ALLETE clean energy™
SMART. POWERFUL. AHEAD.

30 West Superior Street, Suite 200 Duluth, Minnesota 55802-2093
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July 17, 2012



Mr. Darrell Nitschke
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard Ave., Dept. 408
Bismarck, North Dakota 58505-0480

**RE: ALLETE Clean Energy, Inc.**
**100 MW Clean Energy #1 Wind Project, Mercer & Morton Counties**
**Siting Application**
**Case No. PU-11-662**

Dear Mr. Nitschke:

ALLETE Clean Energy is enclosing an original and ten copies of the following documents:

Draft Findings of Fact, Conclusions of Law and Order;
Late Filed Exhibit 4 – SHPO Concurrence Letter;
Late Filed Exhibit 6 – Landowners Waivers Shadow Flicker; and
Late Filed Exhibit 7 – Set back from non-participating and participation landowners.

As ALLETE Clean Energy indicated during the May 4, 2012 public hearing, the process for Late Filed Exhibit 5 – Mercer County Conditional Use Permit will begin after issuance of the North Dakota Public Service Commission permit and ALLETE Clean Energy will submit the permit as soon as issued by Mercer County.

Please let us know if you have any questions regarding these documents.

Sincerely,

David R. Moeller

kl
Enc.
c: Eric Norberg, ALLETE Clean Energy
Dwight Anderson, ALLETE Clean Energy
Steve Peluso, ALLETE Clean Energy
Jim Atkinson, ALLETE
Daniel McCourtney, ALLETE

# STATE OF NORTH DAKOTA
# PUBLIC SERVICE COMMISSION

**ALLETE Clean Energy, Inc.** **Case No. PU-11-662**
**Clean Energy #1 Wind Project – Mercer and Morton Counties**
**Siting Application**

## FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

**_____, 2012**

### Appearances

Commissioners Tony Clark, Kevin Cramer, and Brian P. Kalk.

David R. Moeller, Senior Attorney, ALLETE Clean Energy, 30 West Superior Street, Duluth, MN 55802, on behalf of the Applicant.

Mark Gruman, Legal Counsel on behalf of the North Dakota Public Service Commission.

Patrick Ward, Administrative Law Judge pursuant to temporary appointment by the Office of Administrative Hearings, 1701 North Ninth Street, Bismarck, North Dakota 58501-1882, as Procedural Hearing Officer.

### Preliminary Statement

On October 17, 2011, ALLETE Clean Energy, Inc., a subsidiary of ALLETE, Inc. (ALLETE Clean Energy) submitted a Letter of Intent (LOI) to submit an application for a Certificate of Site Compatibility for a nominal 100 MW wind energy conversion facility in Mercer and Morton counties of North Dakota. ALLETE Clean Energy requested in its LOI that the Commission shorten the one-year waiting period required between filing the LOI and the filing of an application.

On November 23, 2011, the North Dakota Public Service Commission (Commission) shortened the one-year waiting period to one month, and assessed a filing fee of $100,000.00 due upon filing of an application.

On January 31, 2012, ALLETE Clean Energy filed an Application for a Certificate of Site Compatibility (Application) authorizing construction of the up to 100 MW Clean Energy #1 Wind Project (Clean Energy #1 Wind Project) consisting of up to 50 wind turbine generators and associated facilities in Mercer and Morton counties, North Dakota (Hearing Exhibit 1).

On March 21, 2012, the Commission deemed the Application complete conditioned on the filing of final wind turbine locations one week before the scheduled public hearing, and issued a Notice of Filing and Notice of Hearing, scheduling a public hearing for May 4, 2012, at 9:00 a.m. CDT, at the City Commission Meeting Room, 205 2nd Ave NW, Mandan, North Dakota 58554.

The Notice identified the following issues to be considered:

1. Will the location, construction and operation of the proposed facilities produce minimal adverse effects on the environment and upon the welfare of the citizens of North Dakota?

2. Are the proposed facilities compatible with the environmental preservation and the efficient use of resources?

3. Will the proposed facility locations minimize adverse human and environmental impacts while ensuring continued system reliability and integrity, and ensuring that energy needs are met and fulfilled in an orderly and timely fashion?

