

October 25, 2024

Via Hand Delivery & Electronic Mail

Mr. Steve Kahl
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480
ndpsc@nd.gov

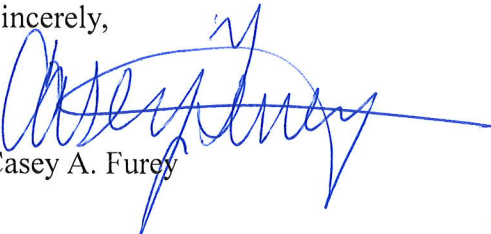
In re: Oliver Wind IV, LLC
Decommissioning Plan
Case No. PU-24-185
Our File No. 035218-000083

Dear Mr. Kahl:

On behalf of Oliver Wind IV, LLC, please find enclosed for filing in the above-referenced matter the Oliver Wind IV Project Decommissioning Plan.

Please feel free to contact me if you have any questions. Thank you.

Sincerely,



Casey A. Furey

CAF/lh
Enc.


cc: Brian Johnson (via email)
Robert Frank (via email)
Tracy Davis (via email)
Erik Edison (via email)

Oliver Wind IV Project Decommissioning Cost Estimate

Decommissioning Cost Estimate

Prepared for
Oliver Wind IV, LLC

Prepared by Sargent & Lundy



Report SL-019467
Final
October 24, 2024
Project 10561.554

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State of License: North Dakota

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Expire Date: 12/31/2024

Date: October 24, 2024



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VERSION LOG

Version	Issue Date	Sections Modified
Final	October 24, 2024	Final Issue

ISSUE SUMMARY AND APPROVAL PAGE

This is to certify that this document has been prepared, reviewed, and approved in accordance with Sargent & Lundy's Standard Operating Procedure SOP-0405, which is based on ANSI/ISO/ASSQC Q9001 Quality Management Systems.

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October 24, 2024

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APPENDIX A. DECOMMISSIONING COST BREAKDOWN

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition/Clarification
ADLS	Aircraft Detection Lightning System
COD	Commercial Operations Date
HH	Hub Height
Met	Lattice-Frame Meteorological Tower
O&M	Operations and Maintenance
Project	Oliver Wind IV Energy Center
WTG	Wind Turbine Generator

1. INTRODUCTION

Oliver Wind IV, LLC engaged Sargent & Lundy to develop a decommissioning cost estimate for the Oliver Wind IV Energy Center (“Oliver Wind IV” or “Project”) in Mercer and Oliver Counties, North Dakota. The Project will achieve commercial operation in December 2024.

Decommissioning requirements for the Project are specified by the following:

- N.D. Admin. Code Ch. 69-09-09 Decommissioning

Decommissioning requirements for the Project are specified by the North Dakota Administrative Code (N.D. Admin. Code), Title 69, Article 69-09, Chapter 69-09-09 [1]. This decommissioning cost estimate was developed in accordance with the specific decommissioning plan stipulations as described within N.D. Admin. Code Sections 69-09-09-05 and 69-09-09-06.

The purpose of this document is to consider the Oliver Wind IV facility and provide a recommended decommissioning cost estimate for retiring the Project at the end of its useful life. Details of the decommissioning cost estimate are included in Appendix A. The cost estimate is provided to show the estimate with the project salvage value both included and excluded, consistent with N.D. Admin Code Section 69-09-09-06(3)(b).

1.1. SARGENT & LUNDY BACKGROUND

Sargent & Lundy is one of the oldest and most experienced full-service architect-engineering firms in the world. Founded in 1891, the firm is a global leader in power and energy with expertise in grid modernization, renewable energy, energy storage, nuclear power, and fossil fuels. Sargent & Lundy delivers comprehensive project services—from consulting, design, and implementation to construction management, commissioning, and operations/maintenance—with an emphasis on quality and safety. The firm serves public and private sector clients in the power and energy, gas distribution, industrial, and government sectors.

Sargent & Lundy has extensive wind project decommissioning experience, having provided decommissioning cost estimations, decommissioning studies, and related services for more than 25 clients at more than 80 stations in addition to hundreds of retrofit projects with demolition scope. Additionally, Sargent & Lundy is well versed in developing cost estimates for power facility dismantlement. Over the past 10 years, Sargent & Lundy has prepared more than 270 such estimates for 10 clients, encompassing 80 different units.

