

# Appendix V-1

## Cultural Resources Effects Analysis



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## Icebreaker Wind

City of Cleveland, Ohio

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May 2017

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## **1.0 INTRODUCTION**

### **1.1 Purpose of the Investigation**

On behalf of the Lake Erie Energy Development Corporation (LEEDCo), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) prepared this cultural resources effects analysis for the proposed Icebreaker Wind project (the “Facility” or “Project”) located 8 to 10 miles north of Cleveland, Ohio in Lake Erie. The purpose of the cultural resources effects analysis is to evaluate the Project’s potential effect on archaeological and historic resources. The information included in this report is intended to assist the United States Department of Energy (DOE), Ohio Historic Preservation Office (OHPO), and other involved agencies/consulting parties in their review of the Project under Section 106 of the National Historic Preservation Act.

### **1.2 Project Description and Location**

The proposed Project is a wind-powered electric generating facility, consisting of six Vestas 3.45 megawatt (MW) off-shore wind turbines located between 8 and 10 miles off-shore of the City of Cleveland Ohio, in Lake Erie (Figure 1). Along with the turbines, the Project includes associated support facilities including buried/under water electrical collection and transmission cables, an on-shore substation, meteorological tower, and O&M facility. The proposed Project configuration and layout is illustrated in Figure 2.

The proposed turbine array is a straight line, oriented in a southeast-to-northwest direction, with each individual turbine site separated by approximately 2,480 feet (Figure 2). Seven potential turbine sites have been identified, but only six turbines will be installed, presumably excluding the most distant site (identified in figures as the Alternate Turbine site). The proposed turbine sites are located a minimum of 2.3 miles from the nearest navigation channel, and include no existing man-made structures, buoys or navigational aids. The Project also includes a buried cable located within the lake bed between each turbine (inter-array cable) and between the southernmost turbine and the shoreline in the City of Cleveland (export cable).

The Applicant has entered a 50-year submerged land lease (SLL) agreement with the State of Ohio, which commenced on February 1, 2014. The SLL covers the turbine sites, cable right-of-way (ROW), and a substation site adjacent to the Cleveland Public Power (CPP) Lake Road Substation. As per the SLL, the area to be used for construction/operation of the Facility includes 0.4 acre for the substation and 4.2 acres for the six wind turbines. The cable ROW leased area consists of a 100-foot-wide strip along the approximately 12.1-mile cable route (inter-array cables and export cable).

### 1.3 Potential Effect on Cultural Resources

Potential effects on cultural resources include direct effects – which include any physical impacts such as disturbance, destruction, or demolition during construction activities, and indirect effects – such as visual or auditory impacts that would result from the construction or operation of a project in the vicinity of a cultural resource.

**Archaeological Resources:** Proposed construction of the Project will include ground disturbing activities that have the potential to result in direct impacts archaeological resources. Indirect effects are not typically considered in relation to archaeological resources.

**Historic-Architectural Resources:** Construction of the Project will not require the demolition or physical alteration of any buildings or other potential historic resources. No direct physical impacts to historic-architectural resources will occur as a result of the Project. The Project's potential effect on a given historic property would be a change (resulting from the introduction of wind turbines) in the property's visual setting.

The Federal Regulations entitled "Protection of Historic Resources" (36 CFR 800) include in Section 800.5(2) a discussion of potential adverse effects on historic resources. The following types of effects apply to wind energy projects include:

Adverse effects on historic properties include, but are not limited to: [items i-iii do not apply]; (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance; (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features; [items vi-vii do not apply] (CFR, 2004b).

The Project's potential effect on a given historic property would be a change (resulting from the introduction of wind turbines) in the property's visual setting. As it pertains to historic properties, *setting* is defined as "the physical environment of a historic property" and is one of seven aspects of a property's *integrity*, which refers to the "ability of a property to convey its significance" (NPS, 1990:44-45). The other aspects of integrity include location, design, materials, workmanship, feeling, and association (NPS, 1990). The potential effect resulting from the introduction of wind turbines into the visual setting for any historic or architecturally significant property is dependent on a number of factors including distance, visual dominance, orientation of views, viewer context and activity, and the types and density of modern features in the existing view.

#### 1.4 Area of Potential Effect (APE)

The APE for Direct Effects includes all areas within the limits of disturbance for proposed construction activities. These areas include proposed turbine sites and associated construction workspaces, access roads, the corridor of potential disturbance for the submerged transmission lines, laydown and staging areas, operations and maintenance facilities, and substations.

The Facility's potential effect on a given historic property would be a change (resulting from the introduction of wind turbines or other Facility components) in the property's visual setting. Therefore, the APE for Indirect Effects includes those areas where Facility components (including wind turbines) will be visible and where there is a potential for a significant visual effect.

The report entitled *Literature Review and Recommendations for Area of Potential Effects and Historic Properties Identification Efforts for LEEDCo's Project Icebreaker, Cuyahoga County, Ohio* (Gray & Pape, 2014) includes preliminary recommendations regarding the extent of the APE for the Facility. The report recommended an APE for direct effects limited to those areas that will be physically affected by the installation and operation of the proposed turbine array, including "the footprint of the turbines and any associated construction workspace, the corridor of disturbance from the cable, and any on-shore construction" (Gray & Pape, 2014: 6). Regarding the APE for indirect effects, the report noted that due to the nature of a wind project sited along open water it is challenging to determine precisely where visual impacts will occur due to the lack of obstructions. Therefore, it was recommended that the area of potential effect for indirect effects include the areas:

parallel to the shoreline for 29.6 statute miles (47.6 kilometers) on either side of the project area to ensure that navigation markers, lights, and traditional use areas within the lake that might have a view of the turbines are included...Due to the amount of development along the lake shore, views of the lake are fragmentary or non-existent beyond the first road south of the lake shore. The Area of Potential Effects along the shore, therefore, has been limited to the area immediately adjacent to the lake, as bounded by easily identifiable roads (Gray & Pape, 2014: 6).

The report also noted that the APE for Indirect Effects should be "limited to areas where the project can affect the characteristics of a historic property qualifying it for inclusion in or eligibility for the [National Register of Historic Places]" (Gray & Pape, 2014: 8). Therefore, the APE for Indirect Effects is not based solely on potential visibility of the Project, but also on the distance within which visibility of the Project could result in a significant effect on the visual setting of a given historic property. Previous visual studies have shown that significant visual effects of land-based wind power projects are generally concentrated within 3.5 miles of a project site (Eyre, 1995; Bishop, 2002). Based on viewer reaction to simulations of turbines at various distances (albeit substantially smaller turbines than those proposed for the Icebreaker Project), Bishop (2002) concluded that, in the absence of atmospheric reduction in contrast, turbine detection or recognition occurred for only about 5% of people at a distance of 18.6 miles and just 10% at 12.4 miles.

Most of the reduction in turbine detection rates occurred between 5.0 and 7.4 miles in clear conditions and between 4.3 and 5.6 miles in light haze. Guidance for offshore wind projects in the United Kingdom suggests visual effects will be minor at distances over 15 miles, and that a distance of 22 miles generally represents the limit of visual impact (Enviros Consulting, 2005). A recent study concluded that offshore wind facilities were judged to be a major focus of visual attention at distances up to 10 miles (16 kilometers); were noticeable to casual observers at distances of almost 18 miles (29 kilometers); and were visible with extended or concentrated viewing at distances beyond 25 miles (40 kilometers) (Sullivan, *et al.*, 2013).

As further described in Section 2.3, below, the Visual Impact Assessment (VIA; EDR, 2017) for the Project evaluated a study area that encompassed a 10-mile radius from the proposed facility. Chapter 4906-4-08(D)(4) of the Ohio Administrative Code (OAC), Certificate Applications for Electric Generation Facilities, indicates that visual impacts to recreational, scenic, and historic resources from a proposed facility should be evaluated within at least a 5-mile radius (OPSB, 2015), and any resources valued specifically for their scenic quality should be evaluated within a 10-mile radius. Because of the Project's location (approximately 8 miles from shore) and visibility from shoreline across open water, the VIA evaluated a 10-mile radius study area.

The VIA addresses both visibility and the visual effect of the Project. Regarding the relationship between distance and visual effect, the report concludes:

Simulations of the proposed Project under ideal viewing conditions indicate that the visibility and visual impact of the wind turbines will be highly variable, based primarily on the presence of other man-made features in the view, and sensitivity of the viewpoints and viewers in question. However, the Project's distance from shoreline viewpoints substantially mitigates this impact. The closest point to shore from the turbines is **7.1 miles** and is represented in the view from Lakewood Park... Even at this closest distance, the Project will occupy a relatively small portion of an expansive lakeward view, and thus will not dominate the horizon (EDR, 2017).

Therefore, based on the recommendations in Chapter 4906-4-08(D)(4) of the OAC, the findings in the VIA, and supported by the findings of recent studies regarding the visibility and visual effect of offshore wind turbines (Sullivan, *et al.*, 2013), the APE for Indirect Effects for the Project includes those areas within 10 miles of the proposed turbines with potential visibility of the Project. This represents the area where introduction of the turbines into the visual setting of a given historic property has the potential to result in a significant effect on the setting of the property. Although the Project may be visible at distances greater than 10 miles, the Project is not expected to result in significant visual effects on historic properties at distances greater than 10 miles, due to the effect of distance on the scale and visual effect of the turbines.

## 2.0 BACKGROUND: PREVIOUS SURVEYS AND ANALYSES

### 2.1 Summary of Underwater Archaeological Assessment

Evaluation of the Project's potential effect on submerged archaeological resources included an archaeological sensitivity evaluation of the Project's Area of Potential Effect (APE) for Direct Effects for both Native American and Historic-Period archaeological resources (Gray & Pape, 2014) and a geophysical survey of the proposed wind turbine sites and transmission cable route (CSR, 2016; VanZandt, 2017).

The report entitled *Literature Review and Recommendations for Area of Potential Effects and Historic Properties Identification Efforts for LEEDCo's Project Icebreaker, Cuyahoga County, Ohio* (Gray & Pape, 2014) includes an analysis of the potential for Native American archaeological sites to be identified within the APE for Direct Effects. The report considers the paleo-environmental setting of the Project site, including the rise of lake levels and other landscape changes during the post-glacial period, the history and geomorphology of sedimentation and the movement of lake bottom deposits within the lake itself, as well as the distribution across the landscape of known Native American archaeological sites from various time periods. Based on this data, portions of the APE for Direct Effects were potentially habitable from about 12,000 years before present (BP) until between 5,400 and 4,750 BP, which coincides with the during the Paleo-Indian, Early Archaic, and Middle Archaic Periods (Gray & Pape, 2014; VanZandt, 2017). However, the report concludes that locating such archaeological sites, if present, would be difficult or impossible:

The potential for locating Early and Middle Archaic sites beneath Holocene lake sediments with today's remote sensing technologies is a factor of sedimentation depths and relict landscapes. Features such as hidden outcrops that may indicate cultural use areas, have been covered by natural lake sedimentation processes. Therefore, it would be difficult or impossible to locate sites if they existed (Gray & Pape, 2014:97; also cited in VanZandt, 2017).

Submerged historic-period archaeological resources are typically shipwrecks. The National Oceanic and Atmospheric Administration (NOAA) maintains a record of vessel losses and obstructions to shipping, the Automated Wreck and Obstruction Information System (AWOIS). The NOAA AWOIS lists 13 wrecks and obstructions in the Cleveland area (Gray & Pape, 2014), two of which lay in Lake Erie beyond the outer breakwater of Cleveland harbor near the CPP landfall for the cable, but outside of the cable route envelope. None of these previously reported wrecks or other obstructions are within the APE for Direct Effects for the Project. In addition, the OHPO online mapping system was reviewed to locate any inventoried cultural resources identified within the survey area (VanZandt, 2017). This included a review of the Ohio Archaeological Inventory (OAI), Ohio Historic Inventory (OHI), and NRHP, Ohio Sea Grant Shipwreck map, the Cleveland Underwater Explorers shipwreck database, and the Cleveland Underwater Explorers historical Lake Erie nautical chart collection. No properties or districts listed in the OAI, OHI, NRHP are present within the survey area. Though four shipwrecks are located within 3.5 nautical miles of the survey area, no shipwrecks from

the Ohio Sea Grant Shipwreck map, Cleveland Underwater Explorers Shipwreck Database, or Cleveland Underwater Explorers Historical Lake Erie Nautical chart collection are present within the survey area.

Data from a 2016 geophysical survey of the cable route envelope (CSR, 2016) was evaluated by VanZandt Engineering to determine if the geophysical survey identified potential archaeological resources within the APE for Direct Effects (VanZandt, 2017). The areas that were evaluated included areas around the proposed turbine locations, the export cable, and the inner Cleveland Harbor. Due to the shallow penetration depths of the turbine foundations and the inter-array and export cable burial depth, the impact of the Project's construction on prehistoric archaeological sites would be negligible. Sidescan sonar data, magnetometer data, and sub-bottom data analyses indicated that no historic structures (such as shipwrecks) or other potentially significant archaeological resources were present within the survey areas.

With respect to submerged archaeological resources, the studies conducted for the Project did not identify any potentially significant archaeological sites within the APE for Direct Effects and concluded that the Project was unlikely to impact significant archaeological resources. No further investigation nor need for mitigation was recommended (Gray & Pape, 2014; VanZandt, 2017).

## **2.2 Summary of Historic Resources Survey**

The *Literature Review and Recommendations for Area of Potential Effects and Historic Properties Identification Efforts for LEEDCo's Project Icebreaker, Cuyahoga County, Ohio* (Gray & Pape, 2014) included the identification of historic and cultural resources that will potentially experience indirect (visual) effects from the proposed Project within an enlarged study area study "to ensure that any adjacent significant properties are identified and the APE could be altered, if appropriate" (Gray & Pape, 2014: 31). The study area for properties listed in the NRHP, OHI, and/or National Historic Landmarks (NHLs) was 1 mile from the coast of Lake Erie. Previously identified historic and cultural resources identified in the *Literature Review and Recommendations for Area of Potential Effects* located within the study areas for the Project include:

- 39 sites individually listed in the National Register of Historic Places (NRHP), including one NHL (the USS Cod submarine);
- 7 NRHP-listed historic districts;
- 478 properties identified in the OHI; and,
- 14 properties identified in the OAI, including one shipwreck (the Sarah Sheldon).