On April 23, 2012, ALLETE Clean Energy filed an executed Certification Relating to Order Provisions – Wind Energy Conversion Facility Siting (Hearing Exhibit 3).

On April 26, 2012, ALLETE Clean Energy submitted a map detailing the proposed final locations for turbines. ALLETE Clean Energy also supplemented its Application with additional information on wetland delineation, cultural resources surveys and agency consultation (Hearing Exhibit 2).

On May 4, 2012, the public hearing was held as scheduled. Having allowed all interested persons an opportunity to be heard, and having heard, reviewed and considered all testimony and evidence presented, the Commission makes the following:

## Findings of Fact

1. ALLETE Clean Energy, is a wholly owned subsidiary of ALLETE, Inc.

2. ALLETE Clean Energy is registered to conduct business in the State of North Dakota, as evidenced by a Certificate of Good Standing issued by the North Dakota Secretary of State on November 7, 2011.

3. ALLETE Clean Energy proposes to construct and own a wind energy facility (the Clean Energy #1 Wind Project) to be located in Mercer and Morton counties, North Dakota, north of Glen Ulin, North Dakota. The project area, consists of approximately 12,000 acres. The wind turbines will be placed throughout the project site.

4. Associated facilities to be constructed within the project area include access roads, underground electrical and feeder lines, additions to an existing electrical substation, meteorological towers, wind monitoring stations, and operations and maintenance buildings.

5. North Dakota Century Code § 49-22-16 provides that no energy conversion facility site shall be designated if it violates any county or city land use, zoning, building rules, regulations or ordinances. Mercer and Morton counties require zoning permits for construction, which ALLETE Clean Energy is in the process of obtaining.

Project Design

6. The project will have a nameplate (gross) generating capacity of up to 100 MW, consisting of up to 50 wind turbines, depending on turbine size and associated facilities.

7. ALLETE Clean Energy has not yet selected a wind turbine, but each turbine will have a maximum blade tip height of 150 meters that is derived from a maximum nominal hub height of 90 meters (295 feet), and a maximum nominal rotor diameter of 120 meters (393 feet).

8. Each tower will be secured by a concrete foundation that can vary in design depending on the soil conditions. A typical foundation extends seven to ten feet below grade where it spreads to a final diameter of 50 to 70 feet at the base. Turbine lighting will be limited to warning lights required by the Federal Aviation Administration. A control panel inside the base of each turbine tower houses communication and electronic circuitry. Each turbine is equipped with a wind speed and direction sensor that communicates to the turbine control system to signal when sufficient winds are present for operation. The turbine features variable-speed control and independent blade pitch to assure aerodynamic efficiency. Electricity generated by each turbine is brought to a pad-mounted transformer where the voltage is stepped up to a power collection line voltage of 34.5 kV. This electricity is collected by sets of underground power collection lines.

9. The 34.5 kV collector system will transmit power to a proposed Minnesota Power substation in Mercer County. At the Project substation, the power will be transformed to a proposed 230 kV transmission line that will connect with Minnesota Power's existing 230kV Bison – Square Butte 84 Line to interconnect at the Square Butte 230 kV Substation. Electrical energy is converted from AC to DC via a DC converter station within the Square Butte Substation. From there, the electric energy from the Clean Energy #1 Wind Project will be transmitted to customers via the existing Minnesota Power DC Line which extends from the Square Butte Substation to Minnesota Power's Arrowhead Substation located near Duluth, Minnesota. Electrical energy may also reach ALLETE Clean energy customers via the existing AC transmission system, as capacity is available.

10. Wind data was collected from meteorological towers constructed in the project site area. ALLETE Clean Energy expects the project will have annual average wind speeds of 8 mps (equivalent to 17.8 mph) or higher, comparable to National Renewable Energy Laboratory wind power class ratings of 5 and 6, indicating an excellent to outstanding wind resource.

11. Construction of the Clean Energy #1 Wind Project is expected to take approximately 6 months, at a total estimated construction cost of $200 million depending on final project design, turbine selection and market pricing at the time the project is executed.