1.2. PROJECT OVERVIEW

The Project has a nameplate capacity up to 200 MW and consists of two General Electric (GE) wind turbine types, as summarized below [2]:

- 63 GE 2.82-MW wind turbines with a 127-meter (m) rotor and 89m hub height (HH), where 7 WTGs will have a net rated capacity of 2.725 MW and 3 WTGs will have a net rated capacity of 2.205 MW
- 5 GE 2.52-MW wind turbines with a 127m rotor and 89m HH
- 5 GE 2.82-MW wind turbines with a 127m rotor and 89m HH, which will operate at 2.205 MW

In addition to the WTGs, Oliver Wind IV also includes the following auxiliary equipment and structures:

- One 345 kV substation
- Underground collection system
- Site access roads
- One operations and maintenance (O&M) building
- One lattice-frame meteorological (met) tower
- Two aircraft detection lightning system (ADLS) towers

The Oliver Wind IV Project has a planned commercial operation date (COD) in December 2024. The anticipated life of the Project is 30 years.

The general location and general site layout of the Project are shown in Figure 1-1 and Figure 1-2, respectively.

Figure 1-1 — Oliver Wind IV Project Location

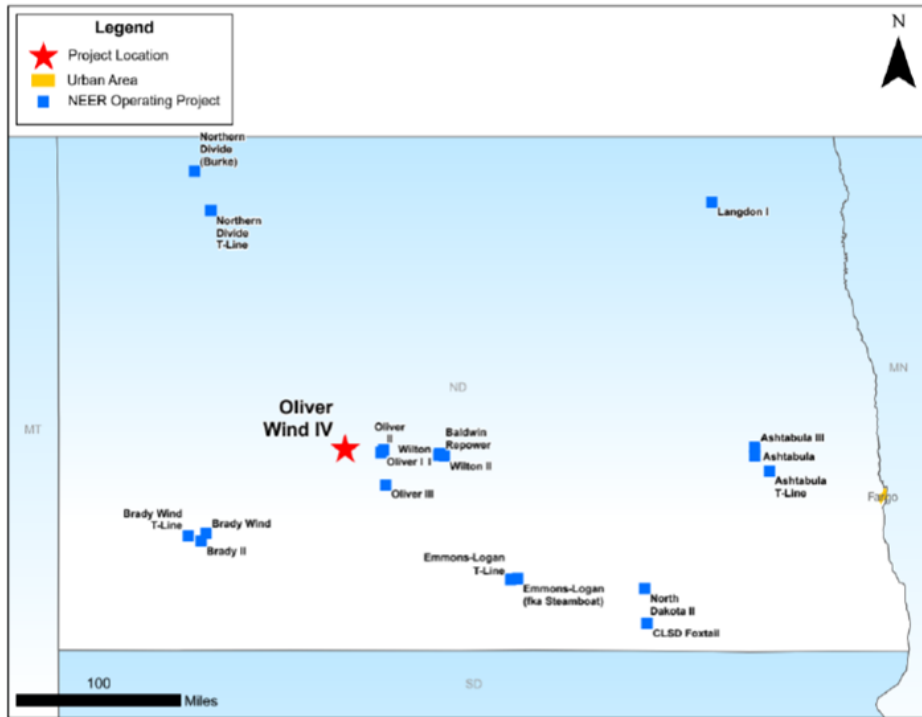
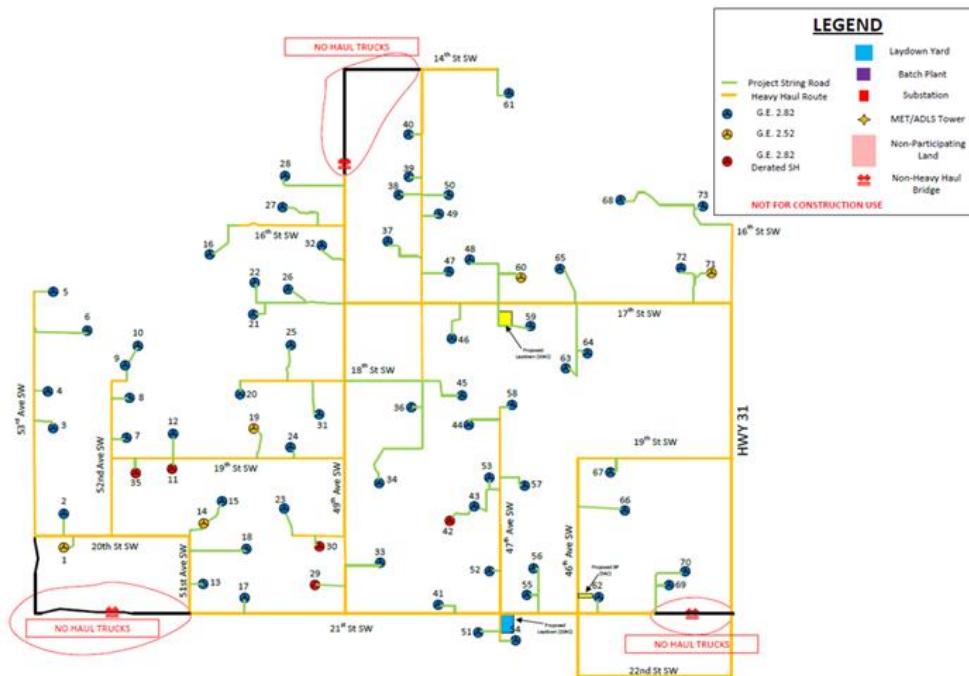


