Review of Decommissioning Costs for Pleasant Ridge Energy Project

PATRICK ENGINEERING

Livingston County, Illinois

Prepared for:
Livingston County

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21476.189

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Partnering to Build Better Infrastructure

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1.0 INTRODUCTION

The Pleasant Ridge Energy Project (Project) is a proposed wind energy project consisting of 136 wind turbine generator (WTG) sites within a 58,300-acre area in southeast Livingston County. This report (Report) presents the results of a technical review of the *Decommissioning Plan Pleasant Ridge Energy Project, Livingston County, Illinois* (Plan, see Appendix A), prepared for Livingston County (County) by Stantec Consulting Inc. (Stantec). The Plan was prepared in support of an application for siting approval for a Wind Energy Conversion System (WECS) for the Project. This Report includes an independent evaluation of construction activities and associated costs and revenues for the decommissioning of the Project. This Report was prepared in accordance with Patrick Proposal No. 2B5WR0001, dated January 14, 2015.

2.0 PROJECT BACKGROUND

The expected lifetime of the WTGs is approximately 20 years. After 20 years, the WTGs can be updated with new components to extend their useful life. As outlined in the Plan and for the purposes of this Report, it is assumed that the Project will be fully decommissioned after 20 years, including all 136 WTGs and associated infrastructure. According to the Plan, upon disassembly, components with no wholesale value will either be salvaged and sold as scrap for recycling or disposed of at an approved landfill.

The Plan provides a description of the decommissioning and restoration phases of the Project, including a list of the primary wind farm components to be dismantled and removed and the final disposal of the components (recycled or disposed of). It also provides summaries of estimated costs and revenues associated with the decommissioning activities.

3.0 PROJECT COMPONENTS

The components of the Project include:

1. 1.72- or 1.79-megawatt (MW) WTGs
2. WTG foundations, consisting of:
    a. A reinforced concrete octagonal spread footing foundation, and
    b. A reinforced concrete pedestal atop the foundation, which serves as the base for the WTG
3. A single step-up transformer located near the base of each WTG
4. Aggregate access roads to permit vehicle and equipment access to the WTG sites
5. Crane pads required to support loads during initial construction which are removed and rebuilt at the end of the Project for WTG decommissioning
6. An underground electrical collection system that connects the step-up transformers to a larger Project substation
7. A 34/345 kilovolt (kV) substation
8. Above-ground generator tie-in electrical system
9. Public roadway impacts resulting from vehicle and equipment traffic

The components of a WTG include the tower, nacelle, hub, rotor, rotor blades, and associated ancillary elements such as anchor bolts and internal electrical wiring.

For a more detailed description of the various components, including materials, weights, and design information, please refer to the Plan.

4.0 DECOMMISSIONING SEQUENCE

Decommissioning activities must follow a logical construction sequence in order to permit a safe and efficient teardown, disassembly, material removal/haul-off, and restoration of the WTG sites, substation, and related areas. It is understood that the final sequence of activities is subject to the means and methods of the contractor(s) performing the work. It is also understood that there may be considerable time and cost savings associated with overlapping various activities and conducting concurrent activities at multiple WTG sites.

4.1 Plan Decommissioning Sequence

The Plan assumes all decommissioning activities will be completed in a six- to twelve-month timeframe. As such, roughly three WTGs per week would have to be decommissioned in order to meet a 12-month schedule (six WTGs per week for a 6-month schedule). The Plan includes the following decommissioning sequence:

- Reinforce access road (e.g., turning radii) and prepare site for decommissioning
- De-energize WTGs and "make safe"
- Dismantle and remove rotor, hub, and nacelle
- Remove tower and internal components
- Remove step-up transformer
- Remove collection system less than 5 feet (60 inches) below the surface
- Remove WTG pedestal and backfill site
- Remove crane pad and grade WTG site
- Remove access road (unless retained at discretion of host landowner)
- Restore and re-vegetate disturbed land

The overall decommissioning sequence outlined in the Plan captures the required major construction activities, although it does not specifically mention the setup of crane pads prior to the removal of WTG components. It is assumed that crane pad installation is included in the "prepare site" work item as crane pad installation is included in the estimated decommissioning expenses contained within the Plan.

In general, the Plan lacked sufficient detail to evaluate, quantify, and estimate costs accurately. For example, no explanations or assumptions were listed for work required to reinforce access roads and prepare the site, or to de-energize WTGs and "make safe." In order to fully evaluate the estimated cost of decommissioning, Patrick was required to make assumptions to estimate quantities and costs for most activities. Patrick's assumptions are further discussed in applicable sections of this report.

4.2 Assumed Decommissioning Sequence Details

In order to evaluate decommissioning activities and costs, Patrick prepared a sequence of construction. The following construction sequence is essentially the same sequence outlined in the Plan, with the addition of more detailed explanation of each major work item. It is assumed that a single WTG can be decommissioned in approximately one work week (5 days) and that separate crews would be working at multiple sites simultaneously. If multiple crews are working simultaneously, it is reasonable to assume the overall decommissioning schedule can be completed in 12 months or less, which is consistent with the Plan's original estimate. Given the repetitive and systematic nature of the decommissioning activities, it is anticipated that overlap of activities could occur which would decrease the overall schedule.