12. ALLETE Clean Energy states it has secured all wind options from landowners necessary for the construction and operations of the Clean Energy #1 Wind Project.

13. The project schedule is dependent on ALLETE Clean Energy securing an off-taker.

14. Safety factors will be incorporated into the wind turbines. Each turbine will be equipped with a Supervisory Control and Data Acquisitions (SCADA) communication technology to control and monitor the turbine. In addition, each turbine is equipped with a lightning protection system and is grounded and shielded to protect against lightning.

15. Construction and operation of the Clean Energy #1 Wind Project will conform to requirements of the National Electric Safety Code.

Siting Criteria

16. North Dakota Administrative Code Chapter 69-06-08 sets forth certain criteria to guide the Commission in evaluating the suitability of granting an application for the certificate of site compatibility. The criteria set forth in North Dakota Administrative Code Section 69-06-08-01 are classified as Exclusion Areas, Avoidance Areas, Selection Criteria, and Policy Criteria. With the exception of prime and unique farm land, an energy conversion facility must not be sited within an Exclusion Area. The exception for prime and unique farm land is if the Commission finds that the prime farm and unique farm land that will be removed from use for the life of the facility is of such small acreage as to be of negligible impact on agricultural production, then such exclusion shall not apply. An energy conversion facility must not be sited within an Avoidance Area unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an Avoidance Area should be designated for a facility, the Commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources, and alternate sites. In accordance with the Commission's Selection Criteria, an energy conversion facility shall be approved only if it is demonstrated that no significant adverse impacts will result from the location, construction, and operation of the facility. In accordance with the

Commission's Policy Criteria, preference may be given to an applicant demonstrating certain benefits of the energy conversion facility.

17. Exhibit 7 of the Application labeled Prime Farmland Soil Distribution Map shows that approximately 1.4 percent of the site is prime farmland soils, most of it located in the southeast and northeast portions of the site. The final layout will site only a limited number of turbines and facilities in prime farmlands. Even if all the turbines and access roads were placed within prime farmland areas, only approximately 64 acres of prime farmland would be impacted, or approximately 0.1 percent of prime farmland in the Project site. Unique and prime farmland to be disturbed by this energy conversion facility is of such small acreage as to be of negligible impact on agricultural production.

18. Approximately 64 acres of agricultural production will be impacted due to turbine placement, access roads, the operations and maintenance facility and project substation. Wind turbine configuration will not result in significant impacts to agricultural production. No impacts on the agricultural quality of the crop land are anticipated. If compaction of soils occurs during construction, ALLETE Clean Energy will work with landowners to alleviate the compaction.

19. ALLETE Clean Energy submitted evidence to demonstrate that the proposed energy conversion facility would not have significant impact on the Selection Criteria set forth in North Dakota Administrative Code section 69-06-08-01(3).

20. ALLETE Clean Energy submitted evidence to demonstrate its commitment to maximize the benefits of the proposed energy conversion facility as far as is possible so as to meet the Policy Criteria set forth in North Dakota Administrative Code Section 69-06-08-01(4).

21. No significant adverse impact is foreseen on the ability of the affected area to provide community services, such as housing, health care, schools, police and fire protection, water and sewer, solid waste management, transportation, or public safety. The proposed project is expected to be of economic benefit to the affected area.

22. The only Avoidance Areas identified within the project area are wetlands. ALLETE Clean Energy testified that there will be a negligible impact to wetland resources.

23. According to North Dakota Geological Survey data provided by the applicant, no viable lignite coal economic reserves have been identified within the project area.

Cultural Resources

24. The Clean Energy #1 Wind Project will avoid all known archaeological sites.

25. On July 9, 2012 the North Dakota State Historic Preservation Office issued a letter concurring with the conclusion of the Class III Cultural Resource Inventory for the

Clean Energy #1 Wind Project by Beaver Creek Archaeology of Mandan, North Dakota, regarding the "No Significant Sites Affected" and "No Historic Properties Affected" determinations (Late-filed Hearing Exhibit 4).