Of the properties identified in the *Literature Review and Recommendations for Area of Potential Effects*, those located

within areas with potential visibility of the Project include 23 properties and districts listed in the NRHP (including the USS Cod submarine NHL) and 186 properties included in the OHI.

### **2.3 Summary of Visual Impact Assessment**

Existing visual and aesthetic resources within the visual study area were identified as part of a Visual Impact Assessment (VIA) conducted by EDR (EDR, 2017). The visual study area for the Project was defined as the area within a 10-mile radius of each of the proposed turbines (see Figure 3). The VIA includes an evaluation of the potential visibility of the Project based on viewshed analysis, field verification, and preparation of representative visual simulations. The visual simulations (included in the VIA report; EDR, 2017) provide representative views of the potential visual effect of the Project from a variety of distances and settings within the study area (see Figures 4 through 6 for results of viewshed analyses and locations of simulated viewpoints).

The methods used to generate these analyses are described in the Project's VIA and summarized briefly herein. Two 10-mile radius topographic viewsheds were mapped, one to illustrate "worst case" daytime visibility (based on a maximum blade tip height of 479 feet above the lake surface) and the other to illustrate potential nighttime visibility of Federal Aviation Administration (FAA) warning lights (based on an assumed warning light height of 282 feet above the lake surface and the conservative assumption that all turbines could be equipped with FAA warning lights). The viewshed analyses utilized Ohio Statewide Imagery Program's 2006 Light Detection and Ranging (LiDAR) data for Cuyahoga County, which allowed for a second-level analysis that factors the screening effects of vegetation and structures, in addition to topography, into the analysis. A digital surface model (DSM) of the study area was created from the LiDAR data, which includes the elevations of buildings, trees, and other objects large enough to be resolved by LiDAR technology. This DSM was then used as a base layer for the viewshed analysis, as described above (using the blade tip and FAA warning light heights as input data). Once the viewshed analysis was completed, a conditional statement was used to set turbine visibility to zero in locations where the DSM elevation exceeded the bare earth elevation by six feet or more, except in locations of known bridges (which were obtained from the Cuyahoga County Geographical Information Systems Department). This was done for two reasons; 1) because in locations where trees or structures are present in the DSM, the viewshed would reflect visibility from the vantage point of standing on the tree top or building roof, which is not the intent of this analysis and 2) to reflect the fact that ground-level vantage points within buildings or areas of vegetation exceeding 6 feet in height will generally be screened from views of the Project. However, it should be noted that where high rise buildings occur in areas indicated as being screened from views of the Project, views may be available from upper stories that have views of Lake Erie.

Because it accounts for the screening provided by structures and trees, this second-level analysis is a more accurate representation of potential Project visibility. However, it is worth noting that because characteristics of the proposed



turbines that influence visibility (color, narrow profile, distance from viewer, etc.) are not into taken consideration in the viewshed analyses, being within the viewshed does not necessarily equate to actual Project visibility. Visual effects analyses based on this second-level DSM-based viewshed is depicted in Figures 4 through 6.

Field review confirmed that visibility of the Project would be largely restricted to the waterfront and open water portions of the visual study area, as suggested by the viewshed analysis. In residential areas in Westlake, Bay Village and Cleveland visibility of the Project will be fully or substantially screened from inland areas by densely situated homes and vegetation along the shoreline. In most cases, visibility does not extend beyond shoreline residences, except in circumstances where an undeveloped cul-de-sac or public ROW exists, making water views possible from public vantage points. These shoreline residences will all likely have some level of Project visibility due to the fact they have been purposely situated to take advantage of lake views. Multiple parks and developed open space along the lake shore also capitalize on open water views and therefore will have views toward the Project, but again, vegetation and structures at these sites limit unobscured off-shore views to the shoreline and immediate inland areas. In eastern Bay Village, several high-rise residential buildings are concentrated along the Lake Erie shore. These structures provide elevated views of the lake, but effectively block inland ground-level views.

Within the City of Cleveland, an abundance of waterfront facilities such as parks, marinas, and ports will generally have open views of the Project. Areas inland of the shoreline offered limited open water views due to interceding features (buildings, industrial facilities, and vegetation) along the shoreline. However, elevated portions of Interstate 90 and parks such as the City Mall will have intermittent framed views of the Project site. Additionally, many of the inland high-rise structures will have visibility of the Project from upper floors. The field crew was able to visit two high-rise buildings within the City of Cleveland (the Key Building and the Hilton Hotel) and both had expansive lake views. From the elevated vantage points, it was also apparent that many other buildings were situated in such a way that views toward the Project from the upper floors would be available. The field review confirmed a general lack of visibility from street level views within the inland portion of downtown Cleveland.

Photo simulations included in the VIA report (EDR, 2017) provide representative views of the proposed Project from various distances and directions within the visual study area. Evaluation by a licensed EDR landscape architect indicates that the Project's overall contrast with the visual/aesthetic character of the area will range from insignificant to appreciable. Insignificant to moderate contrast was noted for viewpoints that included existing developed shoreline and off-shore features. Moderate to appreciable contrast was noted where existing developed features were lacking in views of Lake Erie and at viewpoints in shoreline park and residential settings where the expansive open view of the lake is an important part of the viewer experience.

### 3.0 CULTURAL RESOURCES EFFECTS ANALYSIS

#### 3.1 Visual Effects Analysis

As described in Section 2.3, the potential visibility and visual impact of the proposed Project is evaluated in the Project's VIA (EDR, 2017).

The potential visibility of the Project from the identified historic resources within the study area is summarized in Tables 1 through 3 (see following pages) and depicted in Figures 4 through 6. NRHP-listed and eligible resources are identified in Table 1 and Figure 4, Designated Cleveland Landmarks are identified in Table 2 and Figure 5, and Ohio Historic Inventory resources are identified in Table 3 and Figure 6. Each table includes all resources with potential Project visibility (considering screening effects of topography, structures, and vegetation), approximate distance to the nearest turbine, the Viewpoint ID of the nearest photo simulation (these reference the photo simulations included in the VIA report; see EDR, 2017), and the approximate percentage of the mapped resource with potential views of the Project. In the case of OHI resources and NRHP-listed and eligible sites (not districts), the mapped extent of each resource, for the purpose of this analysis, is the extent of the parcel boundary it falls within. NRHP-listed districts and Designated Cleveland Landmarks were obtained with a defined spatial extent that was retained for this analysis. The visual effects analysis shown on Figures 4 through 6 shows the location of each identified resource along with the analysis of potential Project visibility.

The following caveats are important to keep in mind when interpreting the viewshed results displayed in Tables 1 through 3 and Figures 4 through 6:

- Where high rise buildings occur in areas indicated as being screened from views of the Project, views may be available from upper stories that have views of Lake Erie. Generally, this will include the taller office and residential buildings scattered throughout the study area.
- There is a small amount of "noise" in the viewshed results that displays as small flecks of visibility in locations where true visibility is not anticipated. As a result, some of the resources included in Tables 3-5 and Figure 4-6 are unlikely to have true Project visibility but have conservatively been included herein.
- Viewshed results are displayed for on-shore areas. Views of the Project from Lake Erie will be unscreened.
- Characteristics of the proposed turbines that influence visibility (color, narrow profile, distance from viewer, etc.), are not taken into consideration in the viewshed analysis. Therefore, being within the viewshed does not necessarily equate to actual Project visibility.

- The visibility analysis presented in Tables 1 through 3 includes the distance from each historic resource to the nearest turbine. As noted previously, distance is a significant factor in evaluating the potential visual effect of the Project on the setting of a given historic property.

**Table 1. Visual Effects Analysis for NRHP Resources**

Site Identifier	Site/District Name	Municipality	Status	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
83NR001950	Cleveland West Pierhead Light	City of Cleveland	NRHP-Listed	7.6	52	100.0
91NR001855	Cleveland East Pierhead Light	City of Cleveland	NRHP-Listed	7.6	52	100.0
00NR001662, 05NR001575	Federal Knitting Mills (+ Boundary Increase), 2860-2894 Detroit Avenue	City of Cleveland	NRHP-Listed	8.9	52	73.3
NRE-5	Main Avenue Bridge (SFN 180035)	City of Cleveland	NRHP-Eligible	8.6	52	70.8
NRE-11	.21 miles east of junction with State Route 283DA	City of Cleveland	NRHP-Eligible	9.6	4	44.0
NRE-8	Located northwest of Cleveland	City of Cleveland	NRHP-Eligible	8.9	28	42.5
83NR001954	Universal Terminal Company Dock and Warehouse, 5451 North Marginal Road	City of Cleveland	NRHP-Listed	8.9	4	21.9
NRE-4	Lakeview Terrace	City of Cleveland	NRHP-Eligible	8.7	52	20.4
NRE-3	910 feet west of Rocky River Drive (Hilliard No. 65)	Cities of Rocky River and Lakewood	NRHP-Eligible	9.0	14	19.1
75NR001360	Cleveland Mall	City of Cleveland	NRHP-Listed (District)	8.5	17	17.1
NRE-7	South of Center Street (Flats)	City of Cleveland	NRHP-Eligible	8.9	28	14.5
74NR001438	Division Avenue Pumping Station, Division Avenue, at the foot of West 45th Street	City of Cleveland	NRHP-Listed	8.7	52	13.8
74NR001437	Detroit-Superior High Level Bridge, Cuyahoga River Valley	City of Cleveland	NRHP-Listed	8.9	28	13.7
84NR003614	Erie Railroad Cleveland Powerhouse, 1246 River Road	City of Cleveland	NRHP-Listed	8.5	52	13.4
82NR003558, 07NR000070	Cleveland Warehouse District (+Boundary Increase)	City of Cleveland	NRHP-Listed (District)	8.5	28	12.0
76NR001398	Lorain-Carnegie Bridge, Cuyahoga River	City of Cleveland	NRHP-Listed	9.4	28	11.9
76NR001390	Cleveland Harbor Station, U.S. Coast Guard	City of Cleveland	NRHP-Listed	8.1	52	10.2
86NR000088	USS Cod (submarine), North Marginal Drive *This site is also a National Historic Landmark	City of Cleveland	NRHP-Listed	8.2	7	9.7
NRE-10	3233 Euclid Avenue	City of Cleveland	NRHP-Eligible	9.7	7	9.5
77NR001054	John Honam House, 14710 Lake Avenue	City of Lakewood	NRHP-Listed	7.2	12	6.8
NRE-9	2939 feet north of West 25th Street	City of Cleveland	NRHP-Eligible	9.3	28	5.4
79NR001799	Jay M. Pickands House, 9619 Lake Shore Blvd	Village of Bratenahl	NRHP-Listed	9.9	4	5.3

Site Identifier	Site/District Name	Municipality	Status	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
74NR001459	Clifton Park Lakefront District	City of Lakewood	NRHP-Listed (District)	7.4	14	4.7
NRE-6	1220 West 3rd Street	City of Cleveland	NRHP-Eligible	8.5	17	4.6
74NR001428	Bay View Hospital, 23200 Lake Road	City of Bay Village	NRHP-Listed	9.0	37	3.0
13NR001117	Cleveland Centre Historic District	City of Cleveland	NRHP-Listed (District)	8.8	28	2.9
04NR000608	Van Rooy Coffee Company Building, 2900 Detroit Avenue	City of Cleveland	NRHP-Listed	8.9	52	1.1
78NR002042	Stager-Beckwith House, 3813 Euclid Ave	City of Cleveland	NRHP-Listed	9.8	7	0.9
73NR001421	University Hall, Cleveland State University, 2605 Euclid Avenue	City of Cleveland	NRHP-Listed	9.5	7	0.5
01NR000894	Cleveland Masonic Temple, 3615 Euclid Avenue	City of Cleveland	NRHP-Listed	9.7	7	0.5
76NR001405	Union Terminal Group	City of Cleveland	NRHP-Listed (District)	8.9	28	0.1
NRE-2	19892 Eldora Drive	City of Rocky River	NRHP-Eligible	8.7	14	0.1
07NR000072	Superior Avenue Historic District	City of Cleveland	NRHP-Listed (District)	9.0	7	0.1
02NR000702	Euclid Avenue Historic District	City of Cleveland	NRHP-Listed (District)	8.8	28	0.1
02NR001209	Gordon Square Historic District	City of Cleveland	NRHP-Listed (District)	8.8	9	<0.1
NRE-1	Detroit Road	City of Rocky River	NRHP-Eligible	9.4	14	<0.1
06NR000269	Franklin Boulevard--West Clinton Avenue Historic District (+ Boundary Increase)	City of Cleveland	NRHP-Listed (District)	8.8	9	<0.1
07NR000634	Birdtown Historic District	City of Lakewood	NRHP-Listed (District)	8.6	25	<0.1
74NR001447, 89NR000435	Ohio City Preservation District (+ Boundary Increase)	City of Cleveland	NRHP-Listed (District)	9.0	52	<0.1
05NR000382	Rockefeller Park and Cleveland Cultural Gardens Historic District	City of Cleveland	NRHP-Listed (District)	9.8	4	<0.1

**Table 2. Visual Effects Analysis for Designated Cleveland Landmarks**

Landmark/District Name	Municipality	Type	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
Superior Avenue Viaduct, 1200 West Superior Drive	City of Cleveland	Designated Cleveland Landmark	8.9	28	39.1
Kirtland Park, 4150 S. Marginal Road	City of Cleveland	Designated Cleveland Landmark	8.7	7	36.2
Hulett Unloaders and C & P Ore Dock, 5400 Whiskey Island	City of Cleveland	Designated Cleveland Landmark	8.2	52	24.5
Hulett	City of Cleveland	Designated Cleveland Landmark District	8.2	52	22.2
Cleveland City Hall, 601 Lakeside Avenue	City of Cleveland	Designated Cleveland Landmark	8.6	17	20.8
Mall	City of Cleveland	Designated Cleveland Landmark District	8.5	17	13.6
United States Coast Guard Cleveland Harbor Station, 1000 Cuyahoga River	City of Cleveland	Designated Cleveland Landmark	8.1	52	13.2
Warehouse	City of Cleveland	Designated Cleveland Landmark District	8.5	28	11.4
Cleveland Harbor East and West Pierhead Lights and Accessory Structures	City of Cleveland	Designated Cleveland Landmark	8.1	52	10.2
Railroad Bridge, Martin Luther King Drive	City of Cleveland	Designated Cleveland Landmark	9.2	4	7.5
Public Auditorium, 500 Lakeside Avenue	City of Cleveland	Designated Cleveland Landmark	8.7	17	2.7
Shovel Works, 1570 East 40th	City of Cleveland	Designated Cleveland Landmark	9.4	7	1.4
Ohio City	City of Cleveland	Designated Cleveland Landmark District	8.9	52	1.2
Stager-Beckwith House (University Club), 3813 Euclid Avenue	City of Cleveland	Designated Cleveland Landmark	9.8	7	0.9
Samuel Mather Mansion, 2605 Euclid Avenue	City of Cleveland	Designated Cleveland Landmark	9.5	7	0.5
May Company Warehouse, 4100 Payne Avenue	City of Cleveland	Designated Cleveland Landmark	9.7	7	0.4
Cleveland Masonic Temple, 3615 Euclid Avenue	City of Cleveland	Designated Cleveland Landmark	9.7	7	0.3
Lorain Variety	City of Cleveland	Designated Cleveland Landmark District	9.6	25	0.2
Gordon Square	City of Cleveland	Designated Cleveland Landmark District	8.7	9	0.1
Market Square	City of Cleveland	Designated Cleveland Landmark District	9.3	28	<0.1
Franklin - West Clinton	City of Cleveland	Designated Cleveland Landmark District	8.9	9	<0.1

