0	40.612778	-83.130000	59.88
20	WTVG	LIC	DT	13	16.7	41.683333	-83.413611	59.10
21	WTVG	APP	DT	13	20.1	41.683333	-83.413611	59.10
22	WNWO-TV	CP	DT	23	120.0	41.683333	-83.413611	59.10
23	W43CZ-D	CP	LD	18	15.0	40.709222	-82.486278	61.02
24	W43CZ-D	LIC	LD	43	11.0	40.709222	-82.486278	61.02
25	WMNT-CD	CP MOD	DC	36	15.0	41.653361	-83.530611	61.80
26	WMNT-CD	LIC	DC	48	15.0	41.653639	-83.530194	61.80
27	WDTJ-LD	LIC	LD	18	4.0	41.653361	-83.547972	62.72
28	WDTJ-LP	LIC	TX	68	6.6	41.653361	-83.547972	62.72
29	WDMY-LP	APP	TX	6	2.9	41.646861	-83.604917	65.33
30	WDMY-LP	CP	LD	23	8.0	41.646861	-83.604917	65.33
31	WDMY-LP	LIC	TX	38	8.2	41.646861	-83.604917	65.33

[2] Definitions of service and status codes:
DT – Digital television broadcast station
DX – Digital auxiliary (backup) facility
TX – Translator station
LD – Low power digital television broadcast station
DC – Class A digital television broadcast station
LIC – Licensed and operational station
CP – Construction permit granted
CP MOD – Modification of construction permit
APP – Application for construction permit, not yet operational

[3] ERP = Transmit Effective Radiated Power

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
32	W33BW	LIC	TX	33	30.0	40.747278	-82.314889	67.07
33	WBGU-TV	CP	DT	22	137.0	41.136667	-83.906667	70.80
34	WBGU-TV	LIC	DT	27	153.0	41.136667	-83.906667	70.80
35	WPNM-LP	CP	LD	27	15.0	41.136667	-83.906667	70.80
36	WIVX-LD	LIC	LD	51	1.1	40.633056	-82.196111	83.14
37	WOCB-CD	CP	DC	22	15.0	40.313056	-83.051111	91.80
38	WOCB-CD	LIC	DC	39	2.4	40.313056	-83.051111	91.80
39	WOIO	APP	DT	10	20.0	41.379167	-81.719722	95.45
40	WUAB	LIC	DT	28	200.0	41.379167	-81.719722	95.45
41	WJW	LIC	DT	8	11.0	41.363333	-81.715833	95.53
42	WJW	CP	DX	31	139.0	41.363333	-81.715833	95.53
43	WRAP-LP	CP MOD	DC	32	15.0	41.363333	-81.715833	95.53
44	WEWS-TV	LIC	DT	15	1000.0	41.373889	-81.717500	95.55
45	WEWS-TV	LIC	DX	15	850.9	41.373917	-81.717333	95.56
46	WLFM-LP	LIC	TX	6	3.0	41.382778	-81.701667	97.00
47	WLFM-LP	CP	LD	6	3.0	41.382778	-81.701667	97.00
48	WLFM-LP	APP	LD	20	15.0	41.382778	-81.701667	97.00
49	WRAP-LP	CP MOD	LD	32	15.0	41.382778	-81.701667	97.00
50	WQHS-DT	LIC	DT	34	525.0	41.382778	-81.701667	97.00
51	WQHS-DT	CP MOD	DT	36	780.0	41.382778	-81.701667	97.00
52	WQHS-DT	APP	DT	36	780.0	41.382778	-81.701667	97.00
53	WCDN-LD	LIC	LD	7	0.3	41.383889	-81.695278	97.55
54	W16DO-D	LIC	DC	16	10.0	41.383889	-81.695278	97.55
55	WBNX-TV	CP	DT	17	505.0	41.383889	-81.695278	97.55
56	W16DO-D	CP MOD	DC	27	15.0	41.383889	-81.695278	97.55
57	WBNX-TV	LIC	DT	30	1000.0	41.383889	-81.695278	97.55
58	WUAB	CP	DT	10	9.5	41.387500	-81.695000	97.63
59	WOIO	CP	DT	10	9.5	41.387500	-81.695000	97.63
60	WKYC	LIC	DT	17	868.0	41.386083	-81.689083	98.10
61	WKYC	LIC	DX	17	930.0	41.386083	-81.689083	98.10
62	WKYC	CP MOD	DT	19	1000.0	41.386083	-81.689083	98.10
63	WVIZ	LIC	DT	26	150.0	41.386083	-81.689083	98.10
64	WVIZ	CP MOD	DT	35	280.0	41.386083	-81.689083	98.10
65	WUEK-LD	LIC	LD	25	6.0	41.134806	-81.705750	96.47
66	KONV-LD	LIC	LD	43	1.0	41.134806	-81.705750	96.47
67	WLMB	LIC	DT	5	10.0	41.744722	-84.018333	98.48
68	WRAP-LP	CP	LD	32	15.0	41.501139	-81.694278	100.41
69	WRAP-LP	LIC	TX	32	6.37	41.508361	-81.694000	100.65
70	WQDI-LD	LIC	LD	21	0.25	41.487000	-81.683639	100.84
71	WQDI-LD	CP	LD	21	5.0	41.487000	-81.683639	100.84
72	KONV-LD	CP	LD	23	4.0	41.487000	-81.683639	100.84
73	WUEK-LD	CP	LD	25	0.5	41.487000	-81.683639	100.84