Wetlands and Wildlife

26. ALLETE Clean Energy has consulted with numerous local, state, and federal agencies, which are identified in Appendix C of the Application, and Appendix A of the April 2012 Supplement. No agency has objected to construction of the project.

27. At the request of USFWS, ALLETE Clean Energy is developing an Avian and Bat Protection Plan (ABPP) that will be implemented during construction and for post-construction monitoring. The ABPP will include protocols for field technicians to report and document avian mortalities during routine maintenance operations.

28. A wetland delineation was conducted for the Clean Energy #1 Wind Project and the results were submitted to the Commission. Wetlands will be avoided to the extent practicable during the construction phase of the project. If impacts to Clean Water Act jurisdictional waters are unavoidable and less than one-half acre, ALLETE Clean Energy will seek project authorization under a Section 404 U.S. Army Corps of Engineers (USACE) Nationwide Permit (NWP) application. Any permanent impacts to jurisdictional waters will be mitigated according to USACE requirements.

Further Mitigative Measures

29. Morton County has established setbacks for wind turbine towers from property boundaries, road right-of-ways (ROW), and occupied residences. ALLETE Clean Energy's proposed turbine locations will meet or exceed those setback requirements. The Morton County Special Use Permit was included in the April 2012 supplemental filing (Appendix F)

30. As part of their permitting process, Mercer County required specific turbine location information as well as road layout design. Upon receiving approval from the North Dakota PSC, ALLETE Clean Energy will then move forward with obtaining a Conditional Use Permit from the Mercer County Board. Once obtained, ALLETE Clean Energy will file the Mercer County's Conditional Use Permit with the Commission.

31. ALLETE Clean Energy proposed setbacks of at least 471 feet (1.1 x turbine height) from existing transmission lines, publically improved and maintained road right-of-ways, railroads and non-participant property boundaries.

32. No turbines will be placed within 1,400 feet of an occupied residence. The closest turbine to a participating occupied residence is approximately 1,540 feet (late filed Exhibit 7). The closest turbine to a non-participating occupied residence is approximately 2,360 feet (late filed Exhibit 7).

33. ALLETE Clean Energy conducted noise and shadow flicker analyses, using both "worst case" and "realistic" scenarios. These studies indicated that the Project will not cause adverse effects due to either noise or shadow flicker. As shown in Hearing Exhibit 2 (Appendix I), the highest expected cumulative noise level at any residence is less than 44 decibels (dB).

34. As shown in Hearing Exhibit 2 (Appendix H), shadow flicker models show that the participating residence with the greatest potential exposure will experience about 36 hours annually. This participating landowner and another participating landowner have executed shadow flicker waivers with ALLETE Clean Energy (late-filed Exhibit 7).

35. Shadow flicker exposure at participating residences that do not require waivers will be below the recognized industry standard of 30 hours/year. Those same models predict that the highest level of exposure at a non-participating residence would be about 25 hours.

36. ALLETE Clean Energy will maintain ground water protection and soil conservation practices to protect topsoil and adjacent resources, and to minimize soil erosion during construction and operation of the project. Best management practices (BMPs) for erosion and sediment control will be used to minimize wind and water erosion in the project area during and after construction. Only land needed for the facility will be impacted. Temporarily disturbed areas will be restored.

37. ALLETE Clean Energy has a legal obligation to decommission the wind energy facilities.

38. ALLETE Clean Energy made other representations and agreements as contained in the Certification Relating to Order Provisions – Wind Energy Conversion Facility Siting executed by ALLETE Clean Energy and filed with the Commission on April 23, 2012 (Hearing Exhibit 3), which is incorporated in these Findings of Fact. The Commission accepts ALLETE Clean Energy's proposed modification to Paragraph 16 that it shall bury all underground collection and feeder lines to a depth of at least 42 inches to the top of the lines due to ALLETE Clean Energy's representation at the May 4, 2012 hearing about increased costs and that safety will not be compromised. The Commission accepts the following modifications proposed to the Tree and Shrub Mitigation Specifications attached to the certification:

a. Paragraph 2: In windbreaks, shelterbelts and other planted areas trees that are one inch diameter or greater at breast height or shrubs anticipated to be cleared must be inventoried for replacement.

b. Paragraph 3: In native growth areas trees anticipated to be cleared that are 3 inch diameter at breast height or greater must be inventoried for replacement.

