

WIND FARM DECOMMISSIONING PLAN

ILLINOIS GENERATION, LLC

HERITAGE PRAIRIE WIND - LIVINGSTON COUNTY 132138

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LIST OF ABBREVIATIONS

Abbreviation	<u>Term/Phrase/Name</u>
1898 & Co.	1898 & Co., a division of Burns & McDonnell Engineering Company, Inc.
AIMA	Agricultural Impact Mitigation Agreement
ВМР	best management practices
IDOA	Illinois Department of Agriculture
Illinois Generation	Illinois Generation, LLC
kV	kilovolts
MW	Megawatt
O&M	operation and maintenance
Project	Livingston County portion of the Heritage Prairie Wind Project
Project Site	Livingston County, Illinois
Turbine Type A	Vestas V163-4.5
Turbine Type B	GE 3.8-154



Executive Summary

1.1 Introduction

1898 & Co., a division of Burns & McDonnell Engineering Company, Inc. (hereinafter called "1898 & Co."), was retained by Illinois Generation, LLC ("Illinois Generation") to conduct a decommissioning cost evaluation for the Livingston County Portion of the Heritage Prairie Wind Project ("Project"). The objective of the Study was to review the Project and to make a recommendation regarding the decommissioning plan for retiring the facility at the end of its useful life.

1.2 Project Overview

The proposed Project will be located in Livingston, Illinois, approximately 5 miles East of Dwight (the "Project Site"). At the time of this Study, there are two possible layouts for the Project. One layout uses Vestas V163-4.5 ("Turbine Type A") and the other uses GE 3.8-154 ("Turbine Type B"). For the purpose of this report, the estimate assumed the Turbine Type A layout for a total nameplate capacity of approximately 319.5 megawatts "MW". If Turbine Type B is ultimately chosen, this decommissioning plan will be revised prior to submittal of the building permits. The two possible Project layouts are shown in Appendix B.

1.3 Methodology

When it is determined that the Project should be retired, the above-grade steel structures and turbine nacelles are assumed to have significant scrap value to a salvage contractor, offsetting a portion of the cost to remove these items. The Project will also incur costs for removal and disposal of the blades, foundations, and other Project facilities as well as for the restoration of the site following the removal of salvageable equipment.

The decommissioning cost estimates provided herein include the costs to return the site to a condition compatible with the surrounding land, similar to the conditions that existed before the development of the Project. Included are the costs to retire the power generating equipment that is part of the Project as well as the costs to retire the Project's balance-of-plant facilities. All equipment, structures, and supporting facilities will be removed to a depth of 5 feet below grade in accordance with the Illinois Department of Agriculture ("IDOA") Wind Farm Agricultural Impact Mitigation Agreement ("AIMA")

1.4 Results

The total cost to decommission the Project at the end of its useful life, using Turbine Type A layout and based on the assumptions noted herein, is presented in the table below. If Turbine Type B is ultimately chosen, this decommissioning plan will be revised prior to submittal of the building permits. It is expressly noted that while costs are presented both in total and per turbine, a change in the quantity of turbines may not cause the total decommissioning cost to increase or decrease



linearly by the per turbine cost due to non-scalable differences in balance-of-plant costs and other similar factors.

Turbine Layout	Gross Cost	Scrap Cost	Net Cost	Net Cost per Turbine	
71 x V163-4.5	\$16,918,750	(\$12,614,000)	\$4,304,750	\$60,600	

1.5 Site Visit

1898 & Co did not visit the Project Site as part of this Study. The contents of this evaluation are based exclusively upon desktop analysis by 1898 & Co.

2.0 Project Overview

2.1 Project Summary

1898 & Co. was retained by Illinois Generation to conduct a decommissioning cost evaluation for the Project. The objective of the study was to review the Project and to make a recommendation regarding the decommissioning cost and plan for retiring the facility at the end of its useful life.

The Project is located in Livingston County, approximately 5 miles East of the city of Dwight. It should be noted that at the time of the Study, there are two possible layouts for the Project. For the purpose of this report, it was assumed Project will have a total nameplate capacity of approximately 319.5 megawatts "MW" and include 71 Vestas V163-4.5 wind turbines. If Turbine Type B is ultimately chosen, this decommissioning plan will be revised prior to submittal of the building permits.