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
74	WUEK-LD	APP	LD	25	7.0	41.487000	-81.683639	100.84
75	WEKA-LD	LIC	LD	27	5.0	41.487000	-81.683639	100.84
76	WLIO	CP	DT	8	40.0	40.775444	-84.120611	100.91
77	WOHL-CD	CP	DC	15	11.5	40.775444	-84.120611	100.91
78	WEKA-LD	CP	LD	26	5.0	41.280556	-81.622500	102.60
79	WLIO	LIC	DT	8	27.5	40.747556	-84.131750	103.26
80	WLIO	CP	DT	8	16.5	40.747556	-84.131750	103.26
81	WLIO	CP	DT	8	14.8	40.747556	-84.131750	103.26
82	WPNM-LP	CP	TX	25	7.5	40.747556	-84.131750	103.26
83	WPNM-LP	CP	TX	25	7.5	40.747556	-84.131750	103.26
84	WPNM-LP	CP	TX	25	7.5	40.747556	-84.131750	103.26
85	WPNM-LP	CP	TX	25	7.5	40.747556	-84.131750	103.26
86	WOHL-CD	LIC	DC	35	9.0	40.747556	-84.131750	103.26
87	WAMS-LP	CP	TX	38	5.3	40.747556	-84.131750	103.26
88	WAMS-LP	CP	TX	38	5.3	40.747556	-84.131750	103.26
89	WAMS-LP	CP	TX	38	5.3	40.747556	-84.131750	103.26
90	WAMS-LP	CP	TX	38	5.3	40.747556	-84.131750	103.26
91	WPNM-LP	CP	LD	45	15.0	40.747556	-84.131750	103.26
92	WAMS-LP	CP	LD	47	15.0	40.747556	-84.131750	103.26
93	WEAO	CP MOD	DT	24	191.0	41.082778	-81.633611	103.37
94	WEAO	LIC	DT	50	250.0	41.082778	-81.633611	103.37
95	WRLM	CP	DT	50	250.0	41.082778	-81.633611	103.37
96	WTLW	CP MOD	DT	4	10.0	40.763056	-84.183056	106.20
97	WOIW-LD	CP	LD	17	15.0	40.763056	-84.183056	106.20
98	WTLW	LIC	DT	44	165.0	40.763056	-84.183056	106.20
99	WVPX-TV	CP	DT	22	950.0	41.055556	-81.593611	107.26
100	WDLI-TV	LIC	DT	49	900.0	41.055556	-81.593611	107.26
101	WAKN-LP	LIC	TX	11	1.5	41.064639	-81.582861	107.94
102	WVPX-TV	LIC	DT	23	1000.0	41.064639	-81.582861	107.94
103	WDLI-TV	CP	DT	23	1000.0	41.064639	-81.582861	107.94
104	WOIO	LIC	LD	24	11.0	41.064639	-81.582861	107.94
105	WOSU-TV	CP MOD	DT	16	1000.0	40.159167	-82.923056	108.64
106	WOSU-TV	LIC	DT	38	503.0	40.159167	-82.923056	108.64
107	WRAP-LP	LIC	TX	32	0.07	41.482528	-81.585667	108.65
108	-	CP	TX	3	0.03	40.140556	-83.141111	111.67
109	WCBZ-CD	CP MOD	DC	18	15.0	40.114944	-82.982028	113.51
110	WCBZ-CD	LIC	DC	28	15.0	40.114944	-82.982028	113.51
111	WPNM-LP	LIC	TX	18	7.7	40.634194	-84.208000	115.42
112	WOIW-LD	LIC	LD	23	3.0	40.634194	-84.208000	115.42
113	WAMS-LP	LIC	TX	38	15.0	40.634194	-84.208000	115.42
114	WOIW-LD	CP	LD	43	7.85	40.634194	-84.208000	115.42
115	WLPC-CD	CP MOD	DC	28	4.0	42.331944	-83.045000	118.98

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
116	WLPC-CD	LIC	DC	40	2.34	42.331944	-83.045000	118.98
117	-	CP	LD	4	0.005	42.340278	-83.045278	119.91
118	WSFJ-TV	LIC	DT	24	1000.0	40.079000	-82.694861	119.67
119	WGCT-CD	LIC	DC	8	0.19	40.031111	-82.974889	122.81
120	WNHO-LP	LIC	TX	26	7.5	41.291389	-84.537500	123.32
121	WNHO-LP	CP	LD	35	15.0	41.291389	-84.537500	123.32
122	WCPX-LP	CP	LD	25	9.5	40.017222	-83.019722	124.44
123	WCSN-LD	CP	LD	26	15.0	40.017222	-83.019722	124.44
124	WCSN-LD	LIC	LD	33	15.0	40.017222	-83.019722	124.44
125	WCPX-LP	LIC	TX	48	150.0	40.017222	-83.019722	124.44
126	WIVX-LD	LIC	LD	13	2.5	40.880611	-81.427889	125.85
127	WRLM	LIC	DT	47	1000.0	41.109306	-81.336083	127.62
128	WHPS-CD	CP	DC	15	2.66	42.408083	-83.091583	127.81
129	WHPS-CD	LIC	DC	33	4.0	42.408083	-83.091583	127.81
130	WHPS-CD	CP MOD	DC	15	15.0	42.406111	-83.112222	127.81
131	WCMH-TV	LIC	DT	14	902.0	39.971111	-83.027778	129.58
132	WDEM-CD	LIC	DC	17	1.05	39.971111	-83.027778	129.58
133	W44DC-D	CP	LD	17	15.0	39.971111	-83.027778	129.58
134	WCLL-CD	LIC	DC	19	15.0	39.971111	-83.027778	129.58
135	WSFJ-TV	CP	DT	19	15.0	39.971111	-83.027778	129.58
136	WBNS-TV	LIC	DT	21	1000.0	39.971111	-83.027778	129.58
137	W44DC-D	LIC	LD	44	15.0	39.971111	-83.027778	129.58
138	WFHD-LP	LIC	TX	27	1.5	42.278056	-83.742222	130.32
139	WHNE-LD	APP	LD	3	3.0	42.447917	-83.173083	133.16
140	WUDT-LD	CP	LD	8	3.0	42.447917	-83.173083	133.16
141	WUDL-LD	LIC	LD	19	11.6	42.447917	-83.173083	133.16
142	WHNE-LD	LIC	LD	20	15.0	42.447917	-83.173083	133.16
143	WTVS	CP	DT	20	345.0	42.447917	-83.173083	133.16
144	WWJ-TV	CP	DT	21	380.0	42.447917	-83.173083	133.16
145	WUDT-LD	LIC	LD	23	15.0	42.447917	-83.173083	133.16
146	WMYD	CP MOD	DT	31	935.0	42.447917	-83.173083	133.16
147	WUDL-LD	CP	LD	35	10.0	42.447917	-83.173083	133.16
148	WHNE-LD	CP	LD	20	15.0	42.448056	-83.173056	133.17
149	WMYD	LIC	DT	21	500.0	42.448056	-83.173056	133.17
150	WUDT-LD	CP	LD	23	15.0	42.448056	-83.173056	133.17
151	WTVS	LIC	DT	43	600.0	42.448056	-83.173056	133.17
152	WWJ-TV	LIC	DT	44	425.0	42.448056	-83.173056	133.17
153	W16DM-D	CP	LD	16	0.5	40.872806	-84.588000	133.22
154	W29EL-D	CP	LD	29	0.5	40.872806	-84.588000	133.22
155	W42EP-D	CP	LD	42	0.5	40.872806	-84.588000	133.22
156	W49EM-D	CP	LD	49	0.5	40.872806	-84.588000	133.22
157	W23BZ-D	CP	LD	15	15.0	39.937222	-83.021111	133.32