From the foregoing Findings of Fact, the Commission now makes its:

## Conclusions of Law

1. The Commission has jurisdiction over this proceeding under North Dakota Century Code Chapter 49-22.

2. The energy conversion facility proposed by ALLETE Clean Energy is an energy conversion facility site as defined in North Dakota Century Code section 49-22-03(11).

3. The Application submitted by ALLETE Clean Energy meets the site evaluation criteria required by North Dakota Century Code chapter 49-22.

4. The location, construction, and operation of the proposed energy conversion facility will produce only minimal adverse effects on the environment and upon the welfare of the citizens of North Dakota.

5. The proposed energy conversion facility is compatible with environmental preservation and the efficient use of resources.

6. The proposed energy conversion facility will minimize adverse human and environmental impact while ensuring continuing system reliability and integrity and ensuring that energy needs are met and fulfilled in an orderly and timely fashion.

7. The Commission has jurisdiction to ensure compliance with National Electric Safety Code standards in the construction and operation of the proposed energy conversion facility.

8. The proposed project is of such design, location and purpose that it will produce minimal adverse effects.

From the foregoing Findings of Fact and Conclusions of Law, the Commission now make its:

**Order**

The Commission orders:

1. Certificate of Site Compatibility for an Energy Conversion Facility No. __ is issued to ALLETE Clean Energy for the construction, operation, and maintenance of a wind energy facility known as Clean Energy #1 Wind Project in accordance with this Order.

2. The site, as proposed in the Application, is located in Mercer and Morton counties north of Glen Ulin, North Dakota, and is designated as the site for construction of the energy conversion facility.

3. ALLETE Clean Energy is authorized to construct up to 50 wind turbines totaling up to 100 MW of total generating capacity in proposed and alternate locations, along with electric collection and communication lines, a project substation, operations and

maintenance buildings, meteorological towers, access roads and other associated facilities identified in the application and at the May 4, 2012 public hearing.

4. The April 23, 2012, Certification Relating to Order Provisions – Wind Energy Conversion Facility Siting (Hearing Exhibit 3), except as modified in accordance with Findings of Fact paragraph 38 above, is incorporated by reference and attached to this Order.

**PUBLIC SERVICE COMMISSION**

| | | |
|---|---|---|
| **Commissioner** | **Chairman** | **Commissioner** |

STATE HISTORICAL SOCIETY OF NORTH DAKOTA



July 9, 2012

Mr. Wade Burns
Beaver Creek Archaeology
301 1st St NE, Suite 201
Mandan ND 58554

**NDSHPO REF.: 12-1216 PSC Case number PU 11-662 "ACE Wind Energy Center: A Class III Cultural Resource Inventory, Mercer and Morton Counties, North Dakota"**

Dear Mr. Burns:

We reviewed NDSHPO REF.: 12-1216 PSC "ACE Wind Energy Center: A Class III Cultural Resource Inventory, Mercer and Morton Counties, North Dakota," and find the report acceptable.

We concur with *"No Historic Properties Affected"* and *"No Significant Sites Affected"* determinations provided that the recommendations provided on page 27 of the report are followed (enclosed). Also, the project is to be of the nature stated, and continue to take place in plotted locations in the report documentation, unless addendums are filed and approved by this office.

Thank you for the opportunity to review this project. If you have questions please contact either Paul Picha at ppicha@nd.gov or (701) 328-3574 or Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and
Director, State Historical Society of North Dakota

CC: PSC

# Conclusion and Recommendation

In November 2011 and March 2012, BCA conducted a Class III Cultural Resource Inventory of the proposed ACE Project.

During the field inventory, BCA archaeologists identified thirteen (13) previously unrecorded cultural resources. Resources included ten Native American Stone Cairns (32ME2421, 32MO1395, 32MO1396, 32MO1397, 32MO1398, 32MO1399, 32MO1400, 32MO1403, 32ME2422, 32ME2423), one Native American Stone Circle (32MO1401), one Native American Cultural Material (CM) Scatter (32MO1402). All sites have been recommended potentially eligible to the National Register of Historic Places (NRHP) by BCA. One Native American Isolated Find (32MOx543) was also found. Isolated finds are not eligible to the NRHP.