Figure 1-2 — Oliver Wind IV Project General Site Layout



2. DECOMMISSIONING REQUIREMENTS

The Project is located in North Dakota, and decommissioning requirements are governed by N.D. Admin. Code, Chapter 69-09-09. The governing organization is the Public Service Commission (“PSC”), which is the regulatory authority approving the siting of the Project. PSC has jurisdiction to grant the necessary approval to begin operation and requires wind energy conversion facilities in North Dakota to maintain an authorized decommissioning plan that must be presented along with the Project parameters.

In this section, Sargent & Lundy summarizes the requirements for physical decommissioning of a wind power project in Mercer and Oliver Counties, North Dakota as provided by the Client. The requirements are as follows:

- Dismantling and removal of all towers, turbine generators, transformers, fencing, overhead cables, inverters, transformers, substations and other equipment
- Removal of underground cables to a depth of twenty-four inches [60.96 centimeters]
- Removal of foundations, buildings, and ancillary equipment to a depth of four feet [121.92 centimeters] for facilities constructed on or after July 1, 2017
- Site restoration and reclamation to the approximate original topography that existed prior to construction of the facility with topsoil respread over the disturbed areas at a depth similar to that in existence prior to the disturbance and
- Grading and restoring topsoil of areas disturbed by the facility, and reseeded according to Natural Resources Conservation Service recommendations, unless the commission approves an owner request signed by the applicable landowner, identifying the surface features the landowner prefers to remain in place, and the reason the landowner prefers those features to remain.

Based on the 2024 COD, 30-year anticipated life, and requirement to begin decommissioning within 12 months after the end of the Project’s useful life, decommissioning could commence in 2054 and be completed within 24 months following the end of the Project's useful life.

3. DECOMMISSIONING AND DEMOLITION EXECUTION

This section describes the decommissioning process.

3.1. WIND TURBINE GENERATOR NACELLES AND TOWERS

Decommissioning of the WTG nacelles and towers will follow the “reverse construction” or “careful disassembly” method, as described in this section. Initially, a crane will be moved using a mobile crane mat to each WTG tower location. The outriggers will be supported by mobile crane mats designed for that purpose. Crane mats are typically made of a series of square timber beams long enough to accommodate the width of crane tracks. The beam height (thickness) is typically between six and 12 inches. The timber beams are moved in series to allow a crane to reposition from one WTG to the next. The use of crane mats is required by many rental companies to ensure cranes are safely moved around agricultural land and supported at each WTG site. The use of crane mats and mats for crane outriggers during the decommissioning process is typically sufficient to complete the work while minimizing disruption to the underlying soil.