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
158	WWHO	CP MOD	DT	23	885.0	39.937222	-83.021111	133.32
159	WDEM-CD	CP MOD	DC	24	15.0	39.937222	-83.021111	133.32
160	WTTE	CP MOD	DT	27	1000.0	39.937222	-83.021111	133.32
161	WSYX	CP	DT	28	677.0	39.937222	-83.021111	133.32
162	WTTE	LIC	DT	36	1000.0	39.937222	-83.021111	133.32
163	WSYX	LIC	DT	48	1000.0	39.937222	-83.021111	133.32
164	W27DG-D	LIC	LD	27	2.0	40.587972	-81.487556	134.44
165	W29EG-D	CP	LD	29	1.39	39.921667	-82.937778	134.97
166	WJBK	LIC	DX	7	15.0	42.460556	-83.213889	135.14
167	WJBK	LIC	DT	7	27.2	42.460556	-83.213889	135.14
168	-	CP	LD	26	0.1	42.066944	-84.240833	135.67
169	-	CP	LD	26	0.1	42.066944	-84.240833	135.67
170	WXYZ-TV	CP MOD	DT	25	765.0	42.470556	-83.250278	136.83
171	WXYZ-TV	LIC	DT	41	1000.0	42.470556	-83.250278	136.83
172	WXYZ-TV	LIC	DX	41	670.0	42.470556	-83.250278	136.83
173	W29EG-D	LIC	LD	29	15.0	39.952278	-82.506806	137.13
174	WDIV-TV	CP	DT	32	720.0	42.482778	-83.205278	137.43
175	WDIV-TV	LIC	DT	45	872.0	42.482778	-83.205278	137.43
176	WDIV-TV	LIC	DX	45	973.0	42.482778	-83.205278	137.43
177	W23BZ-D	LIC	LD	23	15.0	39.891944	-83.045556	138.43
178	WKBD-TV	LIC	DT	14	180.0	42.483611	-83.312222	139.40
179	WKBD-TV	CP	DT	14	385.0	42.483611	-83.312222	139.40
180	WDWO-CD	LIC	DC	18	14.0	42.483611	-83.312222	139.40
181	WDWO-CD	CP	DC	22	15.0	42.483611	-83.312222	139.40
182	WPXD-TV	CP MOD	DT	24	370.0	42.483611	-83.312222	139.40
183	WKBD-TV	CP MOD	DT	34	285.0	42.483611	-83.312222	139.40
184	WPXD-TV	LIC	DT	50	345.0	42.483611	-83.312222	139.40
185	WPXD-TV	LIC	DX	50	49.5	42.483611	-83.312222	139.40
186	WRAP-LP	APP	LD	32	15.0	41.262806	-81.163417	141.03
187	WAMS-LP	CP	LD	29	15.0	40.388667	-84.357333	142.03
188	WGCT-CD	CP	DC	8	1.45	39.863333	-82.799167	142.12
189	W32DS-D	CP	LD	25	6.8	40.552917	-84.517250	142.34
190	W32DS-D	LIC	LD	32	6.8	40.552917	-84.517250	142.34
191	WIVM-LD	LIC	LD	11	2.5	40.898611	-81.210000	142.83
192	W27DG-D	LIC	LD	27	2.0	40.898611	-81.210000	142.83
193	WIVM-LD	LIC	LD	39	15.0	40.898611	-81.210000	142.83
194	WADL	CP	DT	27	605.0	42.554167	-82.887500	143.12
195	WADL	LIC	DT	39	1000.0	42.554167	-82.887500	143.12
196	WINM	LIC	DT	12	16.5	41.454167	-84.802778	147.45
197	WIVN-LD	CP	LD	5	3.0	40.358833	-81.500417	147.58
198	WIVD-LD	APP	LD	14	15.0	40.358833	-81.500417	147.58
199	WIVD-LD	LIC	LD	22	6.0	40.358833	-81.500417	147.58

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
200	WIVN-LD	LIC	LD	29	7.4	40.358833	-81.500417	147.58
201	WIVN-LD	CP	LD	29	15.0	40.358833	-81.500417	147.58
202	W32ED-D	CP MOD	LD	32	15.0	40.352194	-81.474056	149.81
203	W32ED-D	CP MOD	LD	32	6.0	40.352194	-81.474056	149.81
204	W48DY-D	CP MOD	LD	48	10.0	40.352194	-81.474056	149.81

Table 1: Off-Air TV Stations within 150 Kilometers of Project Area (United States)

ID	Call Sign	Status	Class[4]	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
C1	CFTV-DT	AU	LP	30	0.584	42.093889	-82.730000	93.16
C2	CFTV-DT	AU	LP	34	0.584	42.093889	-82.730000	93.16
C3	CFTV-DT	TO	LP	34	0.545	42.094444	-82.729722	93.22
C4	CIII-DT-22	AU	R	33	36.0	42.061389	-82.484722	95.11
C5	CIII-DT-22	OP	R	22	49.0	42.061389	-82.484722	95.11
C6	CICO-DT-32	OP	R	32	19.0	42.153333	-82.953056	98.66
C7	CBET-DT	OP	R	9	26.0	42.153333	-82.953056	98.66
C8	CICO-DT-32	AU	R	19	14.2	42.153333	-82.953056	98.66
C9	CHWI-DT	OP	R	16	3.4	42.141667	-82.446667	104.56
C10	CHWI-DT-60	OP	R	26	0.2	42.316111	-83.040000	117.19
C11	CHWI-DT-60	AU	R	17	0.161	42.316111	-83.040000	117.19
C12	CICO-DT-59	AU	R	28	2.25	42.449444	-82.083611	147.81
C13	CICO-DT-59	OP	R	33	2.5	42.449444	-82.083611	147.81

Table 2: Off-Air TV Stations within 150 Kilometers of Project Area (Canada)

[4] Definitions of class and status codes:
R – Regular VHF Television Broadcast Station
LP – Low-power Television Broadcast Station
OP – Licensed and operational station
TO – Temporary operation
AU – Authorized; not yet operational

3. Impact Assessment

Based on a contour analysis of the licensed stations within 150 kilometers of the Republic wind energy project, it was determined that thirteen of the full-power digital stations, identified below in Tables 3 and 4, along with Class A digital station WOHZ-CD, may have their reception disrupted in and around the project. The areas primarily affected would include TV service locations within 10 kilometers of the wind energy project that have clear line-of-sight (LOS) to a proposed wind turbine but not to the respective station. After the wind turbines are installed, communities and homes in these locations may have degraded reception of these stations. This is due to multipath interference caused by signal scattering as TV signals are reflected by the rotating wind turbine blades and mast.

ID	Call Sign	Status	Service[5]	Channel	Transmit ERP[6] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
3	WGGN-TV	LIC	DT	42	450.0	41.075083	-82.451111	37.80
6	WMFD-TV	LIC	DT	12	14.0	40.763889	-82.617778	50.16
8	WOHZ-CD	LIC	DC	41	15.0	40.763889	-82.617778	50.16
10	WNWO-TV	LIC	DT	49	105.0	41.667500	-83.356111	55.33
11	WTOL	LIC	DT	11	16.9	41.672778	-83.379722	56.73
13	WGTE-TV	LIC	DT	29	49.5	41.657222	-83.431944	57.39
15	WUPW	LIC	DT	46	110.0	41.656111	-83.444722	57.85
20	WTVG	LIC	DT	13	16.7	41.683333	-83.413611	59.10
34	WBGU-TV	LIC	DT	27	153.0	41.136667	-83.906667	70.80
41	WJW	LIC	DT	8	11.0	41.363333	-81.715833	95.53
44	WEWS-TV	LIC	DT	15	1000.0	41.373889	-81.717500	95.55
60	WKYC	LIC	DT	17	868.0	41.386083	-81.689083	98.10