**Table 3. Visual Effects Analysis for OHI Sites**

Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0305701	Cleveland E Pierhead Light, Main Entrance of Harbor	City of Cleveland	7.6	52	100.0
CUY0381801	Cleveland W Pierhead Light, Main Entrance of Harbor	City of Cleveland	7.6	52	100.0
CUY0363901	E 9th Street Pier, 9th Street Pier	City of Cleveland	8.2	19	100.0
CUY0365201	Buckeye Insulation, 1171 E 20th Street	City of Cleveland	8.7	7	75.1
CUY0838201	Burke Lakefront Airport, Lakefront	City of Cleveland	8.2	7	73.7
CUY0363701	USS Cod, N Marginal Road	City of Cleveland	8.2	7	73.7
CUY0312001	Bridges & Docks Office (Formerly Harbor Masters House), 1170 Old River Road	City of Cleveland	8.6	52	70.1
CUY0347801	AB Bartoszewicz Block Bldg (Formerly A & P Grocery Building), 2006 E St Clair Avenue	City of Cleveland	8.9	7	60.0
CUY0347901	Advanced OMS&S Co Building, 2006 E St Clair Avenue (rear)	City of Cleveland	8.9	7	60.0
CUY0361801	Burke Lakefront Service Co Ha, Lakefront	City of Cleveland	8.4	7	55.2
CUY0305901	Mall "C" Park, Lakeside NE btwn Ontario/E 6th	City of Cleveland	8.5	17	50.4
CUY0306801	Anderson Motor Services, 1533 Lakeside Avenue NE	City of Cleveland	8.6	7	44.5
CUY0296301	Gund Brewing Company Stables, 1450-1460 Davenport Avenue	City of Cleveland	8.6	7	44.5
CUY0306501	Ryder Building, 1459-1461 Lakeside Avenue NE	City of Cleveland	8.6	7	44.5
CUY0296401	WareHouse (Formerly Gund Brewery), 1466-1510 Davenport Avenue	City of Cleveland	8.6	7	44.5
CUY0306701	WareHouse, 1475-1501 Lakeside Avenue NE	City of Cleveland	8.6	7	44.5
CUY0149412	Lee Wilson House (Formerly Bishop House), 19520 Frazier Drive	City of Cleveland	7.9	14	42.8
CUY0365401	Donald Gray Gardens (Formerly Great Lakes Exposition), Erieside Drive	City of Cleveland	8.3	19	40.6
CUY0841901	Port of Cleveland Cargo Crane (Formerly The "Buckeye Booster"), On dock 28, Port of Cleveland	City of Cleveland	8.2	17	38.4
CUY0362401	2001 Hamilton Avenue	City of Cleveland	8.8	7	37.7
CUY1049312	The Lakehouse, 11850 Edgewater Drive	City of Cleveland	7.6	25	34.0
CUY0841801	Cleveland -Cuyahoga Co - Port Authority Stadium Piers, Port of Cleveland	City of Cleveland	8.2	19	33.6
CUY0274505	Lake Shore Generating Plant, 6800 S Marginal Drive	City of Cleveland	9.2	4	33.0
CUY0306601	1470 Lakeside Avenue NE	City of Cleveland	8.7	7	32.9
CUY0089403	Edgewater Park Pavilion, Edgewater Park	City of Cleveland	8.1	25	29.4
CUY0363601	Gas Station, 2601 Lakeside Avenue NE	City of Cleveland	8.8	7	29.3

Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0800005	King-Otis Cleveland Mounted Police Stables (Formerly King-Otis Cleveland Mounted Police Stables), 1150 E 38th Street	City of Cleveland	8.8	7	28.7
CUY0839001	Dept of Public Utilities, 1825 Lakeside Avenue	City of Cleveland	8.7	7	27.2
CUY0311901	Cleveland Flux Co WareHouse, 1125-1147 Old River Road	City of Cleveland	8.5	52	24.2
CUY0039601	Monarch Leasing (Formerly Cleveland Steam Gauge Company), 1100 W 9th Street	City of Cleveland	8.5	28	22.7
CUY0990503	Lakeview Terrace (Formerly Lakeview Terrace), 1289 W 25th Street	City of Cleveland	8.7	52	20.4
CUY0482105	North Coast Machining Inc (Formerly Cleveland City Forge & Iron Co), 4501 Lakeside Avenue	City of Cleveland	8.9	7	20.2
CUY0306301	Cleveland City Hall, 601 Lakeside Avenue NE	City of Cleveland	8.6	17	20.2
CUY0328901	Willard Park, E 9th & Lakeside Avenue NE	City of Cleveland	8.6	17	20.2
CUY1049712	The Carlyle, 12900 Lake Avenue	City of Cleveland	7.4	12	17.7
CUY0313101	Chicago Title Insurance Co (Formerly US Post Office), 1275 Ontario Street	City of Cleveland	8.6	28	17.1
CUY0302801	Cuyahoga Co Admin Bldg (Formerly Aker Bldg), 112 Hamilton Avenue	City of Cleveland	8.6	28	17.1
CUY0305801	Mall "B" Park, Lakeside NE St Clair Ontario	City of Cleveland	8.6	28	17.1
CUY0812001	Parking Garage, 3 E St Clair Avenue	City of Cleveland	8.6	28	17.1
CUY0319501	Sportsman Restaurant (Formerly Standard Barbecue), 101 E St Clair Avenue	City of Cleveland	8.6	28	17.1
CUY0319601	Vulcan Building, 113 E St Clair Avenue	City of Cleveland	8.6	28	17.1
CUY0306901	City Hall Annex, 1701-1735 Lakeside Avenue NE	City of Cleveland	8.7	7	16.5
CUY0073405	Cleve Municipal Light Plant, Marginal Road at E 53rd Street	City of Cleveland	8.7	4	16.5
CUY0838601	Public Utilities Building, 1201 Lakeside Avenue	City of Cleveland	8.6	7	16.1
CUY0129912	1032 Homewood Drive	City of Cleveland	7.3	12	16.0
CUY0089303	P Selby House, 10107 Cliff Drive	City of Cleveland	8.1	25	15.2
CUY0318601	Mall A, Rockwell E Mall St Clair E 2nd	City of Cleveland	8.8	28	13.7
CUY0317901	Society Nat'l Bank (Formerly Society for Savings), 127 Public Sq	City of Cleveland	8.8	28	13.7
CUY0308901	War Memorial Statue, Mall A	City of Cleveland	8.8	28	13.7
CUY0158613	Marybell S Cooney House, 23724 Cliff Drive	City of Bay Village	9.1	37	12.9
CUY0838801	Central Adult Traning Center (Formerly Wall Street Journal Building), 1325 Lakeside Avenue	City of Cleveland	8.6	7	12.7
CUY0114703	American Greetings Corp (Formerly Cleveland Rubber Corp), 11551 Berea Road	City of Cleveland	8.8	25	12.2
CUY0009001	Porkys Bar (Formerly Phillip Fehr Building), 1946 E St Clair Avenue	City of Cleveland	8.9	7	12.2
CUY1049612	Winton Place, 12700 Lake Avenue	City of Cleveland	7.4	12	12.1
CUY0333001	Automatic Fasteners Building (Formerly Gilkey Building), 1138-1160 W 9th Street	City of Cleveland	8.5	28	12.1



Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0008605	Nungesser Electric Battery Co, 1176 E 38th Street (at King)	City of Cleveland	8.8	7	11.9
CUY0087503	10912 Edgewater Drive	City of Cleveland	7.9	25	11.5
CUY0296203	1963 Columbus Road	City of Cleveland	9.5	28	11.2
CUY1049112	Edgewater Towers, 11720 Edgewater Drive	City of Cleveland	7.7	25	11.1
CUY0839601	2701 Lakeside Avenue	City of Cleveland	8.8	7	11.0
CUY0312801	Renaissance Wood & Tool Bldg B (Formerly TC Spencer Co), 1315 Old River Road	City of Cleveland	8.6	28	10.7
CUY0087403	11202 Edgewater Drive	City of Cleveland	7.9	25	10.6
CUY0305702	US Coast Guard Station	City of Cleveland	8.1	52	10.2
CUY0840201	Army Corps facility (Formerly Building #3 Army Corps of Engineers Complex), E 9th Street	City of Cleveland	8.2	7	9.7
CUY0363801	Army Corps of Engineers Admin, 1035 E 9th Street	City of Cleveland	8.2	7	9.7
CUY0840101	Army Corps of Engineers maintenance depot (Formerly Building #2 Army Corps of Engineers Complex), 1120 E 9th Street	City of Cleveland	8.2	7	9.7
CUY0089501	Cleveland Municipal Stadium (Formerly Cleveland Municipal Stadium), 1085 W 3rd Street	City of Cleveland	8.3	17	9.5
CUY0014205	Int'l Ladies Garment Wrks Union (Formerly Anthony Carlin House), 3233 Euclid Avenue	City of Cleveland	9.7	7	9.5
CUY0322103	Lakeview Terrace E-27, 1281 Spruce Avenue	City of Cleveland	8.7	52	9.2
CUY0322203	Lakeview Terrace E-28, 1295-1299 Spruce Avenue	City of Cleveland	8.7	52	9.2
CUY0338503	Lakeview Terrace E-29, 1307-1311 W 25th Street	City of Cleveland	8.7	52	9.2
CUY0031603	Lakeview Terrace D-23, 1280 Spruce Avenue	City of Cleveland	8.7	52	9.1
CUY0338403	Lakeview Terrace D-24, 1283-1291 W 25th Street	City of Cleveland	8.7	52	9.1
CUY0338303	Lakeview Terrace D25 Apts, 1275 W 25th Street	City of Cleveland	8.7	52	9.1
CUY0338203	Lakeview Terrace D26 Apts, 1255-1263 W 25th Street	City of Cleveland	8.7	52	9.1
CUY1048112	Martine/Reardon Residence (Formerly Frackleton Residence), 13425 Cliff Drive	City of Cleveland	7.3	12	8.9
CUY0839101	Carbide Co/ Sauga Precision Machine Co, 2020 Lakeside Avenue	City of Cleveland	8.8	7	8.5
CUY0308101	Cleveland Flux Company, 1026-1028 Main Avenue	City of Cleveland	8.5	52	8.2
CUY0334001	Cleveland Gas & Coke, 1059-1115 W 11th Place	City of Cleveland	8.5	52	8.2
CUY0308001	Kindler's Restaurant, 1016-1024 Main Avenue	City of Cleveland	8.5	52	8.2
CUY0321702	Professional Delivery Service (Formerly Cleveland & Chicago Motor Express), 1970 Scranton Road	City of Cleveland	9.4	28	7.8
CUY0122311	Pickands House (Formerly Edward Cushing House), 9619 Lake Shore Blvd	Village of Bratenahl	9.9	4	6.5
CUY1050003	Sliman Residence (Formerly Cernigoj Residence), 10405 Cliff Drive	City of Cleveland	8.1	25	6.5
CUY0837701	Camera Supply, 2635 Hamilton Avenue	City of Cleveland	8.9	7	6.1

Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0837801	Schuemann Surgical Supply, 2797 Hamilton Avenue	City of Cleveland	8.9	7	6.1
CUY0338802	Erie Freight Depot (Formerly New York PA & OH RR Freight Depot), 1865 Scranton Road	City of Cleveland	9.3	28	5.8
CUY0318801	Diamond F Co - Building "A", 1415 Rockwell Avenue	City of Cleveland	8.9	7	5.5
CUY0318901	Diamond F Corp-Building "D" (Formerly Frankelite Co), 1425-1505 Rockwell Avenue	City of Cleveland	8.9	7	5.5
CUY0362301	Beck's Frame Service Bldg, 2000-2010 Hamilton Avenue	City of Cleveland	8.8	7	4.9
CUY0003212	Norfolk & Western Freight Station (Formerly Rocky River Station), Depot Street	City of Cleveland	8.2	14	4.1
CUY0308202	Brilliant Sign Co (Formerly Cleveland Stevedore Company), 1151 Main Avenue	City of Cleveland	8.6	52	3.9
CUY0042601	National Terminals Corporation, 1210-1220 W 9th Street	City of Cleveland	8.6	28	3.7
CUY0042701	WareHouse (Formerly National Terminal Corp), 1200 W 9th Street	City of Cleveland	8.6	28	3.7
CUY0337301	Bardons & Oliver Building (Formerly Findley Building), 1133 W 9th Street	City of Cleveland	8.5	28	3.6
CUY0135012	Lakewood Bd of Ed (Formerly Grant School), 1470 Warren Road	City of Cleveland	8.1	12	3.5
CUY0086212	Lakewood Board of Education Annex (Formerly East Rockport School), 1456 Warren Road	City of Cleveland	8.1	12	3.5
CUY0033803	WestingHouse Electric Corp (Formerly Walker Mfg Co), W 58th Street near Shoreway	City of Cleveland	8.5	8	3.4
CUY0335503	Apartments, 1869 W 22nd Street	City of Cleveland	9.3	28	3.4
CUY0840301	Anthony J Celebreze Federal Office Building (Formerly Federal Building), 1240 E 9th Street	City of Cleveland	8.7	17	3.2
CUY0329601	Public Auditorium, 1220 E 6th Street	City of Cleveland	8.7	17	2.7
CUY0282512	335 Riverdale Drive	City of Cleveland	8.1	14	2.6
CUY0843801	Perfection Body Co, 2101 St Clair Avenue	City of Cleveland	8.9	7	2.5
CUY1049212	Shoreham Apartments, 11800 Edgewater Drive	City of Cleveland	7.7	25	2.4
CUY0132712	1st Church of Christ Scientist, 15422 Detroit Avenue	City of Cleveland	7.9	12	1.9
CUY0177901	Cleveland Electric Illuminatin, Lakeside NE	City of Cleveland	8.8	7	1.9
CUY1049512	Marine Towers, 12540 Edgewater Drive	City of Cleveland	7.5	12	1.8
CUY0134712	Calvary United Methodist Church, 16305 Hilliard Road	City of Cleveland	8.6	12	1.7
CUY0323803	Detroit-Superior Bridge Subway, 2491 Superior Avenue NW	City of Cleveland	8.9	52	1.5
CUY0310701	Cleveland Paint & Color Co, 1001 Old River Road	City of Cleveland	8.4	52	1.4
CUY0843701	Emco Taylor Elevator Co, 2011 St Clair Avenue	City of Cleveland	8.9	7	1.4
CUY0364101	Ideal Financial Printing Bldg (Formerly R & R Printing Building), 2003 E St Clair Avenue	City of Cleveland	8.9	7	1.4
CUY0031903	Cleveland Oak Belting (Formerly Vitrolite Company Building), 2911-2915 Detroit Avenue	City of Cleveland	9.0	52	1.3
CUY0321802	Zelhner Foundry Company, 2100 Scranton Road	City of Cleveland	9.2	28	1.3
CUY0347501	Henry Koeng House, 2232 Rockwell Avenue (rear)	City of Cleveland	9.0	7	1.2

Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0349701	Ohio Bell Truck Department, 2215-2223 E Superior Avenue	City of Cleveland	9.0	7	1.2
CUY0032003	Van Rooy Coffee Co (Formerly Imperial Steel Range Co), 2900 Detroit Avenue	City of Cleveland	8.9	52	1.1
CUY0014305	University Club (Formerly Thomas Sterling Beckwith House), 3813 Euclid Avenue	City of Cleveland	9.8	7	0.9
CUY0843301	Cuyahoga Co Vehicle Maintenance Garage & West Reserve Area, 1319 E 18th / 1801 St Clair	City of Cleveland	8.8	7	0.9
CUY0320801	Frontier Building, 1511 E St Clair Avenue	City of Cleveland	8.8	7	0.8
CUY0336701	HWH Building (Formerly Crown Annex), 1150 W 3rd Street	City of Cleveland	8.6	17	0.6
CUY1049412	Lakeshore Towers, 12506 Edgewater Drive	City of Cleveland	7.5	12	0.6
CUY0362201	E 20th Engineering Bldg (Formerly Cleveland Thermal Enenergy Corp), 1901 Hamilton Avenue	City of Cleveland	8.8	7	0.6
CUY0294902	Haserodt Machine & Tool Co (Formerly S Fix Sons), 1826 Columbus Road	City of Cleveland	9.2	28	0.5
CUY0178101	Mrs Murphey Bell's Restaurant, 1812 Payne Avenue	City of Cleveland	9.1	7	0.5
CUY0343101	CSU-University Hall (Formerly Samuel Mather House), 2605 Euclid Avenue	City of Cleveland	9.5	7	0.5
CUY0340801	University Hall Annex CSU (Formerly Cleveland Automobile Club), 2506 Chester Avenue	City of Cleveland	9.5	7	0.5
CUY0838301	North Point Office Building, 901 Lakeside Avenue, NE	City of Cleveland	8.6	7	0.5
CUY0017805	Masonic Temple & Auditorium, 3615 Euclid Avenue	City of Cleveland	9.7	7	0.5
CUY0291202	Federal Steel & Wire Corp (Formerly Upson Nut Company), 1970 Carter Road	City of Cleveland	9.1	28	0.4
CUY0130412	St Augustine Academy & Convent, 14808 Lake Avenue	City of Cleveland	7.2	12	0.4
CUY0840501	One Cleveland Center (Formerly Medical Mutual Tower), 1375 E 9th Street	City of Cleveland	8.8	28	0.4
CUY0348501	Don's 21st Street Deli, 2027 E Superior Avenue	City of Cleveland	8.9	7	0.4
CUY0842801	Forest City Publishing Co Maintenance Garage, 2005-2041 Rockwell Avenue	City of Cleveland	8.9	7	0.4
CUY0348401	Gee How Oak Tin Assoc (Formerly LW Oster House), 2025 E Superior Avenue	City of Cleveland	8.9	7	0.4
CUY0843501	Plain Dealer Parking Garage, 1920 St Clair Avenue	City of Cleveland	8.9	7	0.4
CUY0178001	The Plain Dealer Building (Formerly The Cleveland News Building), 1801 E Superior Avenue	City of Cleveland	8.9	7	0.4
CUY0363101	Greyhound Bldg, 1295 E 26th / 2600-2816 Hamilton	City of Cleveland	8.9	7	0.4
CUY0302901	Brinks Truck Maintenance, 1304 Hamilton Avenue	City of Cleveland	8.8	7	0.3
CUY0135812	Lakewood High School, 14100 Franklin Avenue	City of Cleveland	8.2	12	0.3
CUY0839401	Arrowhead mfg & PC Ouratt Co, 2174 Lakeside Avenue	City of Cleveland	8.8	7	0.3
CUY0282812	Rocky River Public School, 1640 Wooster Road	City of Cleveland	8.4	14	0.3
CUY0304101	Guildhall Bldg (Formerly Builder's Exchange), 100-124 Huron Road NW	City of Cleveland	8.9	28	0.2
CUY0316901	Midland Building (Formerly Landmark Office Towers), 123-125 W Prospect Avenue	City of Cleveland	8.9	28	0.2
CUY0314001	Republic Building (Formerly Medical Arts Building), 1-45 W Prospect Avenue	City of Cleveland	8.9	28	0.2

Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0304201	Skylight Concourse (Formerly Clev Union Term Steam Concrse), 250 Huron Road NW	City of Cleveland	8.9	28	0.2
CUY0609405	Robert-Evans Hughes Building (Formerly Board of Elections Building), 2925 Euclid Avenue	City of Cleveland	9.6	7	0.2
CUY0130712	15100 Edgewater Drive	City of Cleveland	7.3	12	0.2
CUY0309202	State Fish (Formerly A Booth & Co Fishery), 1600 Merwin Street	City of Cleveland	8.9	28	0.2
CUY0282312	Terrace Apts, 301 Riverdale Drive	City of Cleveland	8.1	14	0.2
CUY0364001	Garage (Formerly Building), 1302-1306 E 20th/1937 E St Clair (rear)	City of Cleveland	8.9	7	0.2
CUY0819505	University Commons, 1900 E 30th Street	City of Cleveland	9.6	7	0.1
CUY0840401	Bond Court Office Building, 1300 E 9th Street	City of Cleveland	8.7	17	0.1
CUY0652713	Village Gage Inc, 24120 Detroit Road	City of Westlake	10.0	37	0.1
CUY0311301	Cleveland Beach Club, 1064 Old River Road	City of Cleveland	8.5	52	0.1
CUY0302701	Cleveland Playdium Club, 1065 Front Street	City of Cleveland	8.5	52	0.1
CUY0311501	JJ ShepaRoad Bldg (Formerly JJ ShepaRoad Brick & Clay Tile Co), 1068-1074 Old River Road	City of Cleveland	8.5	52	0.1
CUY0311701	Rose Iron Works (Formerly Rudd Machine Company), 1100 Old River Road	City of Cleveland	8.5	52	0.1
CUY0311801	Rum Runners (Formerly Star Fish Company), 1124 Old River Road	City of Cleveland	8.5	52	0.1
CUY0310801	Saber's River Front Deli, 1009-1011 Old River Road	City of Cleveland	8.5	52	0.1
CUY0311001	Silky Sullivan's, 1045 Old River Road	City of Cleveland	8.5	52	0.1
CUY0310901	The Circus, 1035 Old River Road	City of Cleveland	8.5	52	0.1
CUY0087003	Children's Aid Society Dorm, 10427 Detroit Avenue	City of Cleveland	8.5	25	<0.1
CUY0320601	Crazy Horse Saloon, 1438 E St Clair Avenue	City of Cleveland	8.8	7	<0.1
CUY0652413	Edward & laurel Schaefer Hse (Formerly M & E Greener Hse), 24017 Detroit Road	City of Westlake	9.9	37	<0.1
CUY0846801	Erievue Tower (Formerly 100 Erievue Plaza), 1300 E 12th Street	City of Cleveland	8.7	17	<0.1
CUY0119008	Stinchcomb Memorial Amphitheater, Cleveland Metropolitan Park	City of Cleveland	9.2	14	<0.1
CUY0149512	Lakewood Abbey (Formerly Lakewood Cemetery), Detroit Road	City of Cleveland	9.4	14	<0.1
CUY0416203	Oliver Alger House, 1378 W 67th Street	City of Cleveland	8.8	9	<0.1
CUY0117508	Mobil Chemical Coating (Formerly Ferber-Schorndorfer Co), 12815 Elmwood Avenue	City of Cleveland	9.2	25	<0.1
CUY0800105	Architectural Real Estate Co Bldg (Formerly Brooks & Co Structural Iron Co), 3000 Lakeside Avenue	City of Cleveland	8.9	7	<0.1
CUY0800105	Architectural Real Estate Co Bldg (Formerly Brooks & Co Structural Iron Co), 3000 Lakeside Avenue	City of Cleveland	8.9	7	<0.1
CUY0365301	1252 E 23rd Street	City of Cleveland	8.8	7	<0.1
CUY0363401	Tremblay Tool Steels Inc, 2222 Lakeside Avenue NE	City of Cleveland	8.8	7	<0.1

Site Identifier	Site/District Name	Municipality	Distance to Nearest Turbine (miles)	Nearest Simulation Viewpoint	Percent of Site/District with Potential Project Visibility
CUY0480905	The Lakeside Building Wholesale Fasteners Inc (Formerly HP Nail Co), 1192 E 49th Street	City of Cleveland	8.9	7	<0.1
CUY0013405	GE Euclid Lamp Plant (Formerly Nat'l Electric Lamp Assoc), 1814 E 45th Street	City of Cleveland	9.7	7	<0.1
CUY0409303	Our Lady of Mt Carmel Church, 6928 Detroit Avenue	City of Cleveland	8.8	9	<0.1
CUY0846501	State Office Tower (Formerly Frank J Lausche State Office Tower), 615 Superior Avenue, NW	City of Cleveland	8.9	28	<0.1

As indicated in Tables 1 through 3 and Figures 4 through 6, the majority of cultural resources that fall within the Project viewshed will have limited views due to screening provided by intervening topography, vegetation, and/or structures. They also indicate that the proposed turbines are located greater than 7 miles from all cultural resources, where they will appear as background features in the view and the effects of distance will significantly attenuate the turbine's apparent size. Cultural resources with greater than 50% Project visibility include Cleveland East and West Pierhead Lights (NRHP-listed and OHI), the USS Cod (NRHP-listed, NHL, OHI), Federal Knitting Mills (NRHP-listed), and Main Avenue Bridge (NRHP-eligible), East 9<sup>th</sup> Street Pier (OHI), Buckeye Insulation (OHI), Burke Lakefront Airport (OHI), Bridges and Docks Office (Formerly Harbor Masters House; OHI), AB Bartoszewicz Block Building (Formerly A&P Grocery Building; OHI), Advanced OMS&S Co Building, Burke Lakefront Service Company Hangar (OHI), and Mall "C" Park (OHI). No Designated Cleveland Landmarks are anticipated to have greater than 50% Project visibility.

Full size images of all of the simulations are included in the VIA report (EDR, 2017). The simulations that best represent the potential visual effect on resources include the simulations from Viewpoints 7, 17, 19, and 52, which are included as insets in the discussion below. The evaluation of the Project's potential visual effect at each of these locations, as presented in the VIA (EDR, 2017), is summarized below:



**Visual Simulation from Viewpoint 7: USS Cod.**



**Visual Simulation from Viewpoint 52: U.S. Coast Guard Cleveland Harbor Station.**

Viewpoint 7 is located approximately 8.4 miles from the nearest turbine and is the view from USS Cod submarine, which is an NRHP-listed site and a NHL as well as being included in the OHI. Viewpoint 52, 8.1 miles from the nearest turbine, is the view from U.S. Coast Guard Cleveland Harbor Station, which is an NRHP-listed site, a Designated Cleveland Landmark, and an OHI site. Viewpoint 52 also includes the Cleveland East and West Pierhead Light, which are also listed on the NRHP and OHI. All of these sites are examples of historic resources that are associated with maritime themes, where the maritime setting (including views of the lake) contribute to the significance of the property. The VIA states that in the simulations of the proposed Project from these viewpoints the wind turbines are less of a focus in the view when compared to viewpoints from less developed locations, because the turbines appear relatively compact, and are viewed in the context of other existing off-shore features. The presence of existing built features in a view generally reduces the contrast presented by the Project, especially when the Project is viewed at distances at excess of 8 miles as it is from these two viewpoints. When viewed at these distances, the turbines do not appear out of scale with other built features in the view. In addition, the limited number of turbines, their clean, delicate lines, and their orderly arrangement do not significantly increase visual clutter, or decrease scenic quality. Additionally, under more overcast sky conditions, turbine visibility, color contrast, and competition as a focal point in these types of views will be further reduced.