The wind turbine blades will be lowered to ground level and cut into pieces. The nacelle and hub will be dismantled and processed at ground level. The tower will be dismantled into sections, starting at the top, and lowered to ground level to be processed and moved offsite. The base will be disconnected from the foundation and moved offsite. All WTG components and material will be transported to the appropriate facilities for salvage and/or disposal, consistent with North Dakota law.

3.2. WIND TURBINE, TRANSFORMER, AND SUBSTATION FOUNDATIONS

The WTG foundation locations will be excavated and demolished to four feet below ground level. Excavated foundation materials will be processed for removal from site. The remaining foundation components below this depth will remain in place.

Transformer foundation pads will be excavated and demolished to four feet below ground level or removed in their entirety. Excavated foundation materials will be processed for removal from the site.

Foundation sites will be graded to match surrounding contours and restored to conditions that will support surrounding vegetation. All anchor bolts, rebar, embedded conduits, and concrete will be removed to a depth of four feet. The remaining excavation will be filled with subgrade material of comparable grading to the immediate surrounding area. The subgrade material will be compacted to a density similar to surrounding subgrade material. All unexcavated areas compacted by equipment used in decommissioning

will be de-compacted to adequately restore the topsoil and subgrade material to a proper density consistent and compatible with the surrounding area.

All land that has been disturbed or altered during the construction and operation of the wind farm will be reclaimed to the original topography of the site. Topsoil will be spread to a depth corresponding to adjacent underlayment. Grading and reseeding will be in accordance with the Natural Resources Conservation Service recommendations, unless otherwise specified by a landowner and approved by the PSC.

In accordance with North Dakota Century Code § 49-02-27, the location of any portion of underground foundation not removed during decommissioning will be recorded with the county recorder in the county in which the facility is located.

3.3. OTHER STRUCTURES AND MISCELLANEOUS MATERIALS FOR REMOVAL

3.3.1. Met Towers

The Project met tower will be decommissioned in the reverse construction method similar to that described for the WTGs. Foundations will be removed to four feet below ground level in accordance with the WTG foundation decommissioning procedure.

3.3.2. O&M Building

The O&M building and any auxiliary buildings will be demolished. The building structure will be removed in its entirety and disposed with other site group materials. All underground support foundations/slabs within the building footprint will be removed to a depth of four feet.

All land that has been disturbed or altered during the construction and operation of the wind farm will be reclaimed to the original topography of the site. Topsoil will be spread to a depth corresponding to adjacent underlayment. Grading and reseeding will be in accordance with the Natural Resources Conservation Service recommendations.

3.3.3. ADLS Tower

The ADLS towers will be decommissioned in the reverse construction method similar to that described for the WTGs. The foundations will be removed to four feet below ground level in accordance with the WTG foundation decommissioning procedure.

3.3.4. Hazardous Materials

Any hazardous materials stored by the Project will be removed and properly disposed in compliance with governing law and regulation.

3.4. WTG ACCESS ROADS AND SITE ROADS

Typical wind project site roads consist of crushed compacted gravel. Approximately 219,313 linear feet of Project service roads are proposed for Oliver Wind IV [4]. The aggregate base of the Project roads will be removed from the site, and the remaining subgrade will be graded to match existing and natural grade. The Project roads at Oliver Wind IV will be reclaimed to approximate original topography unless otherwise requested by a landowner and approved by the PSC.

3.5. COLLECTION SYSTEM

Cable to a depth of two feet or less will be removed. As part of the decommissioning, the cables and conduits items will be cut back to the required depth of two feet. All cable and conduit and other materials buried below the required depth will be left in place and abandoned. No special cable cutting is required, so the simplest means should be implemented.

3.6. SUBSTATION

Substation components, buildings, and material will be transported to the appropriate facilities for salvage, and/or disposal. All underground support foundations/slabs and cabling within the substation footprint will be removed to a depth of four feet.

4. DECOMMISSIONING COST ESTIMATE

The decommissioning and demolition plan described in the prior section is used as input for the generation of the decommissioning cost estimate for Oliver Wind IV.

Project quantities of WTGs, wind turbine towers, wind turbine foundations, met towers, and the O&M building were taken from the site layout plan [4]. The Project includes approximately 219,313 linear feet of proposed service roads, per the KMZ file of the Project site [3].