Table 3: Licensed Off-Air TV Stations Subject to Degradation (United States)

ID	Call Sign	Status	Class[7]	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine (km)
C6	CICO-DT-32	OP	R	32	19.0	42.153333	-82.953056	98.66
C7	CBET-DT	OP	R	9	26.0	42.153333	-82.953056	98.66

Table 4: Licensed Off-Air TV Stations Subject to Degradation (Canada)

[5] Definitions of service and status codes:
DT – Digital television broadcast station
DC – Class A digital television broadcast station
LIC – Licensed and operational station

[6] ERP = Transmit Effective Radiated Power

[7] Definitions of class and status codes:
R – Regular VHF Television Broadcast Station
OP – Licensed and operational station

4. Recommendations

While TV signals are reflected by wind turbines, which can cause multipath interference to the TV receiver, modern digital TV receivers have undergone significant improvements to mitigate the effects of signal scattering. When used in combination with a directional antenna, it becomes even less likely that signal scattering from wind farms will cause interference to digital TV reception.

Nevertheless, signal scattering could still impact certain areas currently served by the TV station mentioned above, especially those that would have line-of-sight to at least one wind turbine but not to the station antenna. In the unlikely event that interference is observed in any of the TV service areas, it is recommended that a high-gain directional antenna be used, preferably outdoors, and oriented towards the signal origin in order to mitigate the interference.
Both cable service and direct broadcast satellite service will be unaffected by the presence of the wind turbine facility and may be offered to those residents who can show that their off-air TV reception has been disrupted by the presence of the wind turbines after they are installed.

5. Contact

For questions or information regarding the Off-Air TV Analysis, please contact:

Contact person:	David Meyer
Title:	Senior Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
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Fax:	703-726-5595
Email:	dmeyer@comsearch.com
Web site:	www.comsearch.com

EXHIBIT Z-2

Wind Power GeoPlanner™

AM and FM Radio Report

Republic

Prepared on Behalf of
Apex Clean Energy, Inc.

December 7, 2018

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Table of Contents

1. Introduction

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the proposed Republic wind energy project in Seneca and Sandusky Counties, Ohio.

2. Summary of Results

AM Radio Analysis

Comsearch found four database records[1] for AM stations within approximately 30 kilometers of the project, as shown in Table 1 and Figure 1. These records represent station WLKR, which broadcasts from Norwalk, Ohio, to the east of the project area; station WTTF, out of Tiffin, Ohio, to the west; and station WLEC, out of Sandusky, Ohio, to the northeast. Station WTTF is licensed separately for daytime and nighttime operations, with a higher transmit power permitted during daytime hours.

ID	Call Sign	Status[2]	Frequency (kHz)	Transmit ERP[3] (kW)	Operation Time	Latitude (NAD 27)	Longitude (NAD 27)	Required Separation Distance[4] (km)	Distance to Nearest Turbine (km)
1	WLKR	LIC	1510	0.5	Daytime	41.279167	-82.656389	1.99	16.30
2	WTTF	LIC	1600	0.5	Daytime	41.125556	-83.231944	1.88	16.69
3	WTTF	LIC	1600	0.019	Nighttime	41.125556	-83.231944	1.88	16.69
4	WLEC	LIC	1450	1.0	Unlimited	41.441111	-82.687222	0.21	25.34

Table 1: AM Radio Stations within 30 Kilometers of Project Area

[1] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the AM/FM station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

[2] LIC = Licensed and operational station; APP = Application for construction permit

[3] ERP = Transmit Effective Radiated Power.

[4] The required separation distance is based on the lesser of 10 wavelengths or 3 kilometers for directional antennas and 1 wavelength for non-directional antennas.

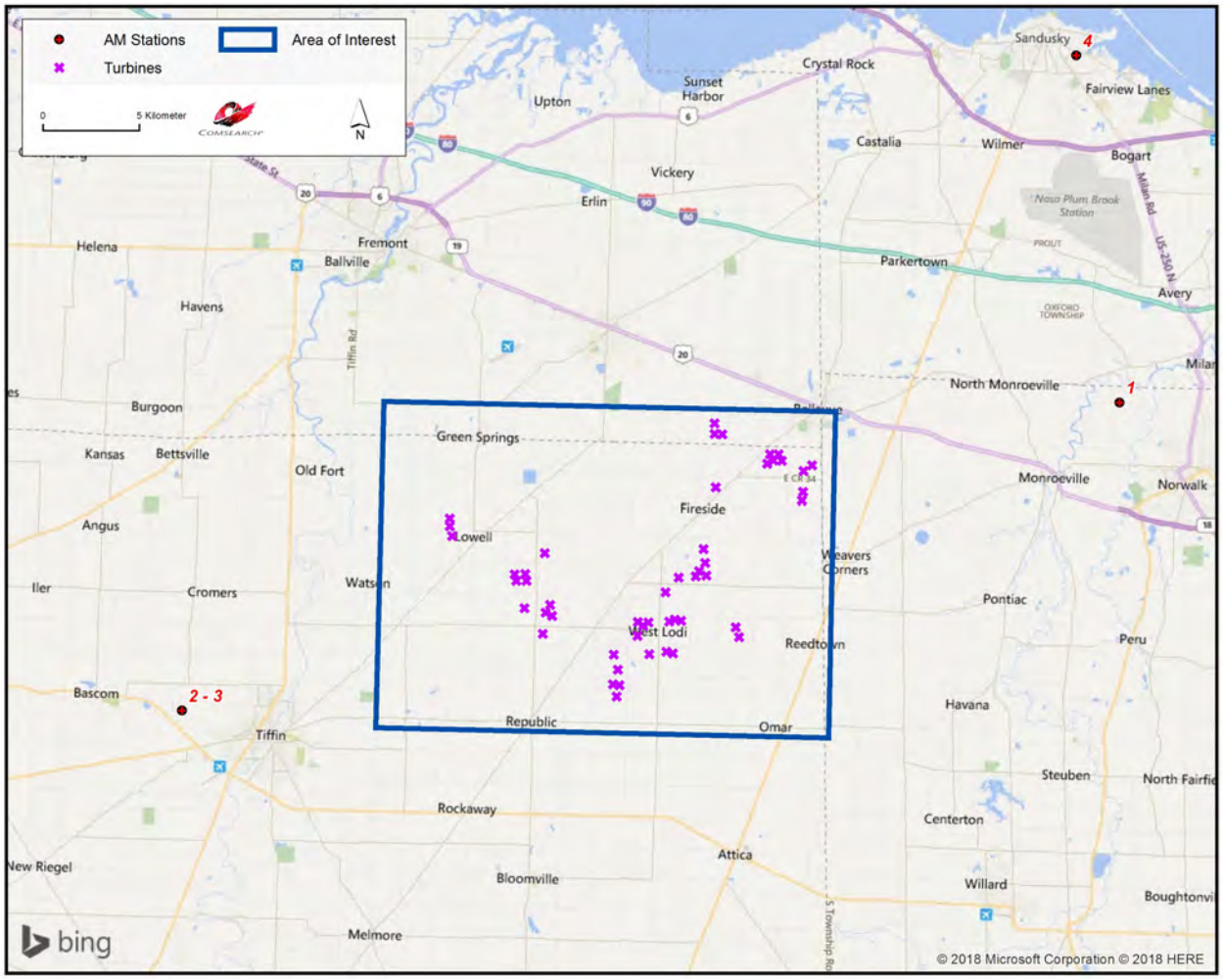

Figure 1: AM Radio Stations within 30 Kilometers of Project Area

FM Radio Analysis

Comsearch determined that there were twenty-six database records for FM stations within 30 kilometers of the Republic wind energy project, as shown in Table 2 and Figure 2. Only twenty-three of these stations are currently licensed and operating, seven of which are low-power or translator stations that broadcast with limited range.