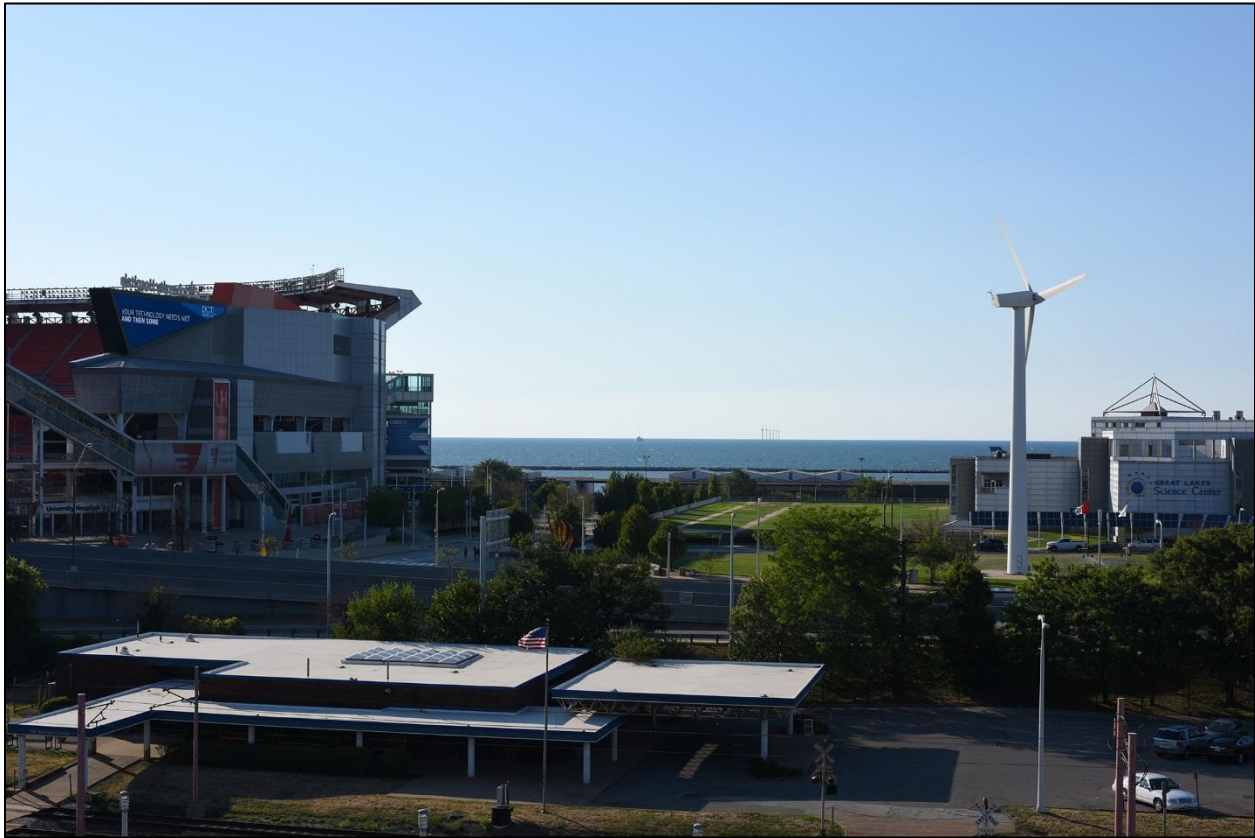




**Visual Simulation from Viewpoint 19: Bicentennial Park.**

Viewpoint 19 is located approximately 8.2 miles from the nearest turbine and is the view from Bicentennial Park, which is adjacent to the East 9<sup>th</sup> Street Pier OHI site. Viewpoint 19 is classified as a “Developed Shoreline View” in the VIA, which is defined as a public vantage point in open space settings with some level of shoreline development in the immediate foreground. The VIA states that, from this location, the proposed Project will add a relatively minor new developed feature to the existing views. Despite the fact that the turbines are very large structures, when viewed at a distance of 7.5 miles they appear relatively small compared to the other developed features along the shoreline and in the near shore area. The turbines will interrupt the skyline and are unexpected in an off-shore setting. As such, the turbines would be a focal point in the view, but would also compete with other on shore and off-shore features for viewer attention. Because they are viewed in the context of other developed features, their land use contrast and effect on scenic quality are minimal. Due their distant off-shore setting, and the presence of competing features and activities occurring along the developed shoreline, the presence of the turbines should not adversely affect viewer activity or enjoyment of the view.





**Visual Simulation from Viewpoint 17: Cleveland Mall.**

Viewpoint 17 is located approximately 8.5 miles from the nearest turbine and is the view from Cleveland Mall, which is an NRHP-listed site, a Designated Cleveland Landmark, and an OHI site. The VIA classifies this viewpoint as an “Elevated City View,” which is defined as an elevated vantage point within the City of Cleveland that allows for open views of Lake Erie over the top of foreground development. Elevated city views include a variety of buildings and man-made structures that define the landscape context as an urban setting. The presence of the lake in these views enhances scenic quality and adds interest. At the Cleveland Mall, a viewer is approximately 83 feet above lake level, and the lake is viewed as a mid-ground and background feature between and above developed foreground features that dominate the view. As illustrated in the simulated view from Viewpoint 17, under clear sky conditions and strong sunshine, the turbines are clearly visible on the horizon line. However, in this view, with an abundance of built features in the foreground (including a wind turbine) the Project does not present significant contrast in terms of line, form, color, or existing land use. The distance of the turbines from the viewer minimizes scale contrast, and the limited extent of open uninterrupted horizon visible from this viewpoint reduces the prominence of the turbines. Regardless of weather conditions, Project-related impacts on scenic quality and viewer activity from this vantage point are likely to be minimal.

In general, the Project's VIA states that the Project's overall contrast with the visual/aesthetic character of the area will range from insignificant to appreciable. Insignificant to moderate contrast was noted for viewpoints that included existing developed shoreline and off-shore features. Moderate to appreciable contrast was noted where existing developed features were lacking in views of Lake Erie and at viewpoints in shoreline park and residential settings where the expansive open view of the lake is an important part of the viewer experience. However, the degree of Project visibility and contrast with the existing landscape will be substantially reduced under cloudy and partly cloudy conditions that occur on 82% of the days during a typical year in Cleveland.

It is worth noting that visual setting may not be an important factor contributing to a given property's historical significance. For instance, many buildings in an urban environment are determined NRHP-eligible under NRHP Criterion C (i.e., they "embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction" [CFR, 2004b]). These properties are typically determined NRHP-eligible because of their architectural design and/or association with a specific architect, builder, or style, and because they retain their overall integrity of design and materials. The visual setting for these properties – typically a developed urban neighborhood – often includes features from a variety of time periods (including modern features). While the setting provides context for these properties, it is not a prominent consideration in determinations of significance. In general, these properties would retain the characteristics that caused them to be recommended eligible after the introduction of modern features such as wind turbines into their visual settings. For these types of resources, the potential change in the setting resulting from the Project will not necessarily result in diminished public enjoyment and appreciation of a given historic property, or impair its character or quality.

As described previously, because of the screening effect of buildings and vegetation within the City of Cleveland, areas with potential visibility of the Project are generally restricted to areas along the Lake Erie waterfront. Many of the historic resources within the APE for Indirect Effects, such as the USS Cod and U.S. Coast Guard Cleveland Harbor Station, are located on the waterfront because of their association with maritime activities, and the lake is therefore a significant feature in the visual setting for those properties. As noted in the VIA for the Project and herein, the proposed wind turbines would be a new modern feature in the visual setting of the lake. Due to their scale and novel form, they are likely to attract viewer attention. However, as noted in the VIA, the Project's distance from the shoreline viewpoints substantially mitigates this impact. The closest point to shore from the turbines is 7.1 miles. Even at this closest distance, the Project will occupy a relatively small portion of an expansive lakeward view, and thus will not dominate the horizon (EDR, 2017). Therefore, the small number of turbines, their distance from shore, and the relatively small area of the horizon occupied by the turbines all help to minimize the visual effect of the Project on the setting associated with historic resources located on the shoreline of Lake Erie.

## **4.0 SUMMARY AND CONCLUSIONS**

### **4.1 Summary of Project's Potential Effect on Archaeological Resources**

With respect to submerged archaeological resources, the studies conducted for the Project did not identify any potentially significant archaeological sites within the APE for Direct Effects and concluded that the Project was unlikely to impact significant archaeological resources. No further investigation nor need for mitigation was recommended (Gray & Pape, 2014; VanZandt, 2017).

### **4.2 Summary of Project's Potential Effect on Historic Resources**

Construction of the Project will not require the demolition or physical alteration of any buildings or other potential historic resources. No direct physical impacts to historic-architectural resources will occur as a result of the Project. The Project's effect on a given historic property would be a change (resulting from the introduction of wind turbines) in the property's visual setting.

The potential visibility of the Project from the identified historic resources within the study area is summarized in Tables 1 through 3 and depicted in Figures 4 through 6. The majority of cultural resources that fall within the Project viewshed will have limited views due to screening provided by intervening topography, vegetation, and/or structures. The proposed turbines are located greater than 7 miles from all cultural resources, where they will appear as background features in the view and the effects of distance will significantly attenuate the turbine's apparent size. When viewed at these distances, the turbines do not appear out of scale with other built features in the view. Despite the fact that the turbines are very large structures, when viewed at distances greater than 7 miles they appear relatively small compared to the other developed features along the shoreline and in the near shore area.

Many of the historic resources within the APE for Indirect Effects, such as the USS Cod and U.S. Coast Guard Cleveland Harbor Station, are located on the waterfront because of their association with maritime activities, and the lake is therefore a significant feature in the visual setting for those properties. As noted in the VIA for the Project and herein, the proposed wind turbines would be a new modern feature in the visual setting of the lake. Due to their scale and novel form, they are likely to attract viewer attention. However, as noted in the VIA, the Project's distance from the shoreline viewpoints substantially mitigates this impact. The closest point to shore from the turbines is 7.1 miles. Even at this closest distance, the Project will occupy a relatively small portion of an expansive lakeward view, and thus will not dominate the horizon (EDR, 2017).

The Project will be visible and result in an effect on the visual setting of historic properties located along the Lake Erie shoreline. However, the small number of turbines, their distance from shore, and the relatively small area of the horizon

occupied by the turbines all help to minimize the visual effect of the wind turbines. The Project's overall effect on the visual setting associated with historic properties will be a long-term, but relatively minor, impact. Therefore, the Project is not anticipated to result in a significant adverse effect on historic properties.

## 5.0 REFERENCES

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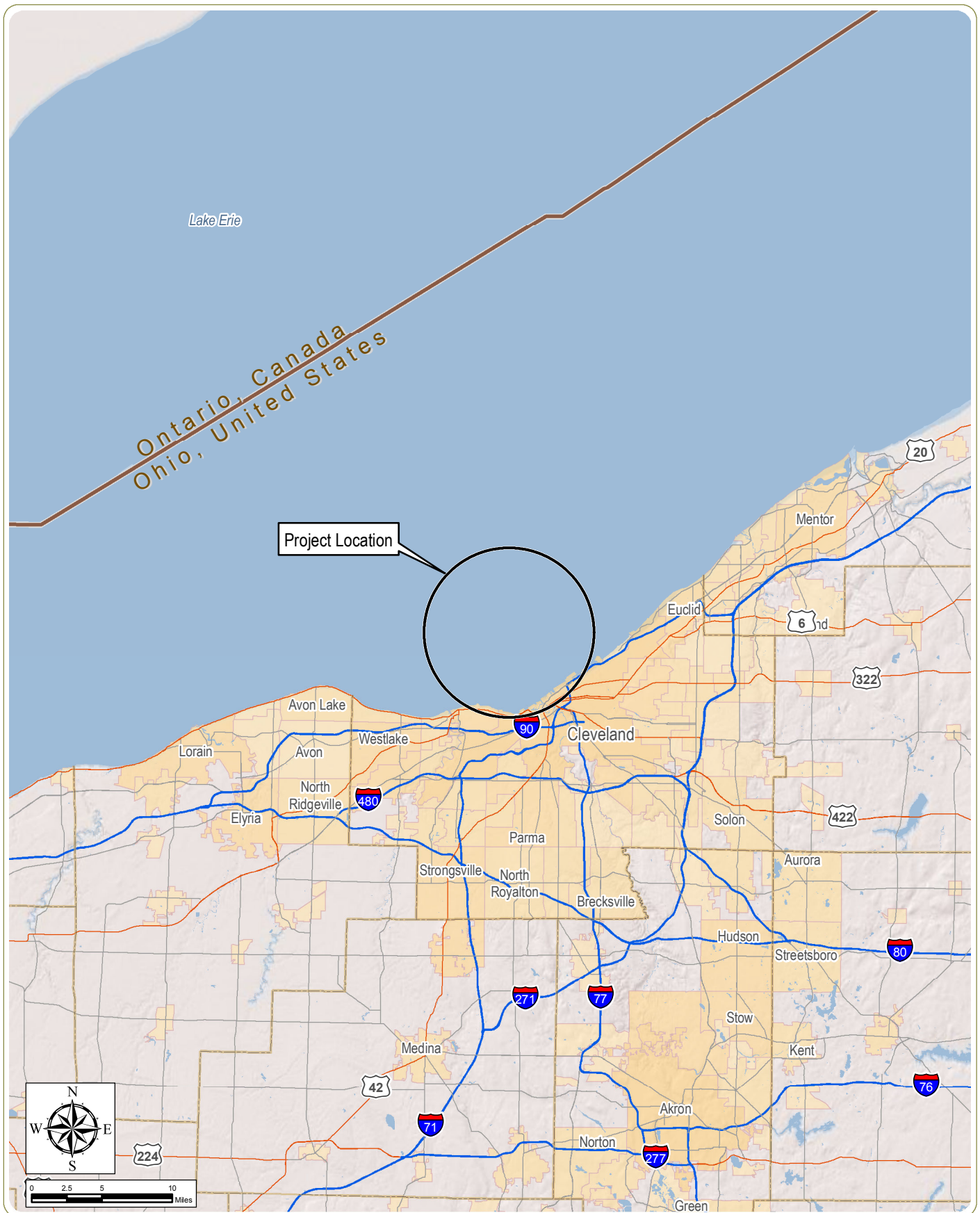
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## Figures