2.2 **Project Facilities**

The following sections provide an overview of the Project facilities.

2.2.1 Wind Turbines

The Project will consist of 71 wind turbines, the details of which have not been finalized at the time of this Study. There are two possible layouts for the Project, utilizing different turbine types. Turbine Type A is the Vestas V163-4.5. Each V163-4.5 wind turbine includes a 113-meter conical tubular steel tower which supports the turbine nacelle mounted on top. The nacelle of each turbine includes three blades mounted to the nacelle rotor with a total rotor diameter of approximately 163 meters. For the purpose of the report, the decommissioning cost estimate assumes Turbine Type A resulting in a total nominal capacity of approximately 319.5 MW. If Turbine Type B is ultimately chosen, this decommissioning plan will be revised prior to submittal of the building permits.

The alternate layout for the Project would use Turbine Type B, the GE 3.8-154. Each GE 3.8-154 wind turbine includes an 98-meter conical tubular steel tower which supports the turbine nacelle mounted on top. The nacelle of each turbine includes three blades mounted to the nacelle rotor with a total rotor diameter of approximately 154 meters. The layout for Turbine Type B includes 71 turbines resulting in a total nominal capacity of approximately 269 MW.

2.2.2 Wind Turbine Foundations

Each wind turbine tower will be supported by a concrete foundation. Preliminary foundation design drawings were provided by Illinois Generation. The circular concrete pedestal is assumed to be 20 feet in diameter with a depth below grade of 2.25 feet. The pedestal is assumed to be supported by an cylindrical base which is assumed to have an upper diameter of 36 feet and a lower diameter of 87 feet.

All underground facilities for the Project are to be removed to a depth of at least 5 feet below grade in accordance with the IDOA Wind Farm AIMA. Thus, the concrete pedestal is to be removed entirely plus the top approximately 2 feet and 9 inches of the foundation base, collectively down to 5 feet below-grade. The area will then be backfilled as part of the decommissioning, and the remaining foundation will be abandoned in place.

2.2.3 Access Roads

Each wind turbine has an access road to support construction and allow for vehicle access to facilitate inspections and maintenance of the turbines and associated equipment during operation. Access roads are

assumed to be surfaced with approximately 6 inches of crushed rock with a final width of approximately 16 feet. According to access road KMZ layouts provided by Illinois Generation, 20 miles of access roads were assumed to be removed, decompacted, and seeded as part of this Study.

2.2.4 Collection System

Each wind turbine will generate three-phase electrical power that is transformed to 34.5 kilovolts ("kV") via a transformer located in the nacelle of each wind turbine. Power from each transformer is delivered through one of the Project's underground power collection circuits to the on-site collector substation.

It is assumed that all cables will be buried at a minimum depth of 5 feet below-grade. At this depth, all cables (including both power and communication cabling) were assumed to remain in place after the Project is decommissioned as they exceed the depth requirement set forth in the IDOA Wind Farm AIMA. Thus, the only cost incurred in this Study from the collection system will be to remove and dispose of the above-grade junction boxes; for the avoidance of doubt, medium-voltage transformers are included in the turbine removal cost.

2.2.5 Project Substation

Power from each wind turbine will be delivered via underground power collection circuits to an on-site collector substation, where it is transformed via two main power transformers. The substation will also consist of multiple disconnect switches, lightning masts, control building, circuit breakers, and other ancillary equipment. All above-grade equipment within the perimeter fence of the substation was assumed to be removed, and all below-grade equipment to a depth of 5 feet per the IDOA Wind Farm AIMA, was assumed to be removed.

2.2.6 Transmission Line

The Project output is transformed at the on-site collector substation. The Project is interconnected to the Kankakee Wind Substation. A KMZ of the Wind Gentie line was provided by Illinois Generation. Included in the study is the removal of approximately 7.6 miles of overhead transmission line. The transmission line is assumed to have steel towers at span lengths of approximately 700 feet, resulting in an assumed removal of 58 steel transmission towers.

