

April 12, 2021

VIA E-MAIL AND FEDERAL EXPRESS

Mr. Steven Kahl
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

Re: Aurora Wind Project, LLC
Aurora Wind Project – Williams County
Siting Application
Case No. PU-18-352

Dear Mr. Kahl:

In accordance with the Tree and Shrub Mitigation Specifications (“Specifications”) incorporated into the North Dakota Public Service Commission’s (“Commission”) May 7, 2019 Findings of Fact, Conclusions of Law and Order issuing a Certificate of Site Compatibility to Aurora Wind Project, LLC (“Aurora”) in the above-referenced docket, Aurora hereby submits an original and ten (10) copies of this letter and a Tree and Shrub Replacement Plan (“Replacement Plan”). Electronic copies of this letter and the Replacement Plan were filed today with the Commission via e-mail.

In accordance with Paragraph No. 9 of the Specifications, the Replacement Plan updates the pre-construction tree/shrub inventory by identifying the actual number of trees/shrubs removed during construction. In addition, the Replacement Plan provides the information required pursuant to Paragraph No. 10 of the Specifications. Therefore, Aurora respectfully requests that the Commission approve the Replacement Plan.

If you have any questions, please let me know.

Sincerely,



Mollie M. Smith
Direct Dial: 612.492.7270
Email: msmith@fredlaw.com

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MS/rg/72648444
Encls.

cc: Jeremy Price (w/ encl.)
Jenni Dean (w/ encl.)

**TREE AND SHRUB INVENTORY AND MITIGATION
PLAN FOR AURORA WIND ENERGY
Aurora Wind Farm**

Prepared for:
Enel Green Power North America, Inc.
Aurora Wind Project, LLC

Submitted by:
KC Harvey Environmental, LLC
376 Gallatin Park Drive
Bozeman, MT 59715

April 9, 2021

Introduction

This report presents the tree and shrub post-construction field inventory and the proposed mitigation plan for the Enel Green Power North America, Aurora Wind Project, LLC which will mitigate the trees and shrubs that were removed during the construction of the Aurora Wind Project (Aurora Wind) in Williams and Mountrail Counties, North Dakota. Aurora is completing construction within 44,000 acres of land approximately five miles northwest of the City of Tioga. The project consists of a wind farm with 80 wind turbines, a series of electrical collection and communications lines, and a 345-kV Transmission Line approximately 20 miles long connecting to the Basin Electric Power Cooperative Tande Substation located in Mountrail County. This report concerns the trees and shrubs to be mitigated in relation to the construction of the wind farm.

To minimize construction impacts, the North Dakota Public Service Commission (NDPSC) limited the width for right-of-way (ROW) construction for the wind farm electrical collection and communication lines to 50 feet through shelterbelts, windbreaks, and all other wooded areas. In addition to the wind farm underground infrastructure, a 150-foot active right-of-way (ROW) was established and vegetation was removed or mowed along the 345-kV transmission line. Aurora recorded the quantity and species of trees and shrubs in windbreaks, shelterbelts, and native wooded areas affected by the project's permanent structures and additional temporary workspaces (ATWS) disturbed during construction.

Field Inventory

Aurora Wind submitted the Tree and Shrub Replacement Plan in 2019 to the NDPSC outlining the pre-construction inventory of potentially impacted trees and shrubs within the project study area. The initial inventories were conducted in July and August of 2019 using an approved sample plan and direct stem count to satisfy the NDPSC permitting requirements for the Aurora Wind Project. The initial inventory area included a 400-foot wide survey area centered along access roads, collector routes, transmission lines, as well as a 500-foot radius around wind turbine locations. A total of 8,141 individual trees and shrubs were counted in the survey including 5,243 trees and 2,898 shrubs consisting of 20 different species. Thirty-one different landowners had the potential for tree and shrub removal based on the preconstruction inventory.