Details of the Plan's anticipated decommissioning sequence follow:

4.2.1 Reinforce Access Roads and Prepare Site

The Plan did not provide specific information or assumptions with respect to access road reinforcement and site preparation. We assumed there would be earthwork and site development activities associated with constructing (and removing) new aggregate pavement to allow for a 90-degree turning movement of an AASHTO 2011 WB-62 transport truck (assuming the expansion of an existing 16-foot-wide access road and 90-degree turn). A 12-inch-thick pavement section and a geotextile fabric were assumed based on the typical access road details contained within the Plan. It is our opinion that this pavement section is sufficient for temporary heavy vehicle loadings and turning movements.

It is assumed that a portion of this work would start prior to WTG decommissioning, but the majority of this work could be planned to occur concurrently as WTGs are decommissioned.

4.2.2 De-energize WTGs and "Make Safe"

Specific information in regard to this activity was not provided in the Plan. We assumed work in this activity would include performing lock-out/tag-out procedures, performing a full physical disconnect from the power grid, draining liquid wastes from the WTG and transformer, and disposing of the drained liquid wastes. The required timeframe to complete this activity was estimated as two days per WTG site.

4.2.3 Crane Pad Setup and Removal

New crane pads are to be constructed as part of the decommissioning process. The Plan provides two alternatives for crane pads consisting of either compacted native soils and approximately 1 foot of base fill (assumed to be aggregate) or wooden crane mats and a reduced volume of base fill. Patrick agrees with the two alternatives presented and agrees with the conservative (higher cost) assumption of installing aggregate pads. We recommend a typical crane pad section consisting of a compacted subgrade, a geotextile fabric, and 2 feet of compacted aggregate (typical section based on geotechnical engineering experience and knowledge; no engineering analysis was performed). It is assumed that some or all of this work could occur concurrently with de-energizing of the WTGs.

4.2.4 WTG Disassembly and Removal

The single most expensive activity is the disassembly and removal of the WTG and all of its components. As previously discussed, the WTG (excluding foundation) consists of a steel tower, three non-metallic blades, a nacelle, a hub, a rotor, and various additional items such as anchor bolts and internal electrical wiring. Construction activities associated with disassembly and removal of the WTG includes the rental, erection, and operation of lifting equipment; disassembly of the various components from each other and into salvageable sections; loading, hauling, and disposing of the materials; and restoration of disturbed land due to crane movements from site to site.

A large crawler crane typically used for WTG erection and a secondary truck-mounted hydraulic crane are assumed to be required to disassemble the major components of the WTG. In order to prevent repetitive teardown/setup of the crawler crane, it is assumed that the contractor will be able to establish a "walking path" such that the crane will travel from site to site (136 total) across agricultural fields. As the detailed design of such a "walking path" was outside the scope of this Report, it is assumed the distance traveled by the crawler crane is equal to the total length of access roads required for the project (268,000 feet per Plan), although the crane path length may be less than this amount. Land restoration activities are calculated based on these assumptions. Although evaluating potential stream and road crossings was outside the scope of this Report, it is likely some amount of crossings will be necessary. Expenses associated with stream and road crossings are included in the Engineer's Opinion of Cost.

4.2.5 WTG Pedestal Removal

Following WTG disassembly, a portion of the WTG foundation must be removed. According to the Plan, the concrete pedestal will be demolished and removed, and the remaining sections of the foundation will be abandoned in place. The Plan indicates the pedestal is a reinforced circular concrete structure 54 inches thick and 17 feet in diameter. No specific design information pertaining to steel reinforcement or anchor bolts was provided. For the purposes of this report, we assumed 1-inch-diameter steel reinforcement (rebar) spaced 12 inches apart would be placed in circumferential rings spaced 12 inches around the pedestal. Also assumed was the location of 2-inch-diameter anchor bolts spaced 12 inches apart in two circumferential rings around the pedestal (one interior and one exterior of the tower).

4.2.6 Step-up Transformer Removal

The removal of the step-up transformer located near the base of the WTG may occur at any time after the WTGs are de-energized and "made safe." This is a minor activity that requires the physical removal and transport of the transformer to a waste facility and the demolition, removal, and restoration associated with the transformers concrete footing. The footing is assumed to be 6 inches thick and have a footprint equal to 8 feet by 8 feet. The Plan assumes the transformer will be purchased and refurbished for use elsewhere. Patrick has assumed that the transformer has limited salvage value at the time of decommissioning and has included a cost to remove the transformer for either scrap or disposal at a waste facility.

4.2.7 Underground Electrical Removal

The Plan assumes minimal decommissioning costs associated with the underground electrical system as the majority of it is to be installed 60 inches below the surface and can be abandoned in place without impacting agricultural activities. Patrick agrees with this assumption and has also assumed minimal decommissioning activities associated with the removal of underground electrical components. It is noted that this activity could be performed concurrently with other activities following de-energizing of the WTG.

4.2.8 Access Road Removal and Restoration

Once the majority of decommissioning activities are complete, access roads that were constructed to facilitate the installation and decommissioning of the WTGs can be removed. [It is noted that some access roads could remain for landowner use. As such, per the County's request, Patrick assumed that only 50% of access roads are removed per this Report; the Plan cost reflects removal of all access roads. Additional costs would be incurred if more than 50% of access roads are to be removed.] It is unclear whether materials excavated during initial access road and WTG construction will be stockpiled and re-spread on-site or hauled off-site. For the purposes of this Report, it was assumed that topsoil will be stripped and re-spread to adjacent areas while subgrade cut will be hauled off-site.