## Icebreaker Wind Farm

Lake Erie, City of Cleveland - Cuyahoga County, Ohio

### Figure 1: Regional Project Location

May 2017

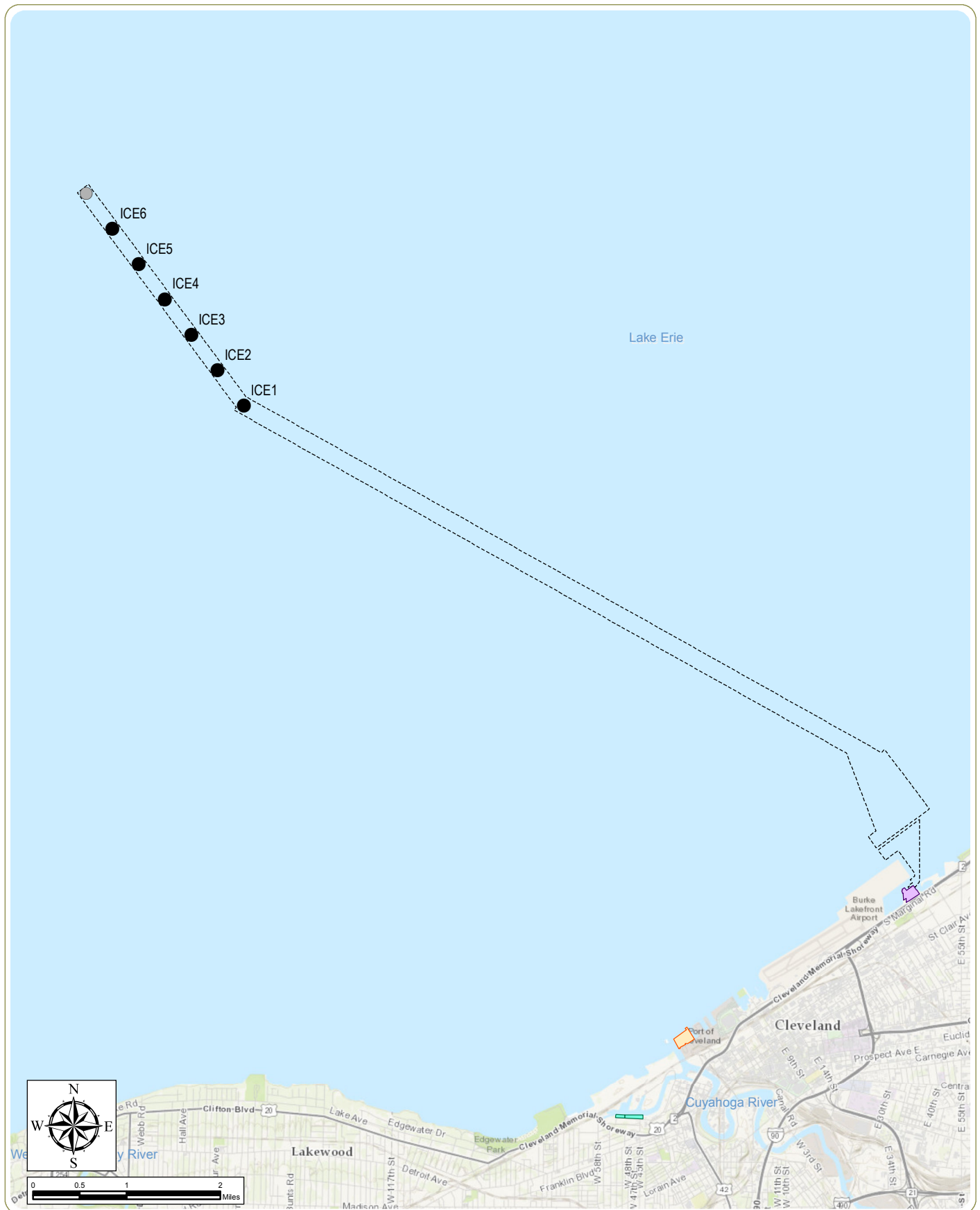
**Notes:** 1. Basemap: ESRI StreetMap North America, 2008.

2. This is a color graphic. Reproduction in grayscale may misrepresent the data.



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## Icebreaker Wind Farm

Lake Erie, City of Cleveland - Cuyahoga County, Ohio

### Figure 2: Proposed Project Layout

May 2017

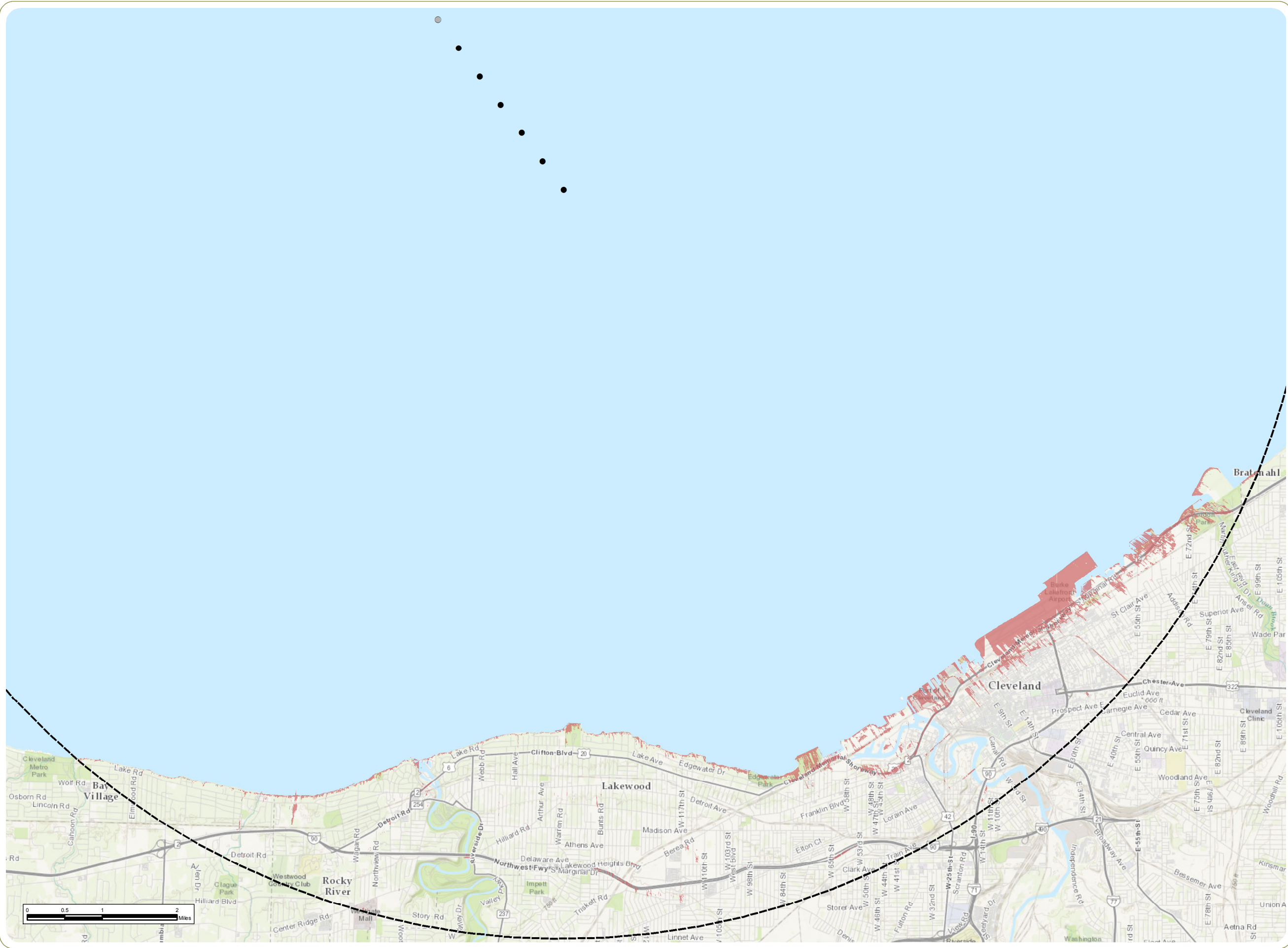
**Notes:** 1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.  
2. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- Primary Wind Turbine
- Alternate Wind Turbine
- Cable Route Envelope
- Staging Area
- O&M Center Parcel
- Substation Parcel



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**Icebreaker Wind**

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

**Figure 3: Study Area**

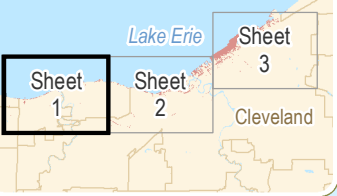
May 2017

- Primary Wind Turbine
- Alternate Wind Turbine
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study Area

- Notes:**
1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
  2. Potential turbine visibility from ground-level vantage points based on a maximum blade tip height of 479 feet.
  3. Viewshed visibility is based on screening provided by topography, structures and vegetation as derived from Ohio Statewide Imagery Program 2006 LiDAR data.
  4. Viewshed results on-shore are presented here. Views of the proposed turbines from Lake Erie will be unscreened.
  5. This is a color graphic. Reproduction in grayscale may misrepresent the data.





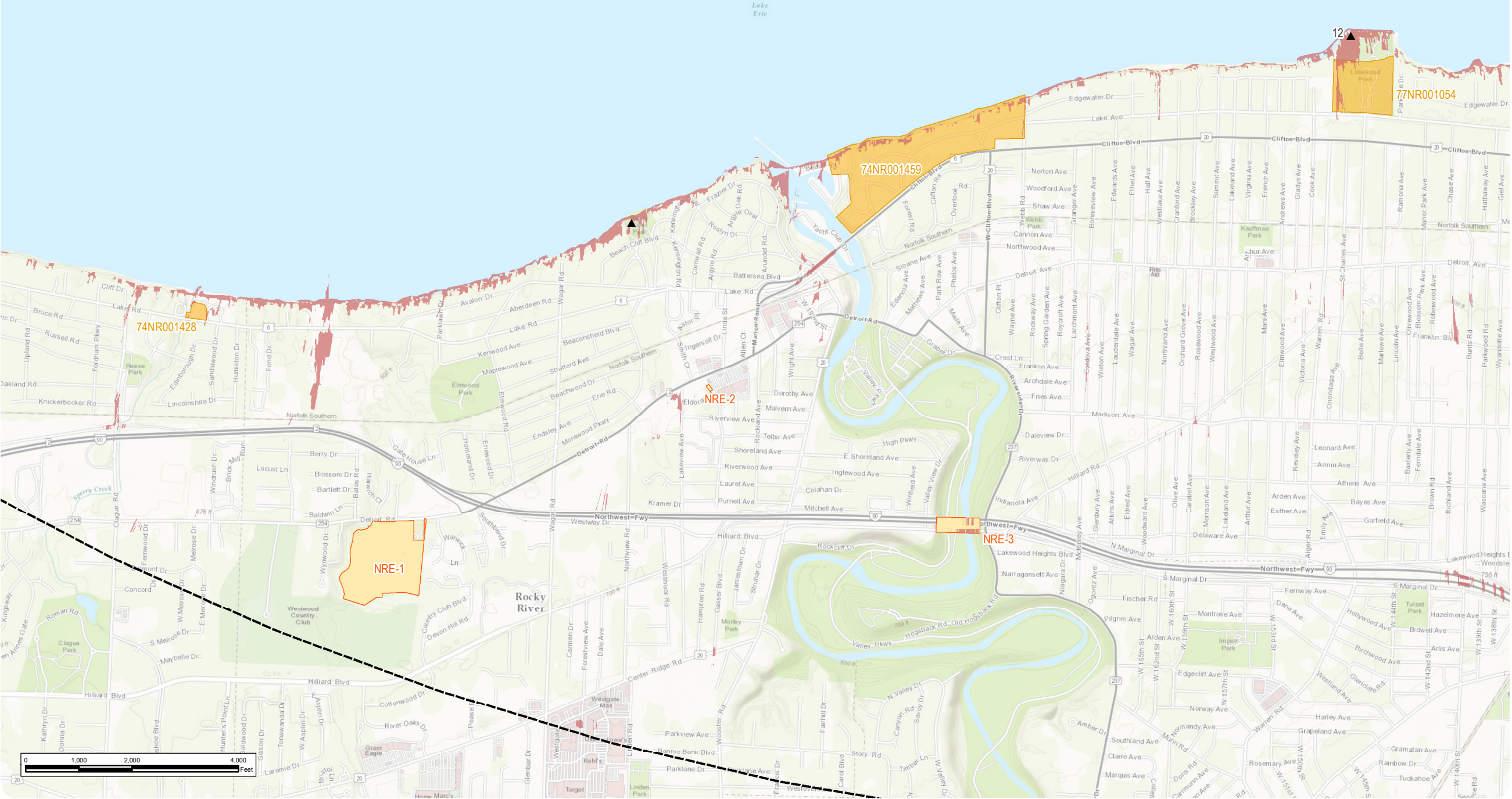


# Icebreaker Wind Farm

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

Figure 4: NRHP Resources Visual Effects

May 2017

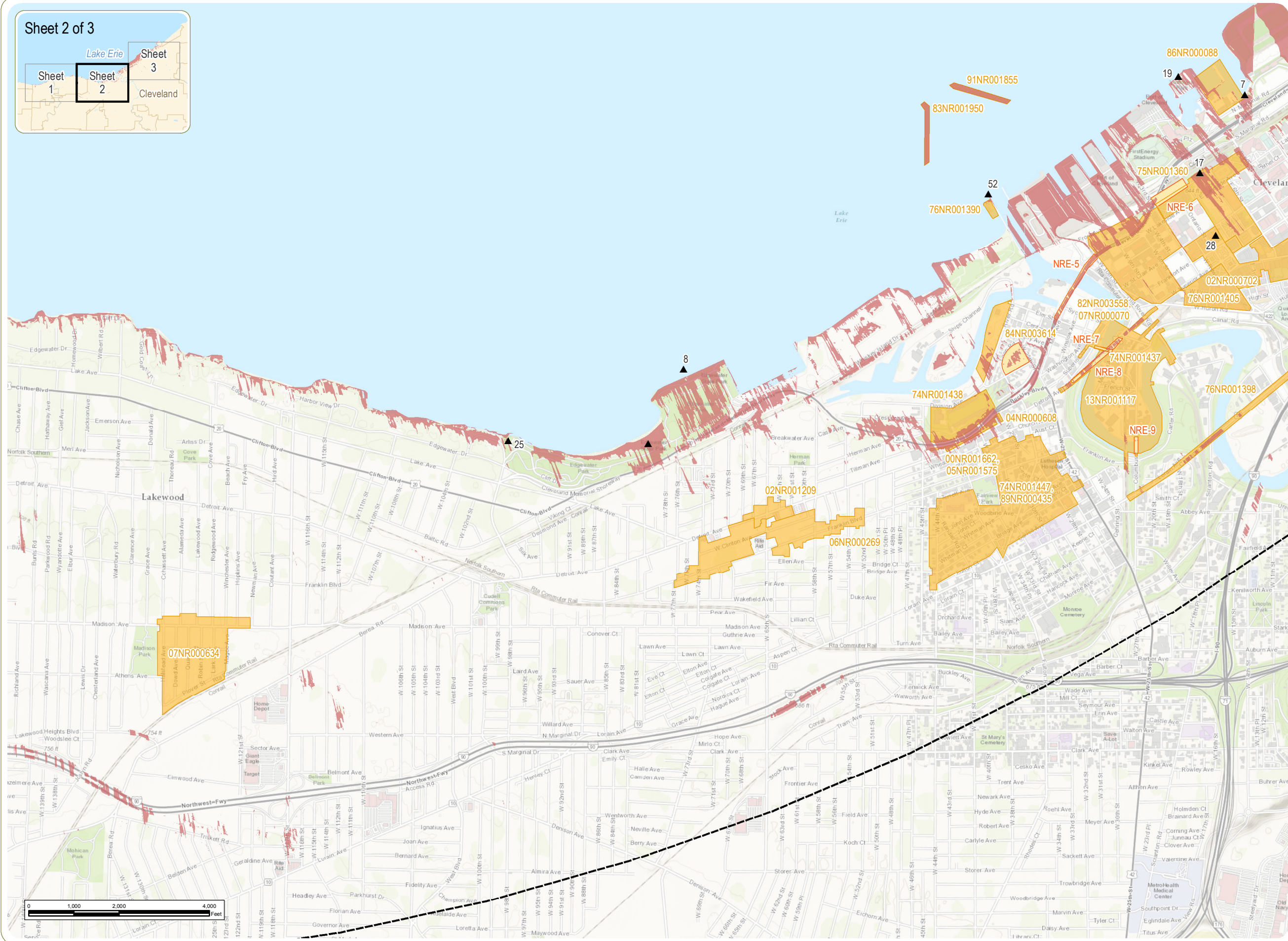
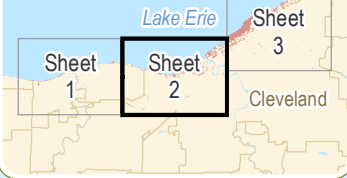