The actual number of trees or shrubs removed varied from the preconstruction inventory depending on the final workspace area, avoidance during construction, and site-specific conditions during construction (weather, soil saturation, and season). The post construction inventory was completed using the same methods outlined in the Tree and Shrub Replacement Plan and a separate accounting was made for the wind farm and transmission lines. Data collected for the post construction inventory included:

- Unique feature ID
- GPS Location
- Tree/shrub disturbed area (acres)
- Field Crew ID
- Inventory date
- Species name
- Count of individual trees and shrubs removed

Since the original inventoried area was much larger than the actual disturbance and since best management practices were applied during construction, it was determined that only 183 trees and shrubs were removed during the construction of the wind farm. This is compared to the original potential impacted count of 8,141. The post-construction inventory identified 6 unique species of trees and shrubs within the mitigation count. Table 1 defines: map location, project, species, quantity removed, and replacement count based on the

removal quantity documented by the inventory. The removal locations are identified in the attached Tree and Shrub Post-construction Inventory Map.

Wind farm construction removed trees and shrubs within windbreaks during installation of underground collection and communication lines, disturbance from temporary workspace and from access roads disturbance. Aurora Wind removed 183 trees and shrubs from windbreaks including 92 trees and 91 shrubs. No other disturbance outside of the windbreaks occurred in native vegetation that required mitigation.

Table 1. Trees and Shrubs identified for Replacement¹

Map ID.	Landowner	Species	Section/ Township /Range	Number Removed	Replacement Count	Replacement Accepted (Full/Partial/Waived)
117	Thompson	Caragana	S19/158N/96W	24	48	Full
117	Thompson	Green ash	S19/158N/96W	24	48	Full
118	Rosenvold	Siberian elm	S18/158N/96W	3	6	Full
118	Rosenvold	Siberian elm	S18/158N/96W	12	24	Full
118	Rosenvold	Caragana	S18/158N/96W	12	24	Full
119	Rosenvold	Green ash	S18/158N/96W	12	24	Full
120	Rosenvold	Green ash	S18/158N/96W	12	24	Full
120	Rosenvold	Caragana	S18/158N/96W	6	12	Full
122	Frantzick	Caragana	S3/158N/97W	40	80	Full
123	Frantzick	Siberian elm	S12/158N/97W	15	30	Full
124	Peterson	Green ash	S24/159N/97W	2	4	Full
124	Peterson	Siberian elm	S24/159N/97W	6	12	Full
124	Peterson	Crab apple	S24/159N/97W	3	6	Full
124	Peterson	Russian olive	S24/159N/97W	3	6	Full
124	Peterson	Amur honeysuckle	S24/159N/97W	9	18	Full
Totals				183	366	

Not all of the planting sites have been finalized for planting in 2021. The planting locations for the 366 replacement plants are proposed to be distributed among four participating landowners. The landowners where each tree or shrub removal occurred have been contacted regarding the replacement planning. All landowners impacted by the windfarm construction have elected to have replacement trees and shrubs planted. All landowners have been given the option to have the plantings located in the vicinity of the removed plants or planted in windbreaks and shelterbelts elsewhere. Replacing the trees and shrubs in windrows may help improve survival as irrigation and maintenance would be more practical.

Replacement Plan

Trees and shrubs identified for replacement require a 2:1 replacement ratio as specified in the NDPSC Tree and Shrub Mitigation Specifications:

- Two, 2-year-old saplings must be planted for every one tree removed.
- Two shrubs (stem cuttings) must be planted for every shrub removed.
- In native growth areas outside of the PROW, shrub inventory replacement would not be required if shrubs are allowed to regenerate naturally provided:
 - Shrubs are cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock; or

- If the native topsoil is preserved and replaced after construction.

Using the NDPSC mitigation planting ratios, 366 trees and shrubs will be planted for the replacement of the 183 trees and shrubs disturbed during the construction of the wind turbines on the Aurora Wind Project. These replacement plantings will follow the NDPSC guidelines.