This activity consists of earthwork and restoration activities including the excavation, loading, and hauling of roadway aggregate to a disposal facility (note that the aggregate would not necessarily need to be disposed of at a landfill site, but could be re-used); de-compacting the subgrade; importing soil fill to replace the removed stone; and rough grading the surface to redistribute topsoil that was spread to adjacent areas during WTG construction. For cost estimating, Patrick assumed the road aggregate will have no salvage value and that no topsoil import will be necessary. For the purposes of this Report, it is assumed that no geotextile fabric is present within the access road pavement section. If geotextile is found during access road removal activities it would need to be separated from removed aggregate and legally disposed of. Construction activities associated with this extra work would incur additional costs not included in this Report.

4.2.9 Public Roadway Impacts

Public roadways will deteriorate due to the movement of construction vehicles and equipment during the decommissioning process. The Plan includes an impact analysis based on equivalent single axle loadings (ESAL) of the vehicles and equipment to be used during the construction of the wind WTGs (see Appendix A of the Plan); calculation of the value of the impacts as a percentage of the design, and application of a 50% factor to account for the age and condition of the public roadways at the time of decommissioning. Patrick generally agrees with this approach and has assumed the associated roadway repair costs are equal to Stantec's estimate.

4.2.10 Transmission Line and Pole Demolition

No information was provided in regard to materials, layout, etc. for the transmission line and support poles. No review of this activity was performed and the associated decommissioning costs are assumed to be equal to Stantec's estimate.

4.2.11 34/345 kV Substation Removal

No information was provided in regard to materials, layout, etc. for the single Project substation. No review of this activity was performed and the associated decommissioning costs are assumed to be equal to Stantec's estimate.

4.2.12 General Conditions

Although not a specific activity, general conditions such as mobilization/demobilization, project management, design and permitting, and contractor markup must be accounted for in order to develop accurate decommissioning costs. Based on past construction management experience, we have assumed mobilization and demobilization costs are equal to 2%, project management costs are equal to 1%, and engineering and permitting costs are equal to 1% of the construction subtotal respectively. Assumed road and stream crossing costs (for crane movement) are also included in the general conditions. Contractor markup is included in the individual unit prices presented in the Engineer's Opinion of Cost.

5.0 SUMMARY OF PLAN DECOMMISSIONING COST ESTIMATE

Estimated decommissioning expenses, revenues, and net costs are presented in Section 3.0 of the Plan. The Plan estimates total decommissioning expenses of $19,890,500 and total revenues at $14,861,640, for a net decommissioning cost of $5,028,860, or just under $37,000 per WTG.

5.1 Decommissioning Expenses

Estimated decommissioning expenses presented in the Plan included 10 separate activities that generally correlated with the decommissioning sequence. However, reinforcing access roads, preparing the sites for decommissioning, and "make safe" activities were not described or included in the cost estimate. In general, the estimate lacked sufficient detail in order to evaluate quantity and work item assumptions. For example, "Crane pad installation, excavation, removal and transportation (conservatively assumes 136)" was given a unit cost of $2,500.00 for each WTG site with no description of the individual work items required to perform the overall task.

5.2 Decommissioning Revenues

Estimated revenues presented in the Plan were based on the salvage value of raw materials including steel, copper, step-up transformers, substation components, transmission line components, and used aggregate.

A key component of the revenue estimate is the assumed salvage value of steel and copper, $370.00/ton and $5,200.00/ton respectively. The derivation of salvage values is not provided in the Plan, but it appears they are based on values which are higher than historical steel and copper scrap prices. As discussed in section 6.2, Patrick performed an analysis of scrap material prices taking into account both current and historic prices in order to determine a reasonable estimate of salvage values at the time of decommissioning.

[Note: During Plan review, we noted an inconsistency in the estimated quantity of salvageable steel from a single rotor and hub. The Plan states the total weight of the hub and rotor is "more than 18 tons," but does not define the actual total weight. It is assumed that the total weight is equal to 18 tons. The Plan also states that the hub consists of 90% salvageable steel (it is assumed this percentage is the same for the rotor). Thus, 90% of 18 tons is 16.2 tons of salvageable steel per WTG, or 1.8 tons less than the assumed 18 tons per WTG assumed in the Plan. This inconsistency results in additional $90,576.00 Project expense using their scrap value of $370.00/ton.]

Patrick generally disagrees with the Plan's assumption that aggregate materials removed from access roads may be salvaged for revenue. It is our experience that most aggregate production facilities do not pay for used materials; however, the same facilities often accept used aggregates without charging a tipping fee. Additionally, other local users (such as township or county road entities) may accept the aggregate at a nearby location for later use, but generally do not pay for the material (this arrangement often provides a shorter haul distance, resulting in cost savings).

5.3 Net Decommissioning Costs

Patrick agrees that subtracting estimated revenues from estimated expenses is an acceptable approach for calculating net decommissioning costs. Online review of similar decommissioning plans indicates this approach is the industry standard for decommissioning plans.