2.2.7 Maintenance/Warehouse Facility

The Project will have an on-site operation and maintenance ("O&M") facility on the Project Site. The O&M building is assumed to be 60 feet long by 100 feet wide by 12 feet high and was assumed to consist of a preengineered metal building with a concrete slab foundation.

2.2.8 Meteorological Equipment

Wind data is measured using two (2) meteorological towers. Project-specific design drawings for this tower included permanent, free-standing, lattice-type towers. Each tower was assumed to be fully removed as part of this Study.

3.0 Decommissioning

3.1 Decommissioning Plan

When it is determined that the Project should be retired, the Project equipment will be removed as noted herein. It was assumed that the Project will incur costs for removal and disposal of the wind turbines, wind turbine foundations, and other Project facilities, as well as for the restoration of the site following the removal of equipment. However, the above-grade steel, aluminum, and copper equipment is expected to have significant scrap value to a salvage contractor that will offset some decommissioning costs. All recyclable materials will be recycled to the extent possible, while all other non-recyclable waste materials will be disposed of in accordance with state and federal law.

The wind turbine blades will be removed from the nacelle using a crane, cut into manageably-sized sections, loaded onto a trailer, and hauled to a local landfill for disposal. The wind turbine blades are constructed from a composite material that is was assumed to have no salvage value at the time of decommissioning. The turbine nacelles will be removed from the towers with a crane and loaded onto a trailer. The towers will be disassembled and loaded onto a trailer as well. The nacelle and towers typically will then be hauled off to a scrap yard for recycling. The cost estimate presented in this report that includes scrap includes the cost to haul the turbines and nacelles to the scrap yard.

All concrete wind turbine foundations will be removed to a depth of 5 feet below grade in accordance with the IDOA Wind Farm AIMA; the portions of the foundation that are greater than 5 feet below grade will be abandoned in place. The recovered concrete will be demolished, loaded into a dump truck, and hauled to a local landfill for disposal. Voids left from the removal of the concrete footings will be backfilled and restored to pre-development conditions.

The Project substation will be removed from the site, including all above-grade equipment (e.g., transformers, breakers, busbars), buildings, crushed rock surfacing, and fencing. The cost estimate presented in this report that includes scrap includes the cost to haul the salvageable equipment to the scrap yard, whereas the cost estimate that excludes scrap assumes all salvageable equipment will be hauled to a landfill for disposal. All below-grade equipment (e.g., foundations) will be removed to a depth of 5 feet below grade in accordance with IDOA Wind Farm AIMA.

All crushed rock surfacing will be removed from the Project's access roads. Areas where crushed rock surfacing has been removed will be fine graded to provide suitable drainage. In right-of-way and non-agricultural areas, the ground will be seeded to prevent erosion. The removed crushed rock will be loaded into dump trucks and hauled offsite. Crushed rock can be recycled and reused and typically has a salvage value as a commodity equal to or greater than the cost to haul to an end user. However, for the purpose of this Study, the cost to remove the crushed rock, load it into dump trucks, and haul it offsite will be at the expense of the Project.

Prior to commencing activities associated with foundation removal, crushed rock surfacing removal, or any other earthwork, an approved erosion control plan will need to be developed by the demolition contractor. Best management practices ("BMPs") applicable at the time that decommissioning activities occur will need to be implemented by the contractor for control of storm water runoff. Since decommissioning activities are not anticipated to occur for 20 years or more, BMPs may differ from current standards. However, if decommissioning takes place in the near future, Burns & McDonnell would anticipate BMPs such as silt

fencing and proper compaction, seeding, and mulching practices to be implemented. BMPs will need to be reviewed by the contractor prior to commencing decommissioning activities to determine appropriate BMPs at that time. To the extent necessary, permits relating to decommissioning activities will need to be obtained, including permits from the Environmental Protection Agency. The costs included in this Study are expected to be sufficient for a demolition contractor to develop suitable plans for the control of surface water drainage and water accumulation and, where appropriate, for backfilling, soil stabilization, compacting, and grading prior to commencing demolition activities.