Trees and shrubs disturbed as a result of construction will be replaced by the same or similar species. Invasive species identified in Table 2, requiring a replacement species as required by the NDPSC. In addition to these NDPSC requirements, consideration for site conditions, species availability, and landowner preference may also require the use of supplemental species at certain locations. Use of Green ash as a direct replacement and supplement replacement will be avoided when possible. The North Dakota Forest Service (NDFS) no longer recommends Green ash to be planted in windbreaks in North Dakota. Green ash is the most prevalent species of deciduous tree in North Dakota and with the encroachment of Emerald Ash Borer from neighboring states; a similar supplemental species should be utilized for the replacement planting to promote species diversity.

Recommendations by the NDFS, soils mapping analysis, and tree/shrub establishment assessments in the area were reviewed when identifying a replacement species. The planned replacement species have been selected for characteristics that would achieve the highest survival rate at a planting site. Table 2 provides a summary of the planned species replacement and nursery stock designation.

Table 2. Substituted Tree and Shrub species replacement

Type	Inventoried Species	Replacement Species	Nursery Stock
Shrub	Caragana	Common chokecherry/ Black currant	12" Bare-root seedlings
Shrub	Amur Honeysuckle	Juneberry	8" Container stock
Tree	Quaking aspen	Quaking aspen	12" Bare-root seedlings
Tree	Russian olive	RM juniper/ American plum	2-1/Bare-root OR 12" Bare-root seedlings
Tree	Siberian elm	Bur oak/Hackberry	12" Bare-root seedlings OR 8" Container Stock
Tree	Crab apple	American plum	12" Bare-root seedlings
Tree	Green ash	Bur oak/Hackberry	12" Bare-root seedlings OR 8" Container Stock
Tree	Silver buffaloberry	Silver buffaloberry	8" Container stock
Tree	Colorado Blue spruce	Black Hills spruce	3-0/Bare-root
Tree	Native cottonwood	Native cottonwood	12" Bare-root seedlings

Aurora Wind will obtain nursery stock from local nurseries (within 200 miles latitude, 400 miles longitude, and 2000' elevation) for optimal survival. The two primary nurseries used will be Towner Nursery in Towner, North Dakota and the state-owned Lincoln-Oakes Nursery in Bismarck, North Dakota. Two-year-old bare-root saplings and container grown stock will be acquired for the planting as directed by the NDPSC. A refrigerated enclosed trailer will be used to transport and store the materials until planted. Certain hardwood species (Hackberry and Bur oak) exhibit deep bud dormancy and may fail to emerge from dormancy after planting. To prevent this mortality, sweating prior to planting will take place for 5-10 days or until the buds have visibly swelled up.

The planting location will be staked out, prepared, and mowed to mitigate vegetation. Polymer will be used to prevent desiccation of the roots, and roots will be trimmed as appropriate when planted. The trees and shrubs will be hand or machine planted on site, and followed up with an initial watering event to promote root-soil contact and subsist the plant if soil conditions are dry. Aurora Wind proposes to complete planting

during early May 2021, permitting weather and appropriate soil conditions arise. Upon completion of planting in 2021, a baseline report will be prepared to document the final replacement count by species for each location.

Monitoring

All tree and shrub replacements will be inspected annually in September for three years, beginning one full year after the mitigation planting. Electronic data from the monitoring efforts will be compiled and summarized for the annual inspection reports for the NDPSC. The annual monitoring report will include a summary of the monitoring, maintenance efforts, and survival rates as well as inventoried natural regeneration of trees and shrubs along the construction disturbance sites. Annual monitoring events do not begin until one full year after the initial planting. Monitoring and annual report preparation will be completed for three years, with the final monitoring inventory in September 2024. All reports will be produced and submitted to the NDPSC by October 1 of each year. If the survival rate of the plantings exceeds 75% following the third monitoring event (September 2024), the mitigation will fulfill the NDPSC mitigation requirement.