- ▲ Simulation Viewpoint
- NRHP-Eligible Site
- NRHP-Listed Site or District
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study

- Notes:**
1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
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## Icebreaker Wind Farm

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

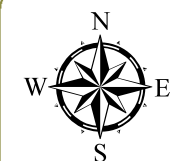
**Figure 4: NRHP Resources Visual Effects**

May 2017

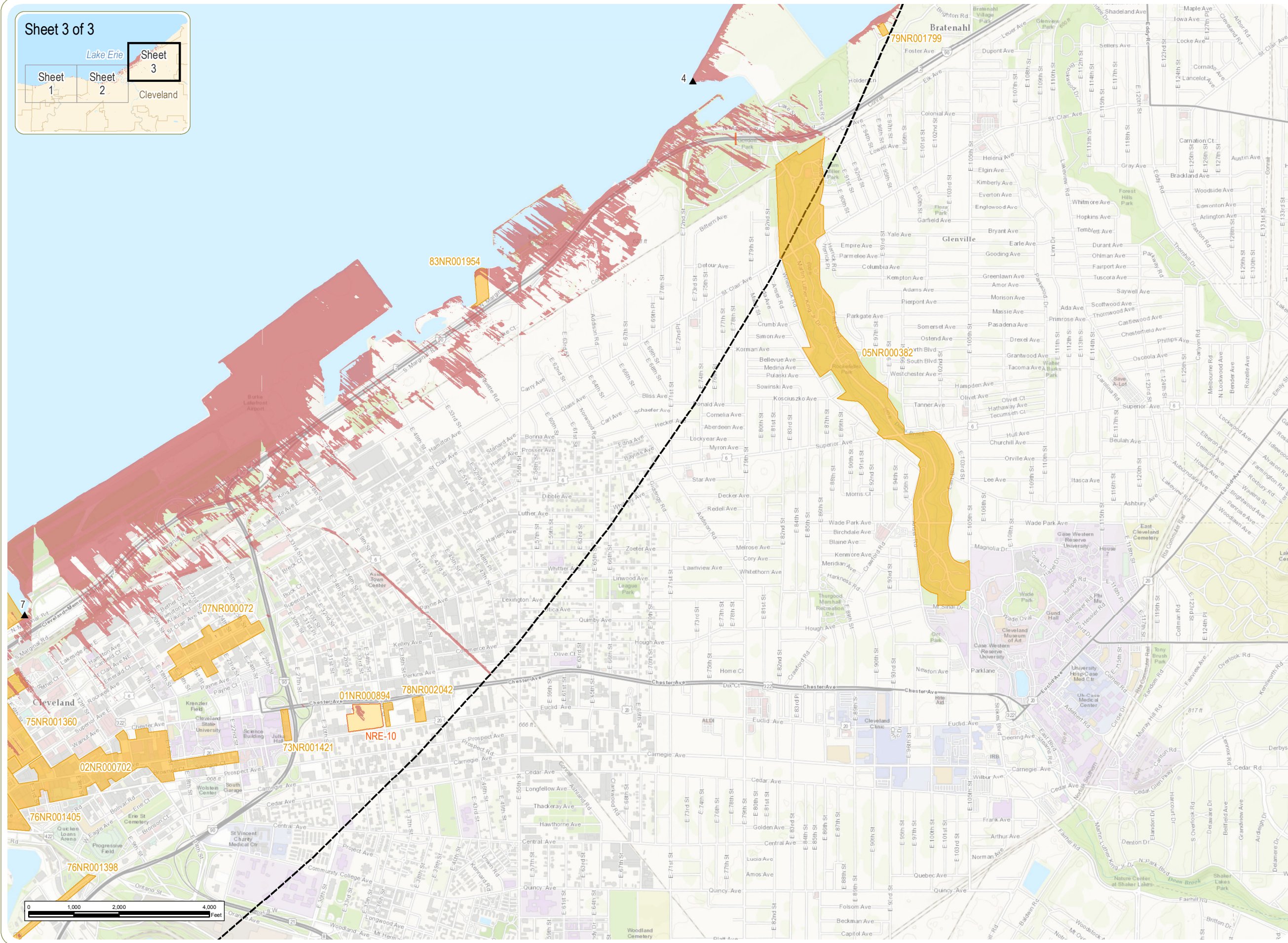
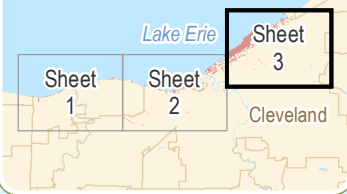
- ▲ Simulation Viewpoint
- NRHP-Eligible Site
- NRHP-Listed Site or District
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study

### Notes:

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## Icebreaker Wind Farm

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

**Figure 4: NRHP Resources Visual Effects**

May 2017

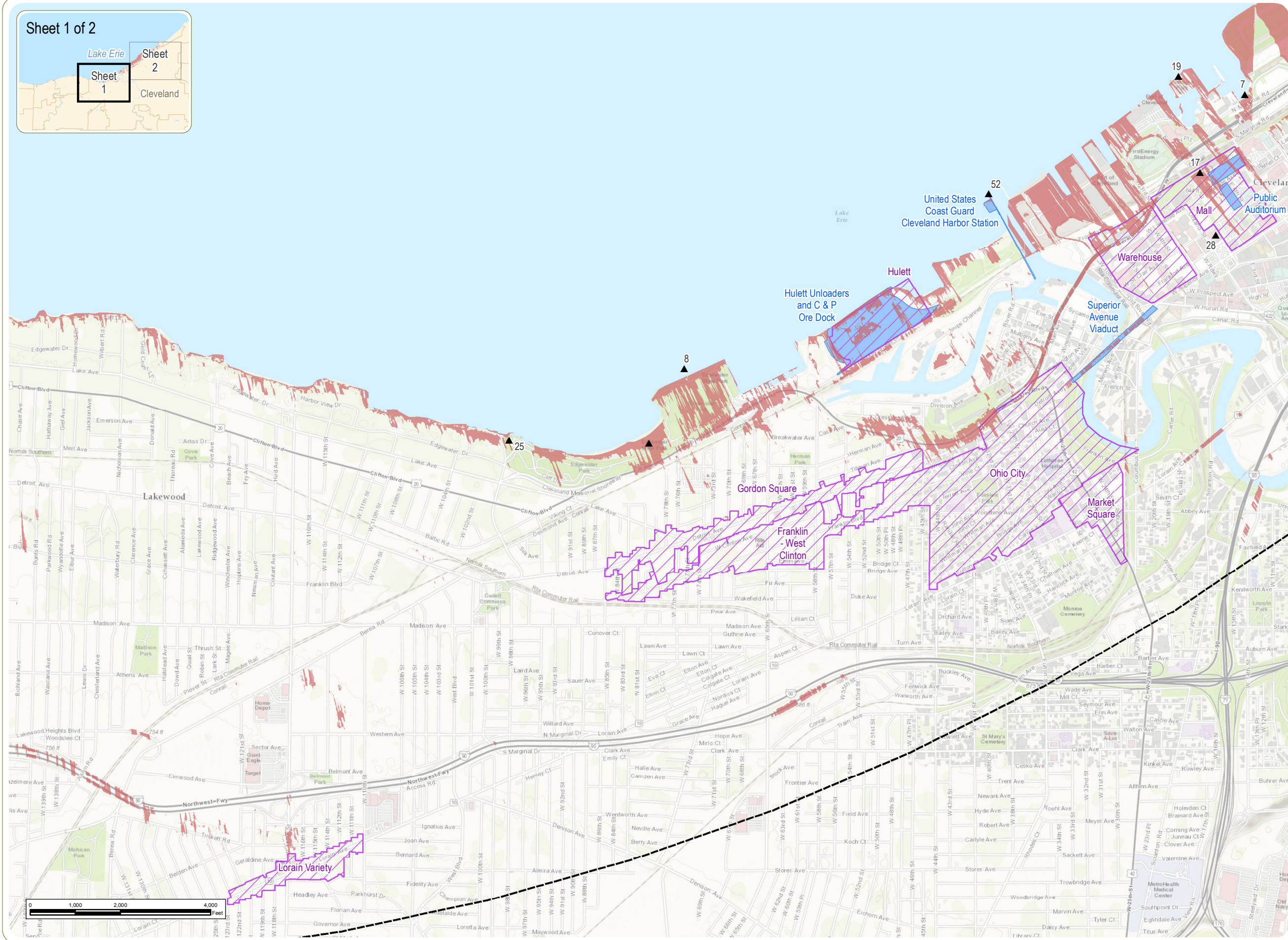
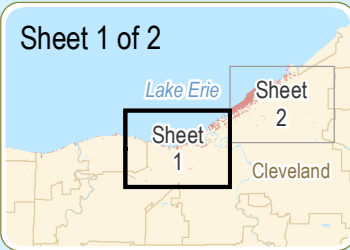
- ▲ Simulation Viewpoint
- NRHP-Eligible Site
- NRHP-Listed Site or District
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study

### Notes:

1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
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## Icebreaker Wind Farm

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

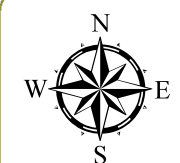
**Figure 5: Designated Cleveland Landmarks Visual Effects**

May 2017

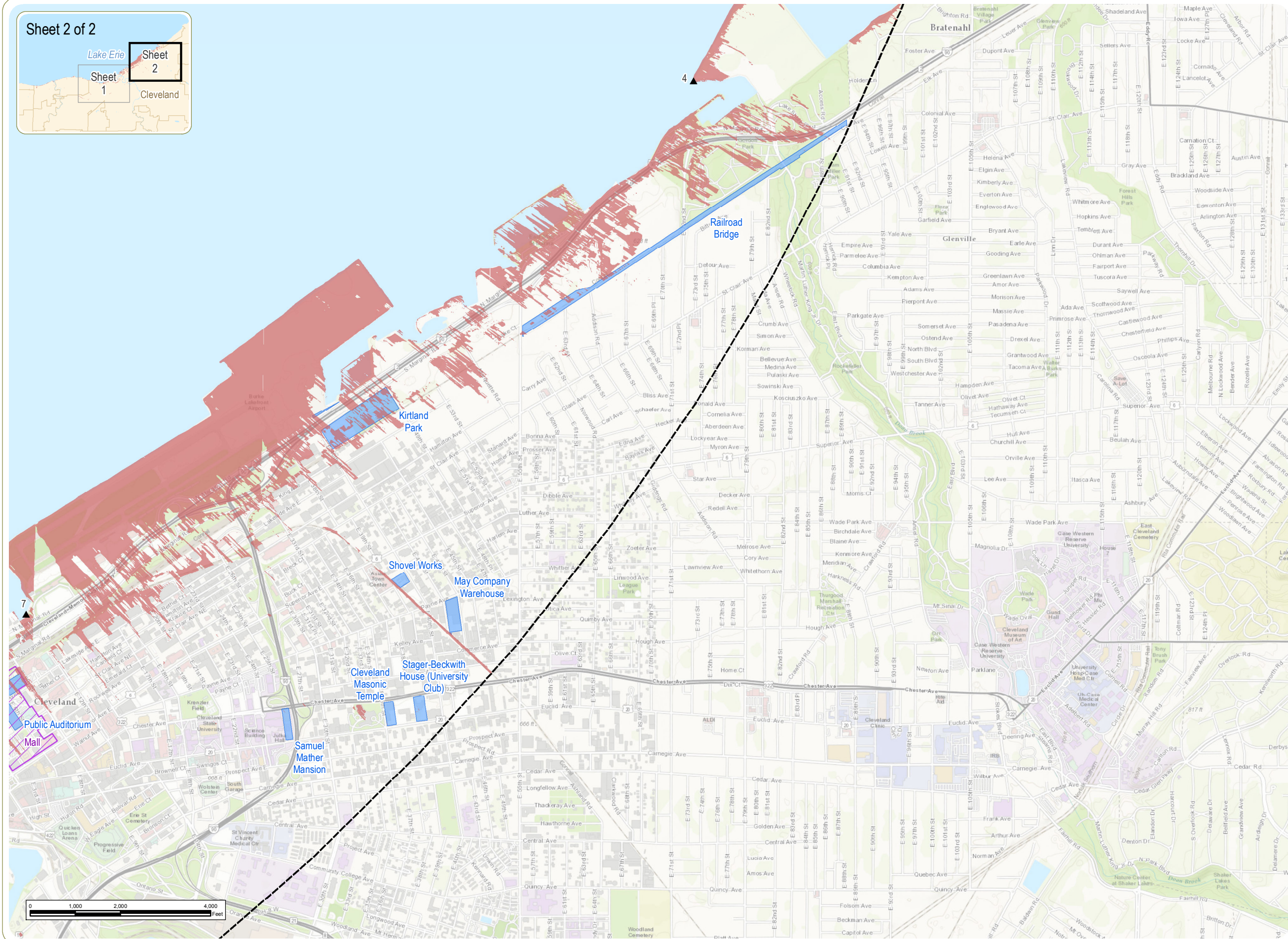
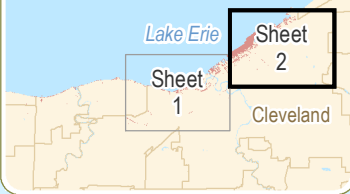
- ▲ Simulation Viewpoint
- Designated Cleveland Landmark
- Designated Cleveland Landmark District
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study