ID	Call Sign	Status[5]	Service[6]	Frequency (MHz)	Transmit ERP[7] (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Nearest Turbine (km)
1	WOHF	LIC	FM	92.1	5.8	41.238611	-82.837778	1.15
2	WMJK	LIC	FM	100.9	3.0	41.249167	-82.913056	1.38
3	WYOR	CP	FM	88.5	20.0	41.248778	-82.912833	1.41
4	WYOR	LIC	FM	88.5	0.1	41.108889	-83.003056	4.55
5	WHVT	LIC	FM	90.5	2.7	41.295833	-82.973889	6.54
6	WHEI	LIC	FM	88.9	0.1	41.116389	-83.167500	13.38
7	W227BJ	LIC	FX	93.3	0.25	41.112944	-83.180611	14.38
8	WSJG-LP	LIC	FL	103.3	0.1	41.108306	-83.175444	14.49
9	WHRQ	LIC	FM	88.1	0.38	41.377167	-82.814528	14.60
10	WLKR-FM	LIC	FM	95.3	3.3	41.280278	-82.657500	16.24
11	W225DG	CP	FX	92.9	0.24	41.280278	-82.657222	16.26
12	W206BX	LIC	FX	89.1	0.055	41.366111	-83.088889	16.49
13	WFRO-FM	LIC	FM	99.1	11.5	41.366111	-83.088889	16.49
14	WCKY-FM	LIC	FM	103.7	50.0	41.138889	-83.245833	16.92
15	WGGN	LIC	FM	97.7	0.64	41.396667	-82.791944	17.24
16	W218BL	LIC	FX	91.5	0.055	41.035278	-82.708889	20.97
17	WVMS	LIC	FM	89.5	5.5	41.441389	-82.805556	21.28
18	WSHB	LIC	FM	90.9	0.45	41.048028	-82.681278	21.82
19	W228EN	CP	FX	93.5	0.25	41.330917	-82.599139	22.70
20	WCPZ	LIC	FM	102.7	50.0	41.330917	-82.599139	22.70
21	WLBJ-LP	LIC	FL	104.1	0.075	41.180500	-83.339750	22.99
22	W202AW	LIC	FX	88.3	0.12	41.399444	-82.651944	23.48
23	WCPZ	LIC	FS	102.7	12.0	41.441111	-82.687222	25.34
24	WXMW	LIC	FM	89.3	0.39	40.914722	-83.125556	28.19
25	WXML	LIC	FM	90.1	15.0	40.914722	-83.125556	28.19
26	W289CP	LIC	FX	105.7	0.25	41.157778	-83.413611	29.56

Table 2: FM Radio Stations within 30 Kilometers of Project Area

[5] LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

[6] FM = FM broadcast station; FX = FM translator station; FL = Low-power FM station; FS = FM auxiliary (backup) station; FB = FM booster station.

[7] ERP = Transmit Effective Radiated Power.