Unit pricing for decommissioning, demolition, removal, and scrap value was taken from representative contractor price quotations and information provided by Oliver Wind IV. Transportation costs are included in component removal and salvage value unit pricing. A detailed line-item breakout of each cost category is shown in Appendix A.

Estimated decommissioning costs for Oliver Wind IV are summarized in the following table.

Table 4-1 — Oliver Wind IV Decommissioning Cost Estimate

Description	Scrap Value Consideration	Cost (2024 USD)
Oliver Wind IV Decommissioning Total	Excluding Scrap Value	\$17,976,000
Decommissioning Total with 10% Contingency	Excluding Scrap Value	\$19,773,600
Oliver Wind IV Decommissioning per WTG	Excluding Scrap Value	\$270,871
Oliver Wind IV Decommissioning Total	Including Scrap Value	\$14,415,000
Decommissioning Total with 10% Contingency	Including Scrap Value	\$16,212,600
Oliver Wind IV Decommissioning per WTG	Including Scrap Value	\$222,090

5. CONCLUSION

Sargent & Lundy developed this decommissioning cost estimate for retiring the Oliver Wind IV Project at the end of its useful life in accordance with N.D. Admin. Code Chapter 69-09-09.

Based on experience with similar requirements for wind project decommissioning, Sargent & Lundy does not expect the decommissioning of Oliver Wind IV to negatively impact present or future natural resource development in the area.

6. REFERENCES

This report references the following documents listed below:

1. N.D. Admin. Code Ch 69-09-09 Decommissioning.pdf
2. PU-23-317 & PU-23-318 Findings of Fact, Conclusions of Law and Order.pdf
3. NEXTERA ENERGY - OLIVER WIND IV ND TURBINE SITE PLAN ISSUED 07-17-24.kmz
4. Oliver IV Site Map Rev.2 Heavy Haul Route.pdf

APPENDIX A. DECOMMISSIONING COST BREAKDOWN

Project: Oliver Wind IV
 Owner: Oliver Wind IV, LLC
 Location: North Dakota

Final
 October 24, 2024

Wind Tower Decommission and Site Restoration Estimate - WTG Scrap Estimate

1.0 Turbines and Towers

Decommission of turbines and towers for this estimate includes dismantling of turbine components and transportation off site for disposal. Price excludes deduct for salvage value of the components.

Turbines:	68 GE 2.8MW, 127m rotor, 89m HH
	5 GE 2.5MW, 116M rotor, 90m HH

	Quantity	Unit Cost (2024)	Extended Cost	Assumptions
1.1 Dismantle Turbine & Towers	73 ea.	\$ 101,000	\$ 7,373,000	Weighted average cost of removal, haul and disposal of turbines and towers.
1.2 Removal of Transformers	73 ea.	\$ 3,000	\$ 219,000	Removal, hauling and disposal of transformers.
1.3 Hauling of Turbines, Towers, and Transformers	73 ea.	\$ 56,000	\$ 4,088,000	Assumed 300 mile haul distance to the landfill disposal location (Belle Fourche landfill, SD).

1.0 Turbine and Tower Totals:	\$ 11,680,000
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2.0 Tower Foundations

Tower foundations will be removed to a depth of four (4) feet below existing grade. Transformer foundations will be removed to four (4) feet below grade or in their entirety. Conduit connections embedded in concrete will be removed to a depth of four (4) ft below grade. Foundation sites will be graded to match surrounding contours and restored to conditions that will support surrounding vegetation.

Type:	64'-0" diameter Base and 18'-0" ft diameter Pedestal Spread Footer Foundation
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	Quantity	Unit Cost (2024)	Extended Cost	Assumptions
2.1 Foundation	73 ea.	\$ 26,000	\$ 1,898,000	Removal, hauling and disposal of foundation concrete and steel. Site regraded to existing contours.
2.2 Transformer Pad	73 ea.	\$ 3,000	\$ 219,000	Removal, hauling and disposal of transformer pads.
2.3 Hauling of Aggregate/Soil	73 ea.	\$ 6,000	\$ 438,000	Assumed 200 mile haul distance.