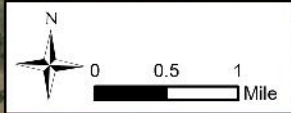
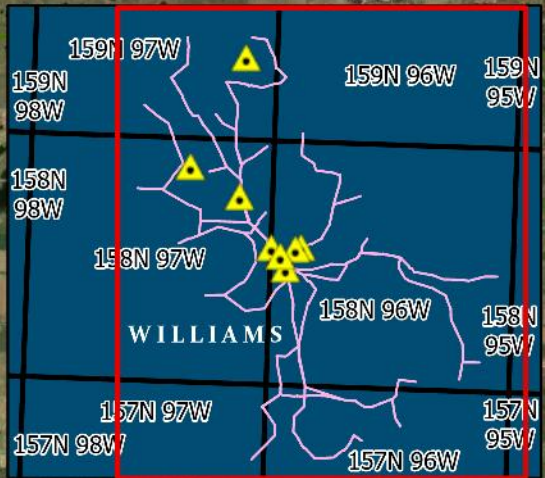
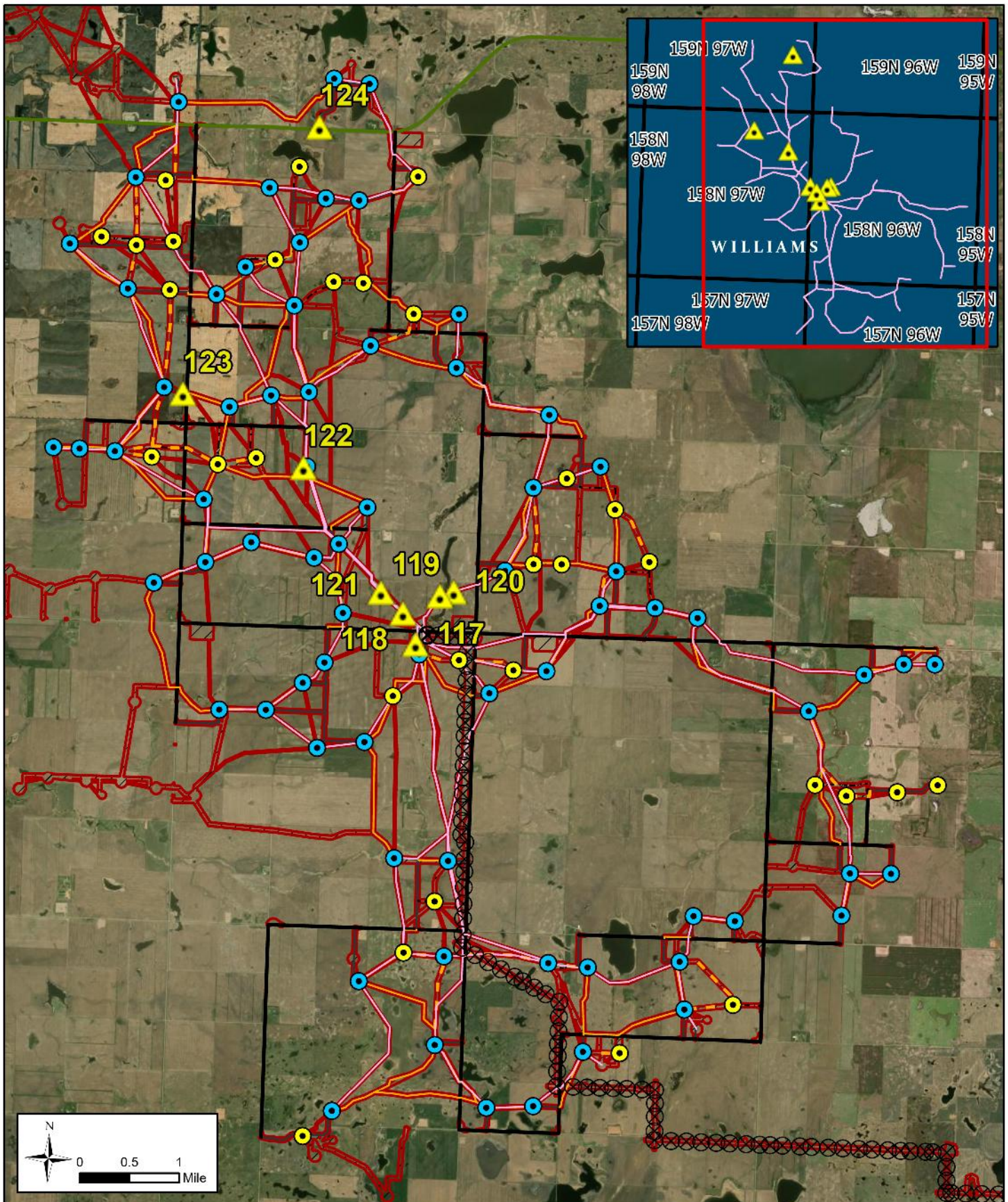
Attachments