A total of nine architectural locations were looked at during the Inventory. These were selected for potentially containing eligible structures. No buildings were deemed to be potentially eligible to the NRHP (See table 6). One previously recorded architectural site (32MO189) is potentially eligible to the NRHP.

BCA recommends that all potentially eligible sites be avoided and flagged/staked off prior to construction. It is recommended that potentially eligible sites located close to linear project features be buffered 50 feet, and sites located close to turbine locations be buffered 100 feet, and that stakes/flags be placed along these buffer zones (see maps in Appendix C).

The APE crosses into previously recorded site lead 32MOx253. During the fieldwork, this site lead was not observed. BCA recommends that the site lead or ineligible site do not need to be avoided during construction as long as the Project is limited to the inventoried corridors outlined on the maps in Appendix C.

Richard & Deborah Schirado
6275 31st St
Glen Ullin, North Dakota 56381
Section 3 Township 140N Range 88W

RE: ALLETE Clean Energy – Clean Energy #1
Shadow Flicker Consent and Waiver

Dear Landowner,

The North Dakota Public Service Commission ("NDPSC") has in other wind energy conversion facility orders specified the potential impacts of shadow flicker on participating and non-participating landowners. Currently, the general standard adopted by the NDPSC is that potential shadow flicker impacts should not exceed 30 hours cumulative exposure under a realistic case scenario. Based on initial modeling, ALLETE Clean Energy's Clean Energy #1 wind farm shadow flicker impact on your residence may exceed the NDPSC's 30 hour standard. In lieu of changing the turbine layout to mitigate these potential impacts, the NDPSC has allowed landowners to consent to such impacts and waive any objections to shadow flicker impacts. Furthermore, ALLETE Clean Energy may submit this consent and waiver to the NDPSC as part of obtaining the NDPSC's approval.

Therefore, if you consent to turbine locations that exceed the 30 hour shadow flicker standard and waive any related objections, please acknowledge your agreement by signing below:

Signed by the Landowners this 27 day of Feb, 2012.

Richard Schirado
Landowner

Deborah Schirado
Landowner

Trice & Joyce Miller
3090 66th Ave
Glen Ullin, North Dakota 56381
Section 6 Township 140N Range 88W

RE: ALLETE Clean Energy – Clean Energy #1
Shadow Flicker Consent and Waiver

Dear Landowner,

The North Dakota Public Service Commission ("NDPSC") has in other wind energy conversion facility orders specified the potential impacts of shadow flicker on participating and non-participating landowners. Currently, the general standard adopted by the NDPSC is that potential shadow flicker impacts should not exceed 30 hours cumulative exposure under a realistic case scenario. Based on initial modeling, ALLETE Clean Energy's Clean Energy #1 wind farm shadow flicker impact on your residence may exceed the NDPSC's 30 hour standard. In lieu of changing the turbine layout to mitigate these potential impacts, the NDPSC has allowed landowners to consent to such impacts and waive any objections to shadow flicker impacts. Furthermore, ALLETE Clean Energy may submit this consent and waiver to the NDPSC as part of obtaining the NDPSC's approval.