2.0 Tower Foundation Totals:	\$ 2,555,000
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3.0 Other Structures

Removal of meteorological towers included.

	Quantity	Unit Cost (2024)	Extended Cost	Assumptions
3.1 Meteorological Tower	1 ea.	\$ 33,000	\$ 33,000	Removal, hauling and disposal of meteorological towers.
3.2 O&M Building	1 ea.	\$ 60,000	\$ 60,000	Removal, hauling and disposal of O&M facility.
3.3 Lattice Construction ADLS Tower	2 ea.	\$ 11,000	\$ 22,000	Removal, hauling and disposal of O&M facility.
3.4 Hauling of Other Structures	4 ea.	\$ 59,000	\$ 236,000	Assumed 200 mile haul distance.

3.0 Other Structures Totals:	\$ 351,000
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4.0 Access Roads and Site Restoration

Aggregate base roads will be scarified, loaded and removed from site. Remaining subgrade will be decompacted and graded to match existing and natural grade. Any vegetation will be re-established.

Type: 44,657 cubic yards with 16.5 feet width and 4 in. depth

219,313 LR

	Quantity	Unit Cost (2024)	Extended Cost	Assumptions
4.1 Roads	44,657 cubic yards	\$ 5.10	\$ 228,000	Aggregate base will be removed and hauled off site; assumed width of 16.5 ft and road depth of 4 in. Cost per cubic yard based on prior project experience for similar wind projects.
4.2 Grading and Seeding	401,993 sq yards	\$ 4.46	\$ 1,793,000	Includes grading site, backfilling, and leveling with surrounding areas. Cost per square yard based on prior project experience for similar wind projects.
4.3 Re-vegetation	26,085 sq yards	\$ 4.46	\$ 116,000	Re-vegetation of the farm fields with an assumed 303.55 sq yards per tower. Cost per square yards based on prior experience for similar wind projects.

4.0 Tower Access Road Totals:	\$ 2,137,000
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5.0 Collection System

Removal of termination sections near transformer to a depth 24" below existing ground line.

	Quantity	Unit Cost (2024)	Extended Cost	Assumptions
5.1 Collection System terminations	73 ea.	\$ 3,000	\$ 219,000	Removal, hauling and disposal of collection system terminations.

5.0 Collection System Totals:	\$ 219,000
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6.0 Substation

Substation excludes deduct for salvage value of the components

	Quantity		Unit Cost (2024)	Extended Cost	Assumptions
6.1 Substation Foundations, Fence, Steel and Grading	1	LS	\$ 326,000	\$ 326,000	Removal hauling and disposal of foundations and fencing. Includes grading costs.
6.2 Substation Equipment	1	LS	\$ 308,000	\$ 308,000	Removal hauling and disposal of substation equipment.
6.3 Hauling of Substation Equipment	1	LS	\$ 71,000	\$ 71,000	Assumed 200 mile haul distance.

6.0 Substation Totals:	\$ 705,000
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7.0 Mobilization/Demobilization

	Quantity		Unit Cost (2024)	Extended Cost	Assumptions
5.1 Mobilization/Demob	1	LS	\$ 329,000	\$ 329,000	Typical industry price quote for mob/demob of crane at similar site location. Single mobilization and demobilization is assumed.

7.0 Mob/Demob Totals:	\$ 329,000
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Site Decommission Totals (Exclude Scrap Value):	\$ 17,976,000
Site Decommission Totals (Exclude Scrap Value) + 10% Contingency:	\$ 19,773,600

Site Decommission per WTG (Exclude Scrap Value):	\$ 270,871
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8.0 Project Scrap Value

	Quantity		Unit Cost (2024)	Extended Cost	Assumptions
8.1 Project Steel Scrap Value	13,697	TN	\$ 260.00	\$ (3,561,000)	Varying steel compositions are grouped together as mixed steel. Quantities for tonnage based on prior project experience for similar wind projects.

6.0 Project Scrap Totals:	\$ (3,561,000)
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Site Decommission Totals:	\$ 14,415,000
Site Decommission Totals (Include Scrap Value) + 10% Contingency:	\$ 16,212,600

Site Decommission per WTG:	\$ 222,090
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