1. Tree and Shrub Post-construction Inventory Maps

References

Western Eco Systems Technology Inc. 2019. Tree and Shrub Replacement Plan, Aurora Wind Energy Project Williams County, North Dakota. Bismarck, North Dakota.

North American Electric Reliability Corporation Vegetation Management Standard Drafting Team. 2010. Transmission Vegetation Management Standard FAC-003-2 Technical Reference. Princeton, New Jersey.



KC HARVEY

376 Gallatin Park Drive
Bozeman, MT 59715
www.kcharvey.com

- | | | |
|----------------------|----------------------|------------------|
| Wind Farm | ⊗ T Line Pole | — Crane Walk |
| ▲ Inventory Location | ▭ Cultural Corridors | — Crane Walk Alt |
| ● Primary Turbine | — Collection RES | — Delivery Road |
| ● Array | — Circuit Array | — Access Road |
| ● Alternate Turbine | ⋯ Access Road Alt | — State Hwy |
| ● Array | | |

Aurora Wind, LLC

**Aurora Wind Inventory Locations
Wind Farm Map**

Date: April, 2021

Imagery: NAIP, 2017

Attachment 1

**Landowner
Tree and Shrub Mitigation
Record of Discussion Forms**

**Aurora Wind Project
Tree & Shrub Mitigation
Record of Discussion**

Wind Project
Transmission

In accordance with the North Dakota Public Service Commission's (PSC) Order issued for the Aurora Wind Project and its Transmission Facilities, for every tree removed during construction within the project boundary, two 2-year old saplings must be planted. Similarly, two shrubs (stem cuttings) shall be planted for every one removed. The replacement vegetation must be the same or a similar species, suitable for North Dakota growing conditions. Landowners must be given the option of having their replacement trees and shrubs planted on their property. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the Landowner's property.

Agreement Number: 4639300, 4639400,
4639500, 4637600, 4637700 Lease or Easement Number: 16, 17, 18, 116, 122

Name: Delores and Norman Thompson (Wes Thompson)
Address: PO Box 241
Ray, ND 58849
Phone: 701-570-3828 (Wes)
Email: _____

Landowner Requests **All** Trees/Shrubs are Replanted on Their Property

Notes:

Landowner Requests **Some** Trees/Shrubs are Replanted on Their Property

Notes:

Landowner Requests **No** Trees/Shrubs are Replanted on Their Property

Notes:

*Landowner acknowledges replanted trees and/shrubs may not be removed for at least four (4) years. Landowner also grants vegetation maintenance crews access to their property, with advanced notice, up to ten (10) times per year for a period of three (3) years.

Signature: Wes Thompson Date: 10/17/2020

Wind Project
Transmission

**Aurora Wind Project
Tree & Shrub Mitigation
Record of Discussion**

In accordance with the North Dakota Public Service Commission's (PSC) Order issued for the Aurora Wind Project and its Transmission Facilities, for every tree removed during construction within the project boundary, two 2-year old saplings must be planted. Similarly, two shrubs (stem cuttings) shall be planted for every one removed. The replacement vegetation must be the same or a similar species, suitable for North Dakota growing conditions. Landowners must be given the option of having their replacement trees and shrubs planted on their property. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the Landowner's property.