6.0 PATRICK OPINION OF DECOMMISSIONING COST ESTIMATE

Patrick developed an Engineer's Opinion of Cost (Appendix B) that includes specific work items and quantities based on the proposed decommissioning sequence described in Section 4.2 of this Report. Costs and revenues were estimated in 2014 U.S. Dollars ($) and utilized best available cost information from such sources as local businesses, historical IDOT bid prices, RS Means Heavy Construction Cost Data 2014, online resources, engineering experience, and the Plan.

Using this approach, Patrick estimated Total Expenses of $18,559,000, Total Revenues of $9,938,000, and a Net Decommissioning Cost of $8,621,000. The Net Decommissioning Cost per WTG is estimated to be $63,400.

6.1 Decommissioning Expenses

Patrick split decommissioning expenses into 12 major categories that correlate to the proposed decommissioning sequence presented in Section 4.2. Each major category is expanded into individual work items that are based on the assumptions outlined in this Report and/or as noted in the Engineer's Opinion of Cost. Decommissioning expenses should be considered preliminary. We include a contingency of 15% to account for any added or unforeseen expenses. Contingency is applied as a cost adjustment at the end of the Engineer's Opinion of Cost.

Given that actual construction means and methods and scheduling of overlapping activities are unknown, and outside the scope of this Report, costs were assumed as though all 136 WTGs are decommissioned individually at a rate of 1 WTG per work week (136 weeks total). We recognize the potential for cost savings due to overlapping activities, and that it is reasonable to assume all 136 WTGs could be decommissioned within a 12-month timeframe (52 weeks), as suggested in the Plan. The Engineer's Opinion of Cost assumes a 38% reduction in overall expenses may be realized by these overlapping activities, and is simply the ratio of the condensed decommissioning schedule (52 weeks) to the individual WTG decommissioning schedule (136 weeks). A detailed analysis of cost savings from condensing the decommissioning schedule was outside the scope of this Report. This 38% reduction is considered a reasonable estimate, and is applied as a cost adjustment at the end of the Engineer's Opinion of Cost.

6.2 Decommissioning Revenues

For the purposes of this evaluation, we assumed the following values to be equal to those presented in the Plan:

- Weight of steel (except as noted in Section 5.2 of this Report)
- Weight of anchor bolts
- Weight of copper
- Salvage value of step-up transformers
- Salvage value of substation components
- Salvage value of transmission line wire and monopoles

We contacted two local recycling facilities (Pontiac Recyclers Inc. in Pontiac, IL and G&D Salvage in Loda, IL) to determine the current market value for scrap steel and copper. The current values of the materials are presented in Table 1 below, and highlight the volatile state of the scrap market and the challenge of predicting scrap values 20 years into the future.

Table 1. Local Scrap Values

Scrap Material	Value from Pontiac Recyclers Inc. ($/ton)		Value from G&D Salvage ($/ton)	
	1/23/15 Quote	1/29/15 Quote	1/23/15 Quote	1/29/15 Quote
Steel	$140	$110	$180	$150
Copper	$3,600	$4,000	N/A	$3,000

Patrick performed an analysis of historic national steel and copper scrap prices between 1983 and 2012[1] in order to estimate a salvage value at the time of decommissioning. The comparative analysis of steel and copper scrap prices is included as Appendix C. The average values for steel and copper over the 30-year period are $212.00/ton and $4,650.00/ton, respectively (values are in 2014 dollars).

Given that the current local scrap values are lower than the historic averages, and that prediction of scrap values 20 years into the future is highly imprecise, Patrick offers that the 30-year average is a reasonable value to use at this time.

6.3 Net Decommissioning Costs

Net decommissioning costs were calculated by subtracting estimated revenues from estimated expenses. Patrick estimates the Net Decommissioning Cost for the Project will be $8,621,000, or approximately $3.6 Million more than presented in the Plan.

[1] Iron and Steel Scrap Statistics, and Copper Statistics, USGS, Last Updated April 1, 2014: http://minerals.usgs.gov/minerals/pubs/historical-statistics/ds140-fescr.pdf and http://minerals.usgs.gov/minerals/pubs/historical-statistics/ds140-coppe.pdf

7.0 SUMMARY

Decommissioning expenses are dependent upon the scope of work required to restore the 136 sites to their final condition. Additionally, the decommissioning sequence and timing of activities may have major impacts on the overall schedule and costs due to potential mobilization/demobilization efficiencies and economies of scale. The decommissioning expenses may be offset by the salvage of scrap materials such as steel and copper, the value of which is highly variable due to changing market conditions.

Tables 2 and 3 show side-by-side comparisons of major decommissioning activities in order to illustrate the differences between estimated expenses and revenues presented in the Plan and those developed by Patrick. The Net Decommissioning Cost calculated by Patrick for the Project ($8.62 Million) is approximately 171% of the Net Decommissioning Cost included in the Plan ($5.03 Million). Overall, the differences between estimates presented in the Plan and Patrick's estimates are due to varying assumptions made in regard to decommissioning sequence, decommissioning activities, material quantities, and material salvage values. Patrick believes the Plan underestimates the expenses associated with a number of decommissioning activities, may overestimate the salvage value of steel and copper materials, and presents an underestimated net decommissioning cost for the Project.

Based on the analysis provided in this Report, Patrick recommends Livingston County initially adopt a financial assurance security that is on the order of magnitude of Patrick's estimated Net Decommissioning Costs (which are more conservative than the estimate presented in the Plan), and require the Developer to update the decommissioning estimate and adjust the financial assurance mechanism (e.g., bond or letter of credit) accordingly at a regular frequency (we suggest every three to five years) during the Project's operation.