All disturbed areas at the site will be returned to as close to predevelopment conditions as possible. This will allow all land disturbed by the construction of the Project to be returned to its predevelopment use at the end of the useful life of the Project. The cost estimates provided in the following section include activities and costs to return the land to a condition suitable for agricultural use subsequent to decommissioning of the Project.

The activities associated with the decommissioning plan described above are anticipated to be completed within a 6-month timeframe, according to the following estimated schedule:

•	Decommissioning Planning & Permitting:	2 months
•	Demolition:	3 months
•	Site Restoration:	1 month

Additional time may be required for post-decommissioning activities, including monitoring of new vegetation. However, this timetable and the cost estimates below should provide sufficient time and budget to comply with any applicable health and safety regulations.

3.2 Decommissioning Costs

The total cost to decommission the Project at the end of its useful life, based on the assumptions noted herein including the original construction methods of the Project, is presented below; a detailed breakdown of these costs is included in Appendix A. It is expressly noted that while costs are presented both in total and per turbine, a change in the quantity of turbines may not cause the total decommissioning cost to increase or decrease linearly by the per turbine cost, due to non-scalable differences in balance-of-plant costs and other similar factors. The decommissioning cost estimate assumes the Project will utilize Turbine Type A, the Vestas V163-4.5. If Turbine Type B is ultimately chosen, this decommissioning plan will be revised prior to submittal of the building permits.

Turbine Layout Gross Cost		Scrap Cost	Net Cost	Net Cost per Turbine	
71 x V163-4.5	\$16,918,750	(\$12,614,000)	\$4,304,750	\$60,600	

Table	3-1:	Summary	of Total	Estimated	Cost for	Project	Decommissioning
Tuble	5	Sammary	or rota	Estimated	C031 101	TTOJECC	Decommissioning

3.3 Decommissioning Assumptions

In addition to other assumptions noted herein, the following general assumptions were utilized for the study's decommissioning cost estimates.

1. All costs are presented in current (2023) dollars using the site cost index of 92.1% for Kankakee, Illinois.

- 2. The decommissioning estimate is based on details and equipment defined through conversations with and documentation provided by Illinois Generation.
- 3. An offsite landfill (Prairie View Landfill) is used for disposal of demolition waste. The hauling distance to this landfill is approximately 23 miles from the Project site, and the cost for disposal of debris and concrete is \$78.45. per ton.
- 4. Where applicable, scrap values are based upon an average of monthly American Metal Market prices for February 2023 through January 2024 (i.e., one calendar year). These values include the cost to haul the scrap via truck and/or rail to the major market which provides the best price. Based on hauling and rail prices, the best market at the time of this Study is Chicago, IL. Prices used include:
 - a. Steel scrap value is \$284.74 per net ton.
 - b. Copper scrap value is \$2.97 per pound.
 - c. Aluminum scrap value is \$0.38 per pound.
- 5. Fluids located within the turbine nacelle, including oils, fuels, solvents, and process chemicals, were assumed to be drained and disposed of offsite as part of the decommissioning.
- 6. It was assumed that all containers and chemical storage tanks owned by the Project will be drained and the material disposed of prior to demolition; these costs are excluded from the estimate.
- 7. All underground equipment will be removed to a depth of 5 feet below grade in accordance with the IDOA Wind Farm AIMA. All non-hazardous structures or foundations greater than 5 feet below grade will remain and are excluded from the decommissioning estimate.
- 8. Access roads, parking areas, storage yards, crane pads, and all other areas constructed from asphalt, concrete, gravel, or compactable fill will be removed, recycled, and reclaimed.
- 9. Crushed rock from roads, balance-of-plant areas, and turbine foundation areas was assumed to have value as a commodity for reuse. The cost to remove the crushed rock, load it into dump trucks, and haul it offsite is assumed to be at the expense of the Project.
- 10. It was assumed that all disturbed areas will be restored to original grade, reclaimed with native soils, seeded, and replanted with native vegetation consistent with the surrounding land use.
- 11. Transformers will be removed and processed on-site. The cost to drain and dispose of transformer oil off-site is included in the decommissioning cost estimate.
- 12. The Project laydown yard utilized during construction of the Project was assumed to have been previously reclaimed and restored; no further grading, seeding, or other restoration of the laydown yard is included in this estimate.
- 13. Cost estimates include 5 percent indirect and 20 percent contingency.
- 14. Market conditions may result in cost variations at the time of contract execution.