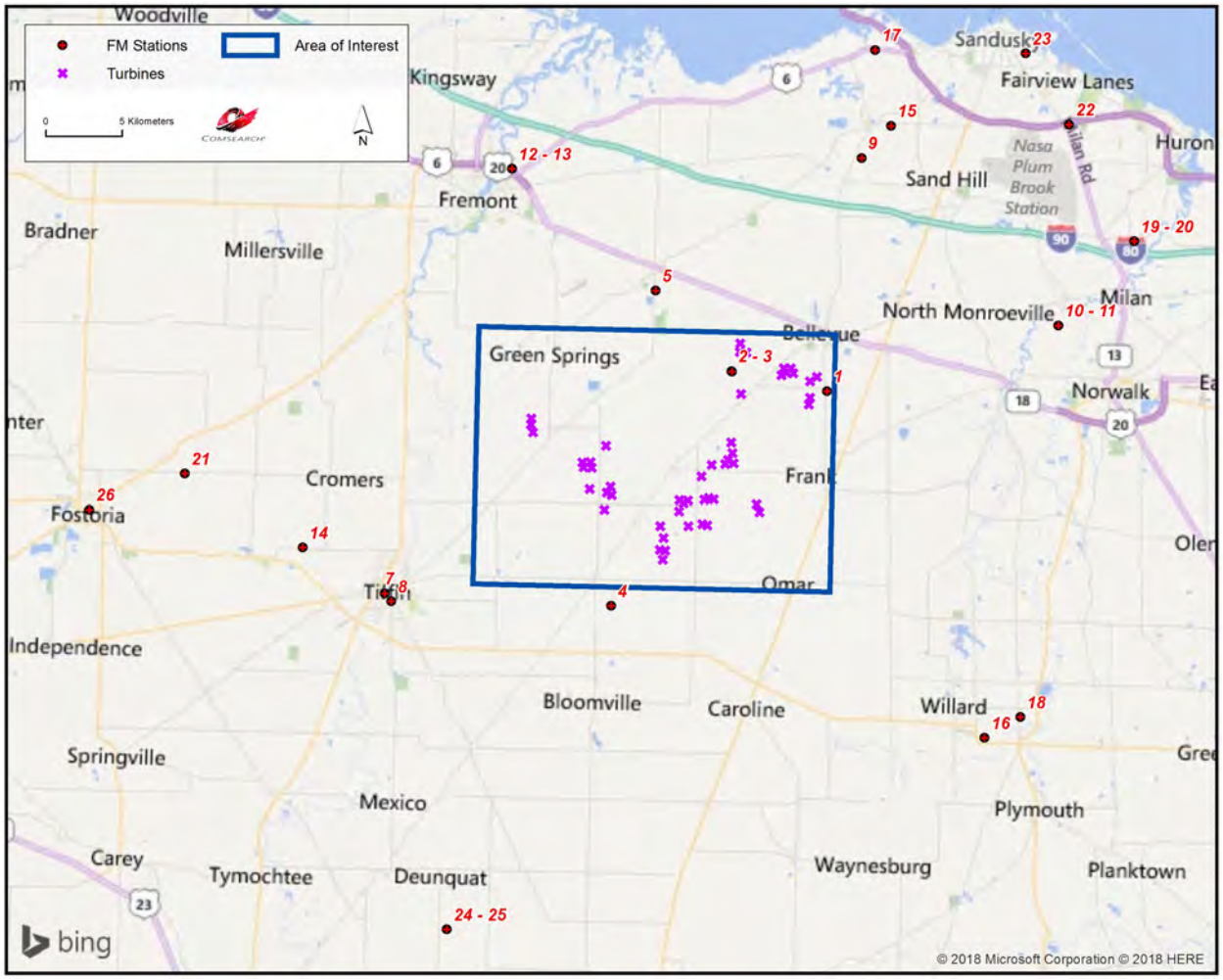

Figure 2: FM Radio Stations within 30 Kilometers of Project Area

3. Impact Assessment

The exclusion distance for AM broadcast stations varies as a function of the antenna type and broadcast frequency. For directional antennas, the exclusion distance is calculated by taking the lesser of 10 wavelengths or 3 kilometers. For non-directional antennas, the exclusion distance is simply equal to 1 wavelength. Potential problems with AM broadcast coverage are only anticipated when AM broadcast stations are located within their respective exclusion distance limit from wind turbine towers. The closest AM station to the Republic wind energy project, WLKR, is approximately than 16.3 kilometers from the nearest turbine location. As there were no stations found within 3 kilometers of the project, which is the maximum possible exclusion distance based on a directional AM antenna broadcasting at 1000 KHz or less, the project should not impact the coverage of local AM stations.

The coverage of FM stations is generally not susceptible to interference caused by wind turbines, especially when large objects, such as wind turbines, are sited in the *far field* region of the radiating FM antenna in order to avoid the risk of distorting the antenna's radiation pattern. The closest operational FM station to the Republic wind energy project, WOHF, is more than 1.1 kilometers from the nearest turbine. At this distance, there should be adequate separation to avoid radiation pattern distortion.

4. Recommendations

Since no impact on the licensed and operational AM or FM broadcast stations was identified in our analysis, no recommendations or mitigation techniques are required for this project.

5. Contact

For questions or information regarding the AM and FM Radio Report, please contact:

Contact person:	David Meyer
Title:	Senior Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5656 (office) / 703-726-5595 (fax)
Email:	dmeyer@comsearch.com
Web site:	www.comsearch.com

EXHIBIT Z-3

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

JAN 29 2018

Mr. Frank O'Brien
COMSEARCH
19700 Janelia Farm Blvd.
Ashburn, VA 20147

Re: Republic Project, Rev. 2: Seneca & Sandusky Counties, OH

Dear Mr. O'Brien:

In response to your request on November 21, 2017, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Republic Wind Farm, Revision 2, located in Seneca and Sandusky Counties, Ohio.

After a 45 day period of review, no agencies had issues with turbine placement in this area.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review these proposals.

Sincerely,

Peter A. Tenhula
Deputy Associate Administrator
Office of Spectrum Management

EXHIBIT Z-4

Wind Power GeoPlanner™

Microwave Study

Republic

Prepared on Behalf of
Apex Clean Energy, Inc.

December 7, 2018

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Table of Contents

1. Introduction

Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. This report focuses on the potential impact of wind turbines on licensed, proposed and applied non-federal government microwave systems.

2. Project Overview

Project Information

Name: Republic

County: Seneca and Sandusky

State: Ohio

Number of Turbines: 50

Blade Diameter: 150 meters

Hub Height: 105 meters

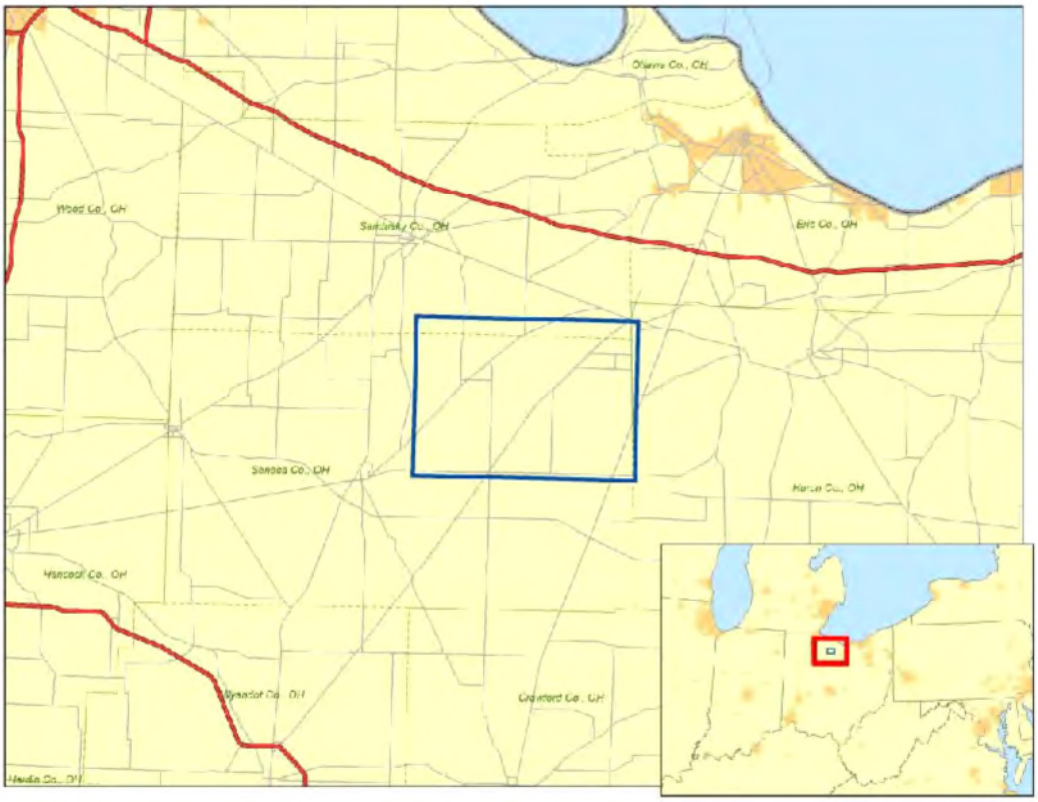


Figure 1: Area of Interest

3. Two-Dimensional Fresnel Zone Analysis

Methodology

Our obstruction analysis was performed using Comsearch's proprietary microwave database, which contains all non-government licensed, proposed and applied paths from 0.9 - 23 GHz[1]. First, we determined all microwave paths that intersect the area of interest[2] and listed them in Table 1. These paths and the area of interest that encompasses the planned turbine locations are shown in Figure 2.