Table 2. Comparison of Estimated Expenses

Activity	Plan Estimate ($)	Patrick Estimate ($)**	Difference ($)
Overhead and management (includes estimated permitting required)*	$500,000	$457,000	($43,000)
De-Energize Turbines and "Make Safe"	-	$375,500	$375,500
Reinforce Access Roads and Prepare Site	-	$1,544,000	$1,544,000
Mobilization and demobilization	$125,000	$457,000	$332,000
Local public road repairs	$757,000	$757,000	-
WTG and step-up transformer disassembly and removal	$13,532,000	$12,833,000	($699,000)
Crane pad installation, excavation, removal, and transportation	$340,000	$2,261,500	$1,921,500
WTG foundation demolition, removal, and backfill	$2,312,000	$1,368,000	($944,000)
Substation removal and site grading	$275,000	$275,000	-
Electrical tie-in and poles	$199,500	$199,500	-
Access road excavation and removal****	$850,000	$3,210,500	$2,360,500
Underground Electrical Removal	-	$27,000	$27,000
Topsoil replacement and rehabilitation of site	$1,000,000	Included above	($1,000,000)
Stream and Roadway Crossing Impacts	-	$50,000	$50,000
SUBTOTAL	**$19,890,500**	**$23,815,000**	
COST ADJUSTMENTS	**-**	**($5,256,000)**	
TOTAL ESTIMATED COST* **	**$19,890,500**	**$18,559,000**	**($1,331,500)**

* Patrick's Estimate includes Engineering

** Patrick's Estimate rounded to nearest $500

***Patrick's Estimate is detailed in Appendix B

****Patrick's Estimate assumes only 50% access road removal and no geotextile removal & disposal. The Plan assumes all access roads are removed and includes geotextile removal & disposal.

Table 3. Comparison of Estimated Revenues

Activity	Plan Estimate ($)	Patrick Estimate ($)	Difference ($)
WTG tower (steel)	$5,635,840	$3,229,000	($2,406,840)
Nacelle (steel)	$3,019,200	$1,730,000	($1,289,200)
Rotor and Hub (steel)	$905,760	$467,000	($438,760)
Anchor bolts (steel)	$100,640	$57,500	($43,140)
Transformer	$340,000	$340,000	-
Copper	$4,243,200	$3,794,500	($448,700)
Substation Components (steel and transformer)	$150,000	$150,000	-
Transmission Line (wire and steel monopoles)	$170,000	$170,000	-
Aggregate base and surface course	$300,000	-	($300,000)
SUBTOTAL	**$14,861,640**	**$9,938,000**	**($4,926,640)**
COST ADJUSTMENTS	-	-	-
TOTAL ESTIMATED COST**	**$14,861,640**	**$9,938,000**	**($4,926,640)**

* Patrick's Estimate rounded to nearest $500

**Patrick's Estimate is detailed in Appendix B

8.0 LIMITATIONS

This Report is for the exclusive use of Livingston County and no one else without written consent from Patrick Engineering Inc. The evaluations contained in this Report are based on the information, assumptions, and analyses contained herein. In the event that WTGs, site elements, and associated work items differ from those assumed, the evaluations contained in this Report should not be considered valid until the differences are reviewed and the conclusions in this report have been modified or verified in writing.

Patrick would be happy to discuss this report with you in more detail. If you have further questions or comments, please call us at 630-795-7200.

Report Prepared by:	Report Reviewed by:
Matthew E. Minder, P.E. **Project Manager – Water Resources**	Gary F. Goodheart, P.E. **Vice President – Water Resources**

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APPENDIX A

Decommissioning Plan Pleasant Ridge Energy Project Livingston County, Illinois prepared by Stantec Consulting Services Inc., dated October 8, 2014

Decommissioning Plan
Pleasant Ridge Energy Project
Livingston County, Illinois

Stantec

Prepared for:
Pleasant Ridge Energy LLC
One South Wacker Drive
Suite 1000
Chicago, Illinois 60606

Prepared by:
Stantec Consulting Services Inc.
1165 Scheuring Road
De Pere, Wisconsin 54115

Project No: 193702946
October 8, 2014

DECOMMISSIONING PLAN
PLEASANT RIDGE ENERGY PROJECT, LIVINGSTON COUNTY, ILLINOIS

This document entitled Decommissioning Plan Pleasant Ridge Energy Project Livingston County, Illinois was prepared by Stantec Consulting Services Inc. ("Stantec") for the use of Pleasant Ridge Energy LLC (the "Client"), and the applicable regulatory agencies. Any reliance on this document by any other third party is strictly prohibited. The material in this document reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in this document are based on conditions and information existing at the time this document was published and do not take into account any subsequent changes.

Prepared by ______________________

STANTEC CONSULTING SERVICES INC.

Technical Review by ______________________
Dave Rautmann, P.E.

Independent Review by ______________________
Michael B. Roznowski

PE CERTIFICATION

NAME: Dave Rautmann

TITLE: Principal

COMPANY: Stantec Consulting Services Inc.