### Notes:

1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
2. Potential turbine visibility from ground-level vantage points based on a maximum blade tip height of 479 feet.
3. Viewshed visibility is based on screening provided by topography, structures and vegetation as derived from Ohio Statewide Imagery Program 2006 LiDAR data.
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## Icebreaker Wind Farm

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

**Figure 5: Designated Cleveland Landmarks Visual Effects**

May 2017

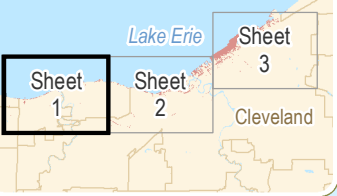
- ▲ Simulation Viewpoint
- Designated Cleveland Landmark
- Designated Cleveland Landmark District
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study

**Notes:**

1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
2. Potential turbine visibility from ground-level vantage points based on a maximum blade tip height of 479 feet.
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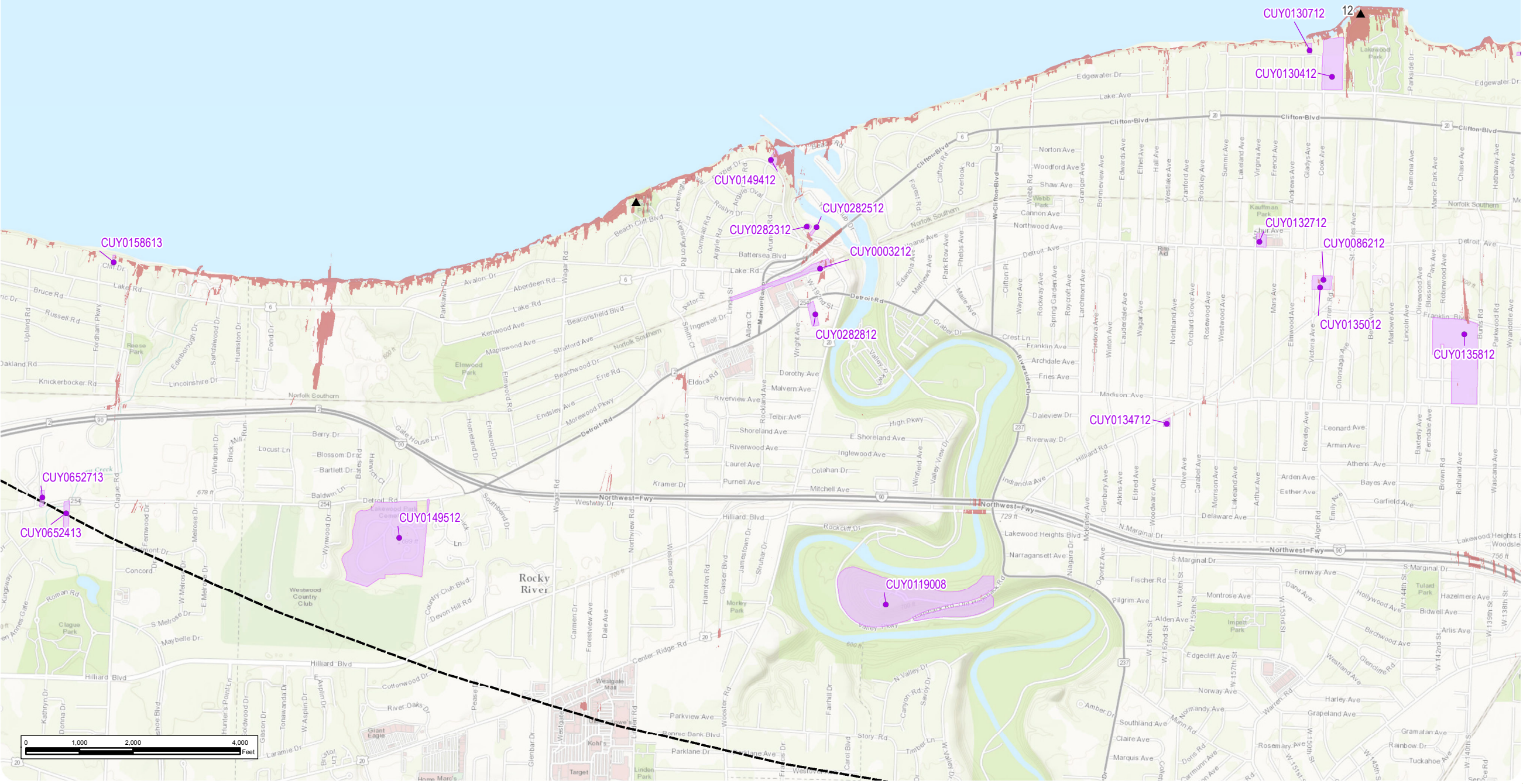




**Icebreaker Wind Farm**  
Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

**Figure 6: Ohio Historic Inventory Visual Effects**

May 2017

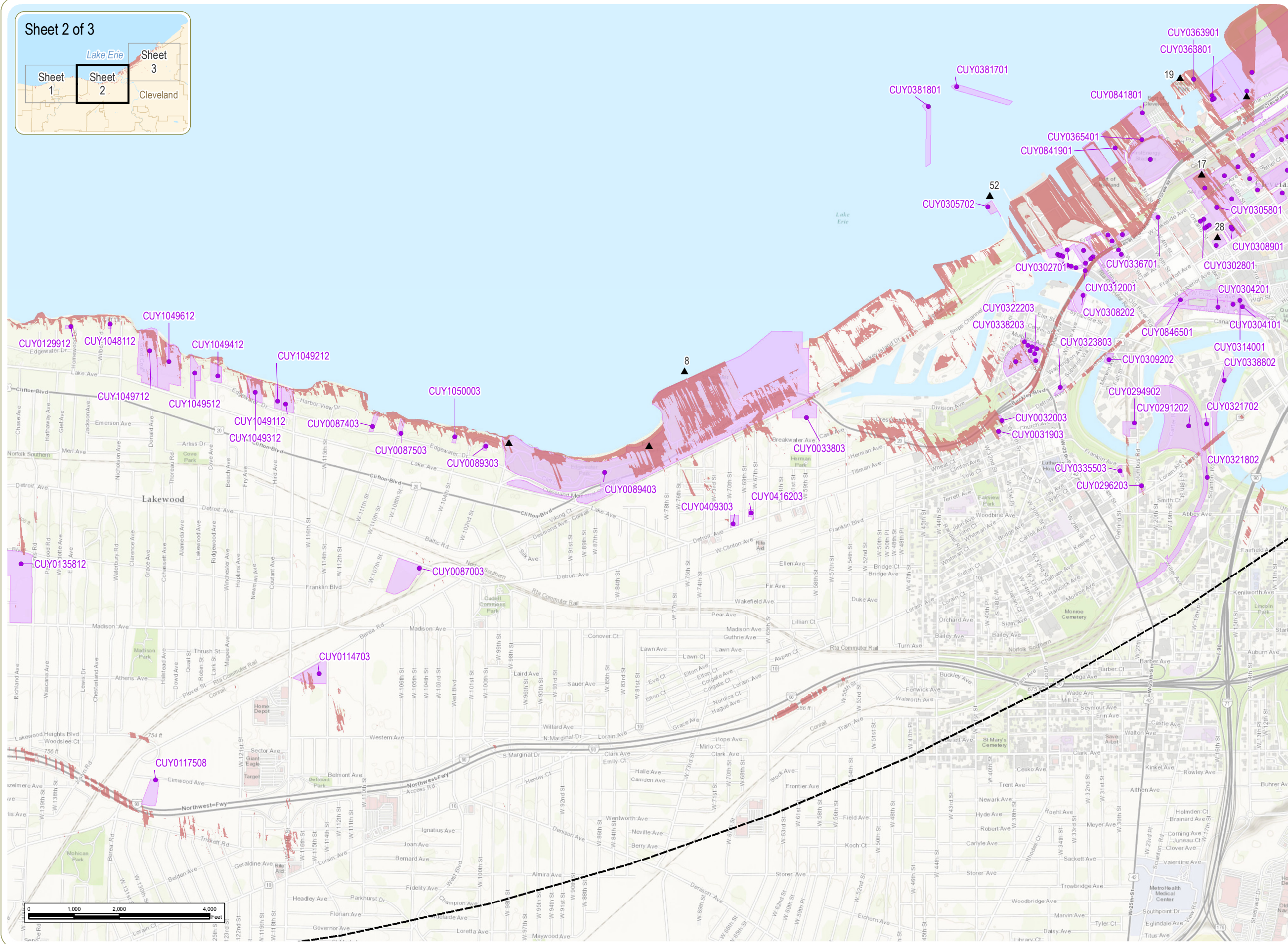


- ▲ Simulation Viewpoint
- Ohio Historic Inventory Structure
- Parcel Containing Ohio Historic Inventory Structure
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study Area

- Notes:**
1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
  2. Potential turbine visibility from ground-level vantage points based on a maximum blade tip height of 479 feet.
  3. Viewshed visibility is based on screening provided by topography, structures and vegetation as derived from Ohio Statewide Imagery Program 2006 LiDAR data.
  4. Viewshed results on-shore are presented here. Views of the proposed turbines from Lake Erie will be unscreened.
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Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

### Figure 6: Ohio Historic Inventory Visual Effects

May 2017

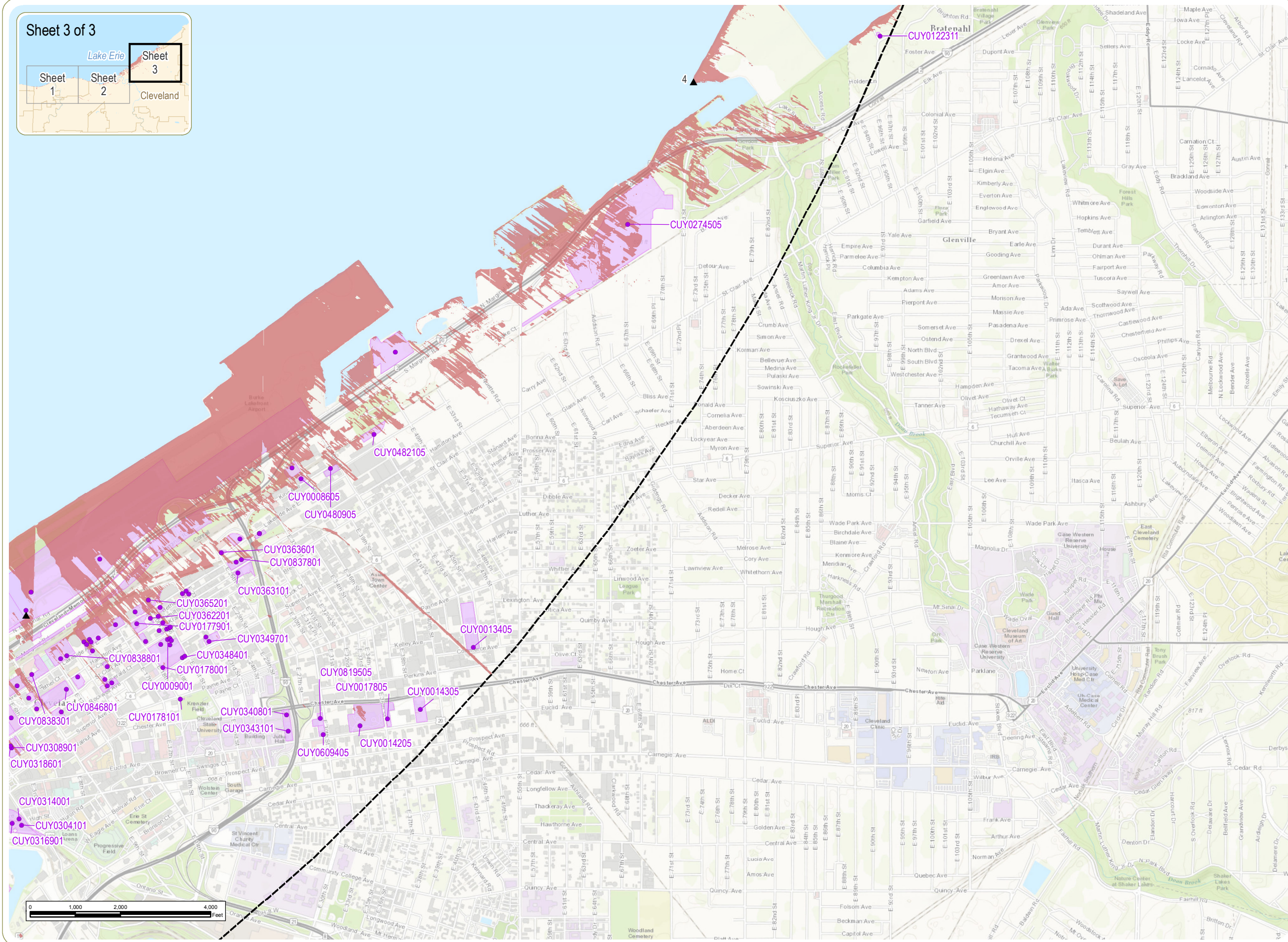
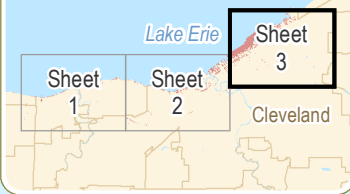
- ▲ Simulation Viewpoint
- Ohio Historic Inventory Structure
- Parcel Containing Ohio Historic Inventory Structure
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study Area

**Notes:**

1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
2. Potential turbine visibility from ground-level vantage points based on a maximum blade tip height of 479 feet.
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## Icebreaker Wind Farm

Lake Erie, City of Cleveland  
Cuyahoga County, Ohio

**Figure 6: Ohio Historic Inventory Visual Effects**

May 2017

- ▲ Simulation Viewpoint
- Ohio Historic Inventory Structure
- Parcel Containing Ohio Historic Inventory Structure
- Study Area: Area of Potential Project Visibility
- 10-Mile Visual Study Area

### Notes:

1. Basemap: ESRI ArcGIS Online "World Topographic Map" Map Service.
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