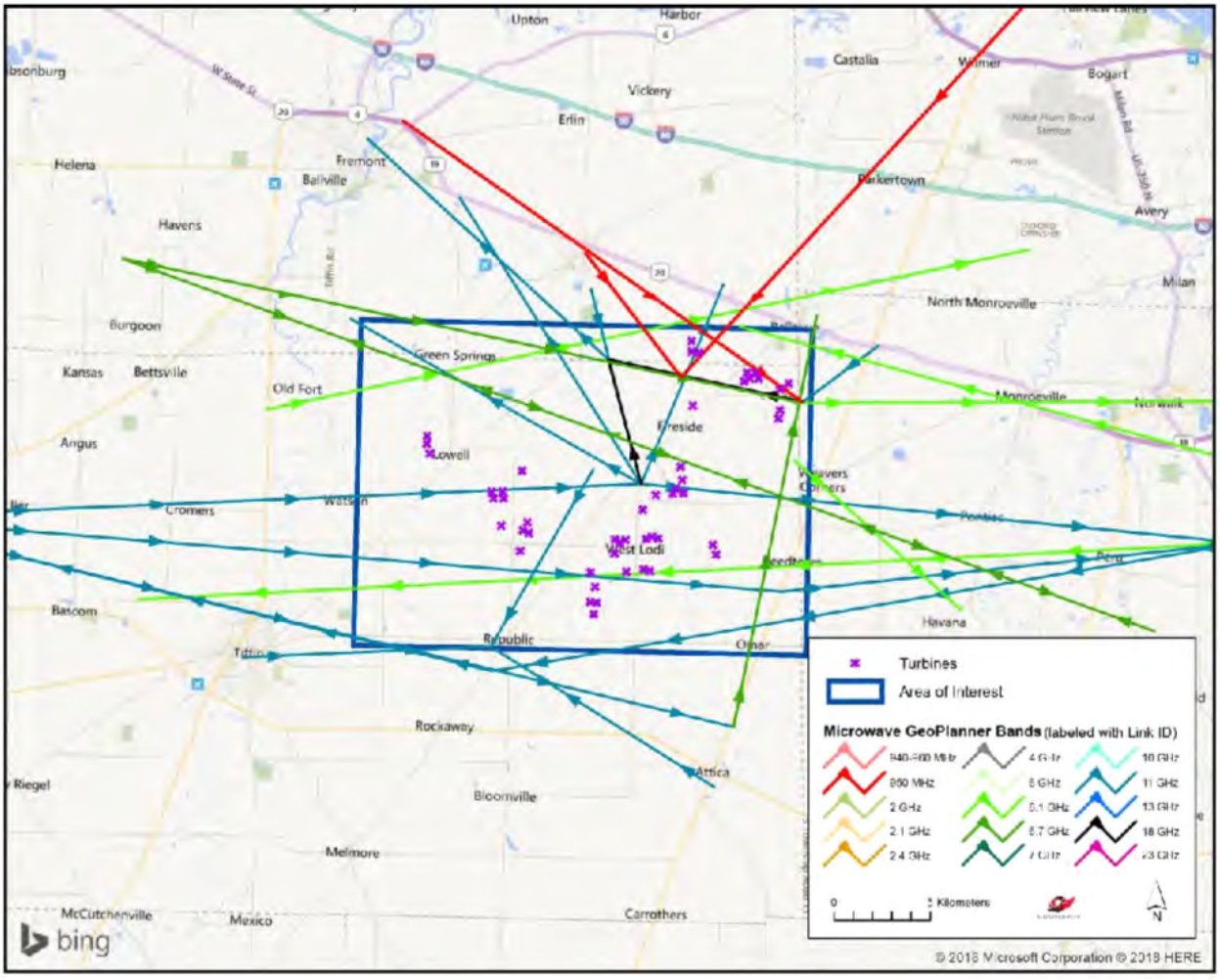


Figure 2: Microwave Paths that Intersect the Area of Interest

[1] Please note that this analysis does not include unlicensed microwave paths or federal government paths that are not registered with the FCC.

[2] We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Proposed	ASR12344	ASR12014	6.1 GHz	57.40	Wireless Internetwork LLC
2	Proposed	REPUBLIC	WQQX871	11 GHz	34.17	Wireless Internetwork LLC
3-6	Licensed	WAA857	WAA858	6.1 GHz	21.79	Norfolk Southern Railway
7	Proposed	WESTLODI	WQQX778	11 GHz	31.36	Wireless Internetwork LLC
8	Licensed	WHS702	RXONLY	950 MHz	8.13	BAS Broadcasting, Inc.
9	Licensed	WPOQ484	RXONLY	950 MHz	28.49	BAS Broadcasting, Inc.
10	Licensed	WPUG349	WPUM945	6.1 GHz	40.50	W.A.T.C.H. TV Company Inc.
11	Licensed	WPZQ250	RXONLY	950 MHz	25.36	BAS Broadcasting, Inc.
12	Licensed	WQKL533	WQKL535	11 GHz	12.92	Bascom Long Distance, Inc.
13	Licensed	WQNK803	WQKL535	11 GHz	13.73	Bascom Long Distance, Inc.
14-16	Licensed	WQPB810	WQPB813	6.1 GHz	36.08	Kryptick Technologies
17-19	Licensed	WQPB813	WQPB814	6.1 GHz	35.01	Kryptick Technologies
20, 21	Licensed	WQPH316	WQPH317	6.7 GHz	56.99	High Voltage Communications LLC (CFN)
22	Licensed	WQPH317	WQPH316	6.7 GHz	56.99	High Voltage Communications LLC (CFN)
23	Proposed	WQQX778	REPUBLIC	11 GHz	39.48	Wireless Internetwork LLC
24	Proposed	WQQX871	WESTLODI	11 GHz	40.97	Wireless Internetwork LLC
25	Licensed	WQQX871	WQQX870	11 GHz	47.04	Wireless Internetwork LLC
26	Licensed	WQQX871	WQXU839	11 GHz	48.42	Wireless Internetwork LLC
27, 28	Licensed	WQTZ737	WQTQ663	6.1 GHz	42.15	World Class Wireless, LLC
29	Licensed	WQVS476	WQKL535	11 GHz	10.61	Bascom Long Distance, Inc.
30	Licensed	WQVW473	WPOQ355	11 GHz	4.96	New Cingular Wireless PCS LLC - Ohio
31, 32	Licensed	WQWF986	WQWF971	6.1 GHz	42.15	AQ2AT LLC
33	Licensed	WQXU839	WQQX778	11 GHz	24.00	Wireless Internetwork LLC
34	Licensed	WQYB310	WQYD931	11 GHz	10.43	Blhc, LLC
35	Licensed	WQYD931	WQUY965	11 GHz	17.56	Blhc, LLC
36	Licensed	WQYD931	WQYC633	11 GHz	11.19	Blhc, LLC
37	Licensed	WQYT575	WQYT658	6.1 GHz	11.66	Verizon Wireless (VAW) LLC - Ohio
38	Licensed	WRBM895	WRBM897	18 GHz	10.31	Amplex Electric, Inc.
39	Licensed	WRBM897	WRBM896	11 GHz	16.98	Amplex Electric, Inc.
40	Licensed	WRBT653	WQXH607	11 GHz	17.32	Sprintcom, Inc
41	Licensed	WRBY379	WRBM897	18 GHz	6.68	Amplex Electric, Inc.