REGISTRATION NO: 062-049449

STATE: Illinois

Official Stamp

REGISTERED PROFESSIONAL ENGINEER
DAVID A. RAUTMANN
062-049449
ILLINOIS
10/9/19

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1.0 Introduction

Pleasant Ridge Energy LLC (Pleasant Ridge), a subsidiary of Invenergy Wind Development North America LLC, is proposing to construct the Pleasant Ridge Wind Farm (the Project) in Livingston County, Illinois. The project is located within the townships of Pleasant Ridge, Forrest, Fayette, Eppards Point, Chatsworth, Charlotte, Bell Prairie, Indian Grove and Avoca (Figure 1). The proposed Project consists of up to 136, 1.79 megawatt (MW) or 1.72 MW wind turbine generators (WTG or turbine) manufactured by General Electric (GE),with a maximum Project nameplate generating capacity of up to 250 MW (Figure 2).

This Decommissioning Plan report provides a description of the decommissioning and restoration phase of the Project, including a list of the primary wind farm components, dismantling and removal activities and disposed of or recycled materials. A summary of estimated costs and revenues associated with the decommissioning phase is also included. Except for the Financial Assurance schedule in Section 3.4 below, this Decommissioning Plan is consistent with the latest draft of the "Wind Energy Facility Construction and Decommissioning Standards and Policies Recommended by the Illinois Department of Agriculture for an Agricultural impact Mitigation Agreement", which has been used as a template to generate the proposed Agricultural Impact Mitigation Agreement (AIMA) between Livingston County and Pleasant Ridge.

1.1 WIND FARM COMPONENTS

The main components of the proposed Project include:

- Turbines (tower, nacelle, hub, rotor and three rotor blades per WTG)
- Turbine foundations
- Step-up transformers
- Access roads
- Crane pads
- Underground electrical collection system
- Project 34/345 kilovolt (kV) substation
- Above-ground generator tie-in electrical system

1.2 EXPECTED LIFETIME AND TRIGGERING EVENTS

If properly maintained, the expected lifetime of the GE utility-scale wind turbine is approximately 20 years. Depending on market conditions and Project viability, the turbines may be re-fitted with updated components, such as nacelles, towers and/or blades to extend the life of the Project. In the event that the turbines are not retrofitted, or at the end of the Project's useful life, the turbines and associated components will be decommissioned and removed from the site.

Turbine components that have resale value may be sold in the wholesale market. Components with no wholesale value will be salvaged and sold as scrap for recycling or disposed of at an offsite licensed solid waste disposal facility (e.g., landfill). Decommissioning activities will include removal of the turbines and associated components as listed in Section 1.1 and described in Section 2.

1.3 DECOMMISSIONING SEQUENCE

Decommissioning activities are anticipated to be completed in a six to twelve month timeframe. Monitoring and site restoration may extend beyond this time period to ensure successful revegetation and rehabilitation. The anticipated sequence of decommissioning and removal is described below; however, overlap of activities is expected. Substation and transmission line removal will occur independently of the wind turbine decommissioning schedule.

- Reinforce access roads (e.g., turning radii) and prepare site
- De-energize turbines and "make safe"
- Dismantle and remove rotors and turbines
- Remove towers and internal components
- Remove step-up transformers
- Remove collection system less than five feet (60 inches) below the surface
- Remove portions of wind turbine foundations less than 54 inches below the surface and backfill sites
- Remove crane pads and grade turbine sites
- Remove access roads (unless retained at discretion of host landowner)
- Restoration and revegetation of disturbed land

2.0 Decommissioning Components and Activities

The wind farm components and decommissioning activities necessary to restore the Project area, as near as practicable, to pre-construction conditions are described within this section. Certain components (e.g. access roads, underground communication lines and underground electric lines) may be left in place if requested and agreed to by the landowner. Concrete and other components of wind turbines and the underground electric collection system located more than five feet below the soil surface, will be abandoned in place. Estimated quantities of materials to be removed and salvaged or disposed of are included in this section. Public roads damaged or modified during the decommissioning and reclamation process shall be repaired upon completion of the Project.

2.1 WIND FARM SYSTEM OVERVIEW

The Project will use up to 136 GE 1.79-100 or GE 1.72-103 turbines, with a total nameplate generating capacity of up to 250 MW. The decommissioning estimates provided in this report assume that 136 GE 1.79-100 or GE 1.72-103 turbines are erected and powered, and are subsequently decommissioned. The operation and maintenance (O&M) building utilized for the Project will likely not be decommissioned as the property and building will be sold or reverted back to the land owner, after wind energy production has ceased. Table 1 presents a summary of the primary components included in this decommissioning plan.

Table 1 Primary Components of Wind Farm

Component	Quantity	Unit of Measure
Wind Turbines (including 1 tower, 1 nacelle, 1 hub and 1 rotor with 3 rotor blades, per turbine)	136 (408 rotors)	Each
Step-up Transformers	136	Each
Wind Turbine Foundations	136	Each
Crane Pads or Mats	136	Each
Access Roads	268,000	Lineal Foot (estimated)
34.5 kV to 345 kV Project Substation	1	Each
Overhead Transmission Line	9.5	Mile

2.2 WIND TURBINE GENERATORS

The GE 1.79-100 and GE 1.72-103 model wind turbine generators are primarily comprised of a modular steel tower, nacelle, and rotor with three rotor blades attached to a hub. The hub height of both turbine models is 80 meters (262 feet) with either a 100-meter (328-foot) or 103-meter (338-foot) rotor diameter. The combined above-ground height (tip-height) of the tower and rotors is 130 meters (426.5 feet) for the 1.79-100 turbine and 131.5 meters (431 feet) for the 1.72-103 turbine. The components are modular in design, allowing for ease of construction, replacement and disassembly during decommissioning. Turbine components in working condition may be refurbished and sold in a secondary market yielding greater revenue than selling as salvage material. For the purposes of this report, estimates will be based on the salvage value, as this will be the most conservative estimate of revenue.