Agreement Number: 3231400

Lease or Easement Number: 22

Name: Robert Rosenvold
305 Broadway, Apt 206
Address: Fargo, ND 58102
Phone: 701-701-282-3249
Email: ROSENVOLD@OUTLOOK.COM

Landowner Requests **All** Trees/Shrubs are Replanted on Their Property

Notes:

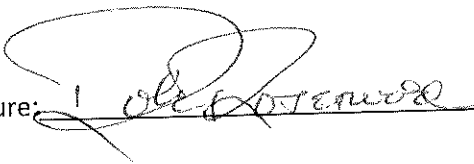
Landowner Requests **Some** Trees/Shrubs are Replanted on Their Property

Notes:

Landowner Requests **No** Trees/Shrubs are Replanted on Their Property

Notes:

*Landowner acknowledges replanted trees and/shrubs may not be removed for at least four (4) years. Landowner also grants vegetation maintenance crews access to their property, with advanced notice, up to ten (10) times per year for a period of three (3) years.

Signature: 

Date: 10-12-20

**Aurora Wind Project
Tree & Shrub Mitigation
Record of Discussion**

Wind Project
Transmission

In accordance with the North Dakota Public Service Commission's (PSC) Order issued for the Aurora Wind Project and its Transmission Facilities, for every tree removed during construction within the project boundary, two 2-year old saplings must be planted. Similarly, two shrubs (stem cuttings) shall be planted for every one removed. The replacement vegetation must be the same or a similar species, suitable for North Dakota growing conditions. Landowners must be given the option of having their replacement trees and shrubs planted on their property. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the Landowner's property.

Agreement Number: 3230900 Lease or Easement Number: 16

Name: Duane Frantzick
11607 77th Street NW
Address: Wildrose, ND 58795
Phone: 701-580-8630
Email: _____

Landowner Requests **All** Trees/Shrubs are Replanted on Their Property

Notes:

Landowner Requests **Some** Trees/Shrubs are Replanted on Their Property

Notes: *10 wants some tree planted in front yard*

Landowner Requests **No** Trees/Shrubs are Replanted on Their Property

Notes:

*Landowner acknowledges replanted trees and/shrubs may not be removed for at least four (4) years. Landowner also grants vegetation maintenance crews access to their property, with advanced notice, up to ten (10) times per year for a period of three (3) years.

Signature: *Duane Frantzick* Date: *3/9/21*

**Aurora Wind Project
Tree & Shrub Mitigation
Record of Discussion**

Wind Project
Transmission

In accordance with the North Dakota Public Service Commission's (PSC) Order issued for the Aurora Wind Project and its Transmission Facilities, for every tree removed during construction within the project boundary, two 2-year old saplings must be planted. Similarly, two shrubs (stem cuttings) shall be planted for every one removed. The replacement vegetation must be the same or a similar species, suitable for North Dakota growing conditions. Landowners must be given the option of having their replacement trees and shrubs planted on their property. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the Landowner's property.

Agreement Number: 3230600 Lease or Easement Number: 26

Name: Gerald Peterson
11423 Highway 50
Address: Wildrose, ND 58795
Phone: 701-539-2251
Email: _____

Landowner Requests **All** Trees/Shrubs are Replanted on Their Property

Notes: *will be in another area TBD
would be interested in more trees if available*

Landowner Requests **Some** Trees/Shrubs are Replanted on Their Property

Notes:

Landowner Requests **No** Trees/Shrubs are Replanted on Their Property

Notes:

*Landowner acknowledges replanted trees and/shrubs may not be removed for at least four (4) years. Landowner also grants vegetation maintenance crews access to their property, with advanced notice, up to ten (10) times per year for a period of three (3) years.

Signature: *Antis A. Peterson* Date: 2-24-2021