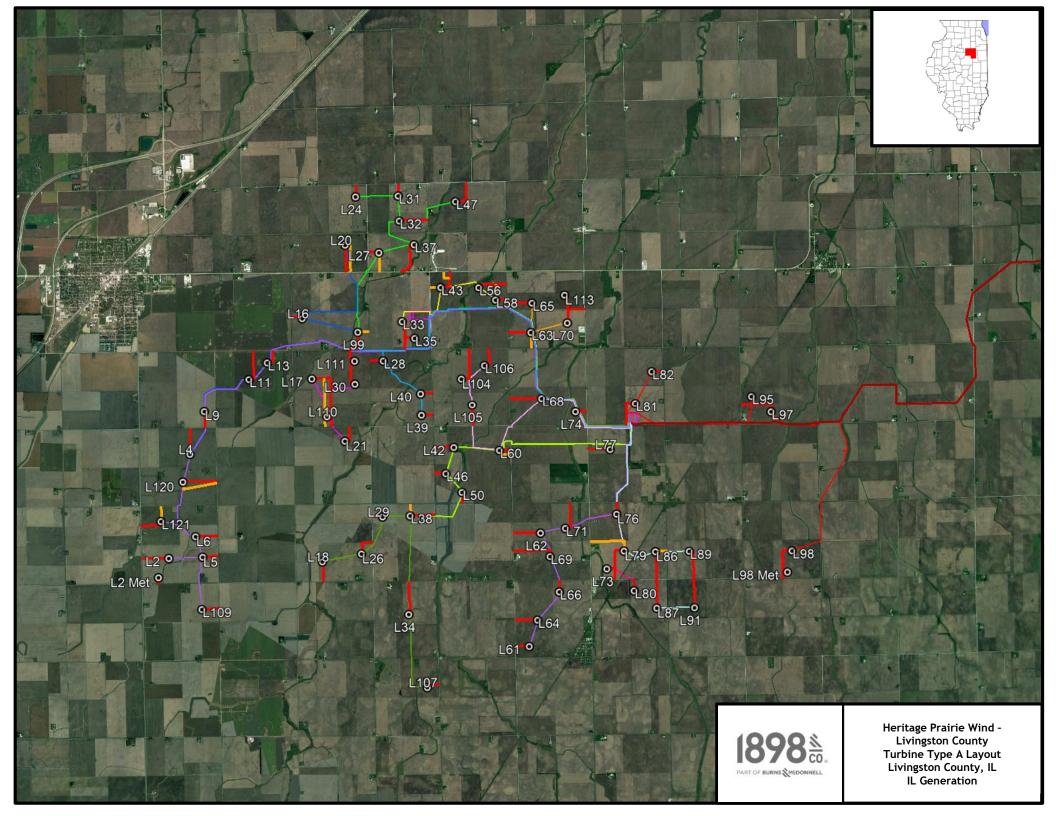
APPENDIX A - COST ESTIMATE SUMMARIES

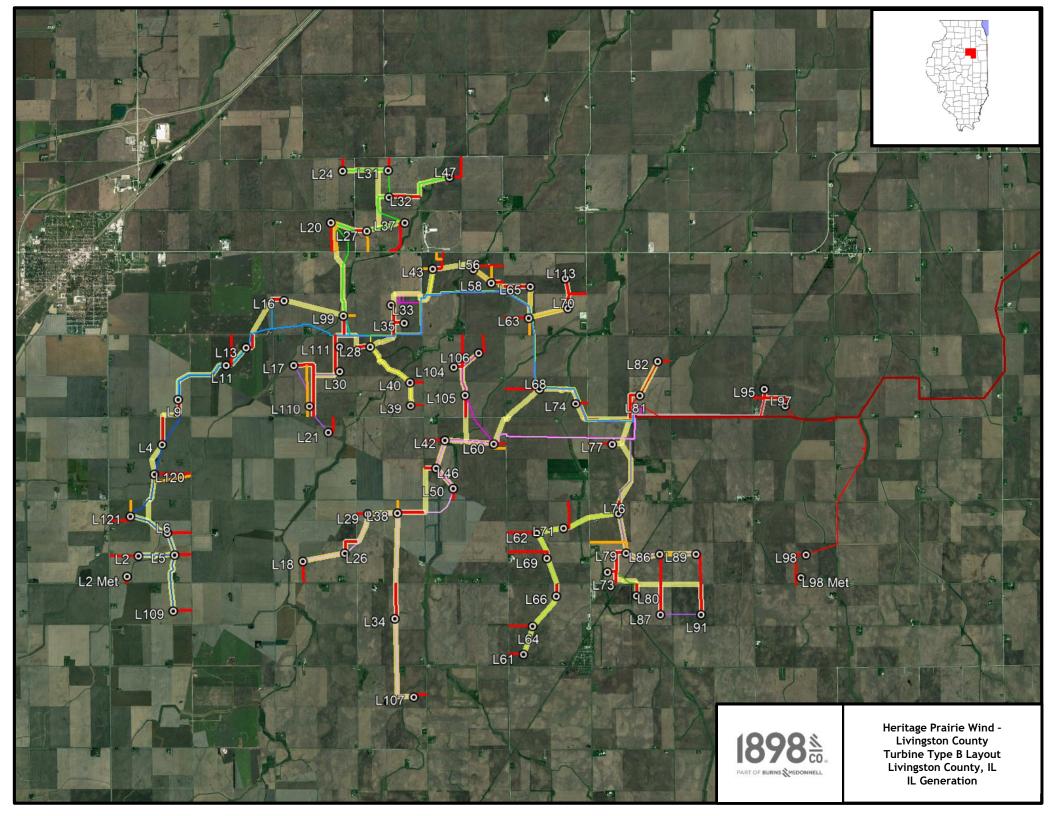
Table A-1: Estimated Cost for Wind Turbine Decommissioning (2023\$)

Heritage Prairie Wind - Livingston County Wind Project Decommissioning Cost Evaluation

Wind Turbine Removal Cost			
Removal		Ś	4,861,000
Hauling & Disposal		\$ \$ \$	1,073,000
Total		\$	5,934,000
Scrap Value		\$	(11,938,000)
Wind Turbine Foundation Removal Cos	st		
Removal		\$	1,988,000
Hauling & Disposal		\$ \$ \$	2,687,000
Total		\$	4,675,000
Substation Removal Cost			
Removal		\$	291,000
Hauling & Disposal		\$ \$ \$	39,000
Total		\$	330,000
Scrap Value		\$	(280,000)
Transmission Line Removal Cost			
Equipment Removal		\$ \$ \$ \$	512,000
Hauling & Disposal		\$	42,000
Total		\$	554,000
Scrap Value		\$	(372,000)
Civil Works Removal Cost			
Removal		\$ \$ \$	382,000
Hauling & Disposal		\$	1,271,000
Grading & Seeding Costs		\$	193,000
Total		\$	1,846,000
O&M Facility Removal			
Removal		\$	48,000
Hauling & Disposal		\$ \$ \$ \$	74,000
Total		\$	122,000
Scrap Value		\$	(22,000)
Met Tower Removal			
Removal		\$	23,000
Total		\$	23,000
Scrap Value		\$	(2,000)
Other Costs			
Oils & Chemicals Removal & Dispo	osal	\$ \$	51,000
Total		\$	51,000
	Total Estimated Cost	\$	13,535,000
	Owner Indirects (5%)	\$	676,750
	Contingency (20%)	\$ \$	2,707,000
	Total Gross Cost	\$ \$	16,918,750
	Total Scrap Value	\$	(12,614,000)
	Total Net Cost	\$ \$	4,304,750
	i otar Net Cost	ş	4,304,730

APPENDIX B - PLANT AERIAL







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