Turbine Tower – The turbine towers are painted modular monopole steel structures approximately 80 meters (262 feet) long. Each tower contains approximately 112 tons of salvageable steel. It is conservatively estimated that the tower pieces will be transported off-site for recycling as it is currently unlikely the tower could be cut into pieces for salvage on site.

Nacelle – The nacelle sits at the top of the turbine tower and has an overall weight of approximately 75 tons including the bedplate. The nacelle is comprised of approximately 80% salvageable steel along with other non-salvageable materials. Non-salvageable material within the nacelle will be disposed of in a landfill.

Hub, Rotor, and Rotor Blades – The rotor and hub (without blades) has a total weight of more than 18 tons. It is mainly comprised of steel that will be salvaged along with the tower and nacelle. The rotor blades are constructed of non-metallic materials such as fiberglass, carbon fibers and epoxies. These materials will likely have no salvage value (at this time) and thus will be properly disposed of in a licensed solid waste facility. There is no measurable difference in the cost of disposal between the 100-meter and the 103-meter rotor blades.

Other Turbine Components – In addition to the main components previously described, each WTG contains other items such as anchor bolts and internal electrical wiring that will have additional salvage value. The down-tower cabling contains copper which will be 100% salvageable.

Decommissioning Activity – The wind turbines will be deactivated from the surrounding electrical system and made safe for disassembly. Improvements to access roads and crane pads will be completed to allow crane access to turbines for removal of components. Liquid wastes, including gear box oil and hydraulic fluids will be removed and properly disposed of or recycled according to regulations current at the time of decommissioning. Control cabinets, electronic components and internal electrical wiring will be removed and salvaged. The hub and rotors will be lowered to the ground as a unit for disassembly. The nacelle and turbine sections will be disassembled and removed in the reverse order of assembly.

2.3 STEP-UP TRANSFORMERS

Step-up transformers generally sit on small concrete footings at the base of each turbine, occupying an approximate six-foot-cubed space. The electrical transformer is housed in a protective structure. After deactivation, oil will be drained and recycled or disposed of at an approved solid waste management facility. The transformer will then be disassembled and removed. Depending on condition, the transformers may be sold for refurbishment and re-use. If not re-used, the transformer will be salvaged from the site for a fee.

2.4 WIND TURBINE FOUNDATIONS

The octagonal spread foot foundations utilized for the Project turbines will be predominantly located underground. The foundation design consists of a solid, reinforced circular concrete pedestal, approximately 54 inches (4.5 feet) high and 17 feet in diameter. Below the pedestal is the foundation base, an octagonal-shaped concrete structure approximately 54 feet across and 8.5 feet deep. The entire foundation sits on supporting sub-grade approximately 12 feet below the ground surface. A typical spread foot foundation design is shown in Figure 3.

Concrete demolition will be completed on the entire pedestal (54 inches). This will include the anchor bolts, rebar, conduits, cables and concrete to the required depth. The site will be back-filled with clean fill and graded and the land contours restored as near as practicable to preconstruction conditions. Topsoil will be placed on the disturbed area and revegetated. Excavated materials will be hauled off-site for recycling or disposal, as required by the lease agreement between Pleasant Ridge and the host landowners. The cost estimate for the excavation and removal of turbine foundations is conservatively based on the previously described design parameters and assumes no resale or salvage value.

2.5 COLLECTION SYSTEM

The Project's electrical collection system will be located in cable trenches buried at a depth of five feet (60 inches) below the ground surface. The system voltage is 34.5 kV and will run from the individual turbine step-up transformers to the Project substation. The estimated length of the Project collection system cable is estimated at 780,000 linear feet (147.7 miles).

The Project collection system will not interfere with farming activities because it will be placed 60 inches or more below ground surface. Hence, complete cable removal is not required at decommissioning to restore the wind farm site to its former use. Cables five feet (60 inches) or more below ground surface will be completely deactivated and abandoned in place. Minimal decommissioning costs are associated with the collection system and are included in the turbine decommissioning estimate. If, at the time of decommissioning, the salvage value of the underground cable exceeds the cost of extraction and restoration, the cables may be removed and salvaged.

2.6 CRANE PADS

Crane pads will be located at the base of each turbine to support the large cranes necessary for assembly and disassembly of the turbines. Pads will be approximately 40 feet by 60 feet and consist of compacted native soils and approximately one foot of base fill. Alternately wooden crane mats may be used to reduce the volume of compacted fill needed; however, the more conservative (higher cost) option of gravel pads has been used in this cost estimate. After decommissioning activities are completed the crane pad aggregate will be removed and the areas filled with native soil, as necessary. If used, wooden mats will be recycled from turbine to turbine so only several will be required. Land will be graded and pre-construction contours restored to the extent practicable. Restoration will likely be performed in conjunction with the turbine foundation and/or access road restoration. Soils compacted during de-construction activities will be de-compacted (ripped to 18 inches), as necessary, to restore the land to pre-construction land use. Labor for trucking and equipment is the primary expense for the crane pad removal.