Table 1: Summary of Microwave Paths that Intersect the Area of Interest

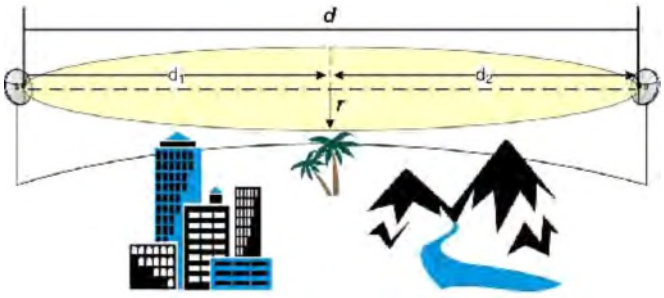
(See enclosed mw_geopl.xlsx for more information and
GP_dict_matrix_description.xls for detailed field descriptions)

Verification of Coordinate Accuracy

It is possible that as-built coordinates may differ from those on the FCC license. For this project, 9 paths cross within close proximity of the proposed turbines and the tower locations for these paths will have a critical impact on the result. Therefore, we verified these locations using aerial photography. Some of the towers were found to be slightly off and were moved to their locations based on the aerial photos[3].

Next, we calculated a Fresnel Zone for each path based on the following formula:

$$r \cong 17.3\sqrt{\frac{n}{F_{GHz}}\left(\frac{d_1 d_2}{d_1 + d_2}\right)}$$



Where,

r	=	Fresnel Zone radius at a specific point in the microwave path, meters
n	=	Fresnel Zone number, 1
F_{GHz}	=	Frequency of microwave system, GHz
d_1	=	Distance from antenna 1 to a specific point in the microwave path, kilometers
d_2	=	Distance from antenna 2 to a specific point in the microwave path, kilometers

In general, this is the area where the planned wind turbines should be avoided, if possible. A depiction of the Fresnel Zones for each microwave path listed can be found in Figures 3 through 8, and is also included in the enclosed shapefiles[4,5].

[3] See enclosed mw_geopl.shp and mw_geopl_fcc.shp for details.

[4] The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 17 projected coordinate system.

[5] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

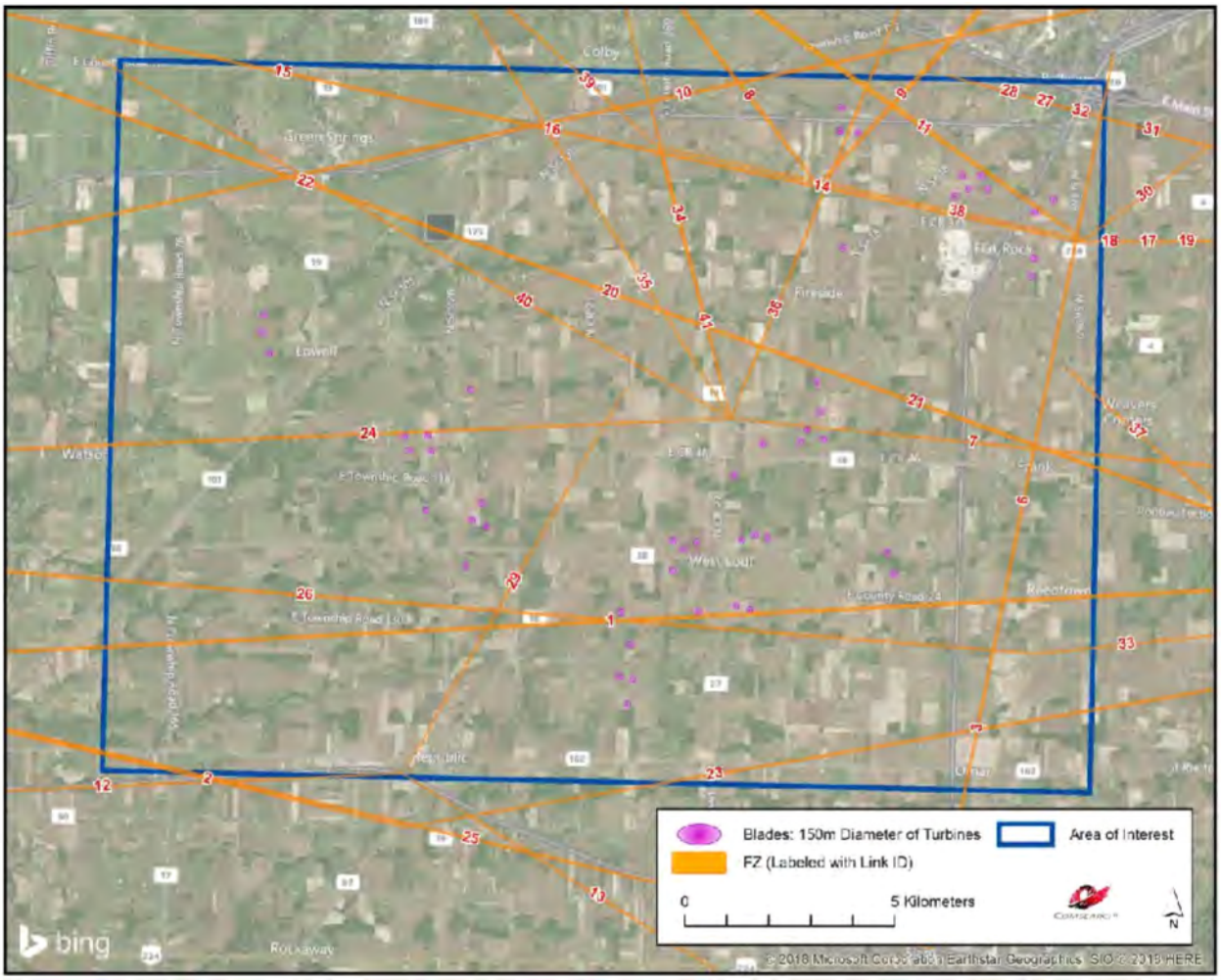


Figure 3: Fresnel Zones in the Area of Interest

Figure 4: Fresnel Zones in the Area of Interest

Figure 5: Fresnel Zones in the Area of Interest

Figure 6: Fresnel Zones in the Area of Interest

Figure 7: Fresnel Zones in the Area of Interest

Figure 8: Fresnel Zones in the Area of Interest

4. Conclusion

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines intersecting the Fresnel Zones
41	0	50	0

Table 2: Fresnel Zone Analysis Result

Our study identified forty-one microwave paths intersecting the Republic Wind Project area of interest. The Fresnel Zones for these microwave paths were calculated and mapped in order to assess the potential impact from the turbines. A total of fifty turbines were considered in the analysis, each with a blade diameter of 150 meters and a hub height of 105 meters. Of those turbines, none were found to have potential obstruction with the microwave systems in the area.

5. Contact

For questions or information regarding the Microwave Study, please contact:

Contact person: David Meyer
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Case No(s). 17-2295-EL-BGN

Summary: Application Exhibits Y & Z electronically filed by Teresa Orahood on behalf of Dylan F. Borchers