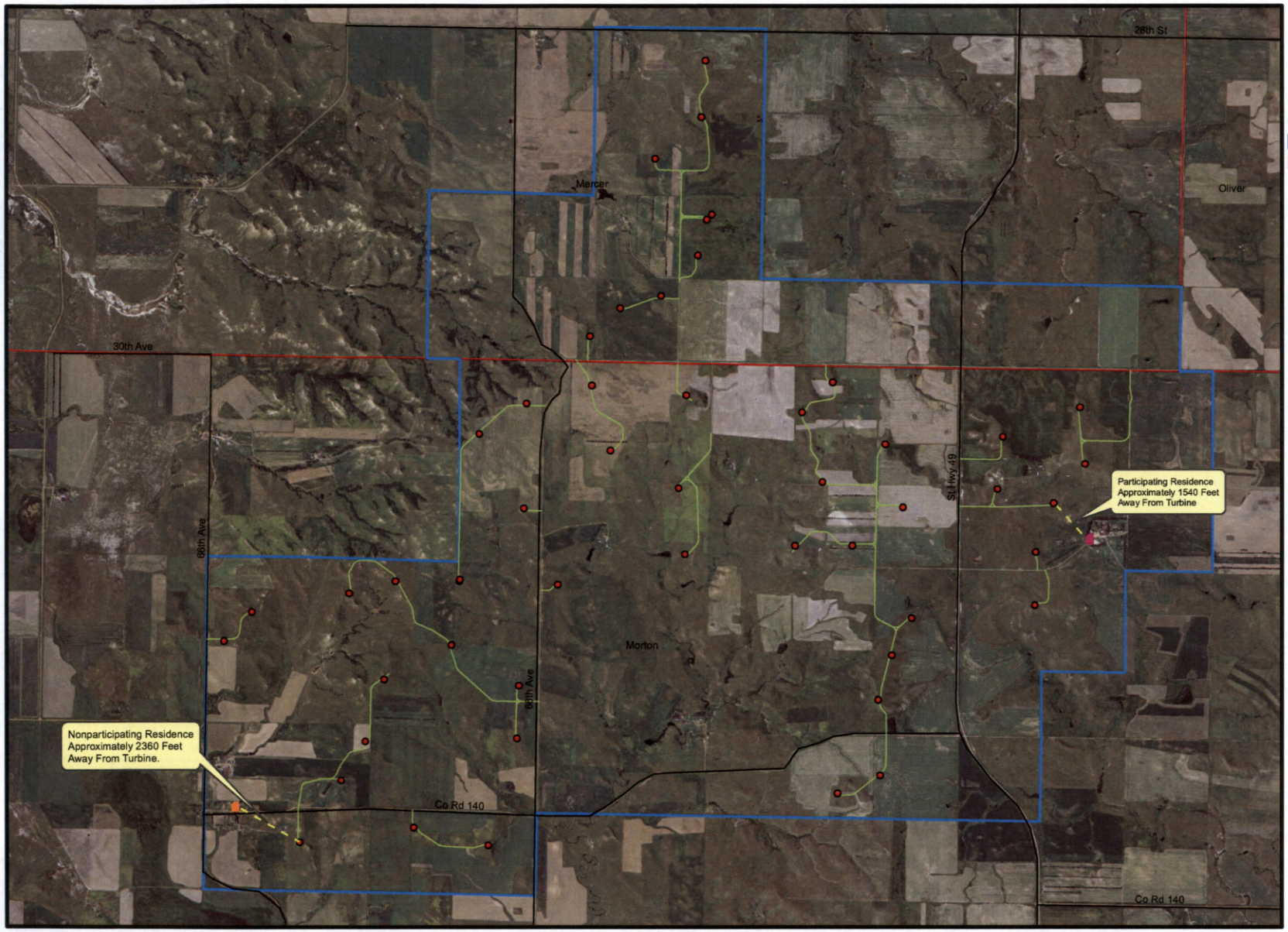
Therefore, if you consent to turbine locations that exceed the 30 hour shadow flicker standard and waive any related objections, please acknowledge your agreement by signing below:

Signed by the Landowners this 2 day of MARCH, 2012.

Trice H. Miller
Landowner

Joyce E. Miller
Landowner

# ALLETE Clean Energy- Clean Energy #1, Residence Setbacks




**Legend**

- Closest Nonparticipating Residence
- Closest Participating Residence
- Maximum Turbine Layout
- Turbine Access Road
- Area Roads
- Clean Energy 1 Project Boundary
- County Line

**ALLETE Clean Energy- Clean Energy # 1**

**-Nearest participating residence from a turbine is approximately 1540 feet.**

**-Nearest nonparticipating residence from a turbine is approximately 2360 feet.**

N
W E
S

0.9 Miles

ALLETE

ALLETE clean energy

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Late Filed Exhibit 7