2.7 ACCESS ROADS

Access roads will be located at each turbine providing access from public roads to the turbine site. The final width of the roads is approximately 16 feet, widening near the turbine base. The total length of Project access roads is approximately 268,000 linear feet (50.8 miles). During the initial construction of the wind farm, the existing soils will be graded to match the typical contour of the adjacent land and compacted. Typical construction of an access road includes placement of a geotextile fabric on a prepared subgrade surface followed by six inches of aggregate base (pit run gravel) and six inches of aggregate surface course Type B (CA-6). Alternately, geotextile fabric may not be used if the access roads are cement stabilized; however, for costs estimating purposes, we conservatively assumed the use of geotextile fabric. The estimated quantity of these materials is provided in Table 2. A typical access road cross-section is shown in Figure 4.

Table 2 Typical Access Road Construction Materials

Item	Number	Unit
Geotextile Fabric	317,700	Square Yards
Aggregate Base Course	53,000	Cubic Yards
Aggregate Surface Course	53,000	Cubic Yards

Access roads will be removed from the Project area unless written communication is received from the host landowner requesting that the road be retained. Decommissioning activities include the removal and transportation of aggregate materials to a site for salvage preparation. Local townships or farmers may accept the material prior to processing for use on local roads or trails; however, for the purpose of this estimate it is conservatively assumed that all materials will be removed from the Project area.

The underlying geotextile fabric will be removed during the decommissioning of the access roads. Fabric that is easily separated from the aggregate during excavation will be disposed of in a solid waste disposal facility. Fabric that remains with the aggregate will be sorted out at the processing site and properly disposed of. Following removal of aggregate and geotextile fabric, the access road areas will be graded, de-compacted (ripped to 18 inches), back-filled with native soils, as needed, and land contours restored as near as practicable to preconstruction conditions.

Salvage value for the aggregate surface material is based on approximately 50 percent of the original material being sold as future aggregate base course. The aggregate base course removed from the access roads assumes a 50 percent recovery rate with a similar reuse as base course. The remaining aggregate may be viable as general fill for use in a non-structural fill site. The geotextile fabric cannot be salvaged and no value is placed on its recovery. The decommissioning estimates are based on removal and re-use of aggregate as described and include transportation of non-salvageable materials to a fill site within 25 miles of the turbine site.

2.8 PROJECT SUBSTATION AND GENERATOR TIE-IN LINE

The Project substation and above-ground electrical line that connects the substation to the current Commonwealth Edison substation will be removed unless an alternate use for the facilities is obtained. The substation foundation, transformers, and fencing will be removed and properly disposed of or recycled according to regulations current at the time of decommissioning. Due to the expected lifetime of the substation and its components, there would likely be a substantial resale value if the station is decommissioned after 20 to 25 years. Although that resale value would be much higher than the estimated scrap value, this report assumes a conservative value of recycled revenue only. The above ground generator tie-in system, including wiring and pole structures will be removed. Substation and pole sites will be back-filled with native soils and graded to restore land contours as near as practicable to preconstruction conditions. Topsoil will be placed on disturbed areas and seeded with appropriate vegetation to reintegrate it with the surrounding landscape.

2.9 TOPSOIL RESTORATION AND REVEGETATION

Project sites that have been excavated and back-filled will be graded as previously described to restore land contours as near as practicable to preconstruction conditions. Topsoil will be placed on disturbed areas and seeded with appropriate vegetation to reintegrate it with the surrounding environment. Soils compacted during de-construction activities will be de-compacted, as necessary, to restore the land to pre-construction land use. Work will be completed to comply with the conditions outlined in the AIMA between Pleasant Ridge and Livingston County or as directed by regulations in affect at the time of decommissioning.

2.10 ROADWAY IMPACTS

An estimate of deconstruction and decommissioning was performed using an approach that reviews anticipated truck traffic impacts to the project area roadways. This approach involved estimating anticipated truck traffic for construction and assumed similar loads for decommissioning. We estimated truck types, weights, and haul trips based upon typical wind farm construction practices. The weights and trips were used to determine Equivalent Single Axel Loads (ESALs) for an individual site based upon the American Association of State Highway and Transportation Officials (AASHTO) Load Equivalent Factor Tables. To determine road damage we looked at an average 20 year design ESAL for low volume rural roads and then applied the per site ESAL damage to determine what percentage of the roadway design life was impacted by the wind farm decommissioning process. This percentage was then applied against an average per mile road reconstruction cost to determine damage impact per mile in dollars. This per mile damage was multiplied by the total number of sites and the average haul distance per site to determine an estimate of total ESAL damage impacts for project decommissioning. The results of this analysis are shown in Appendix A.

Since the roadway impact cost of decommissioning should be very similar to the cost for repairs following construction of the sites, this estimate will be revised following construction and repair of any resulting damage.

3.0 Decommissioning Cost Estimate Summary

Expenses and revenues associated with decommissioning the Project will be dependent on labor costs and market value of salvageable materials at the time of decommissioning. For the purposes of this report approximate mid-2014 to mid-2015 average market values were used to estimate both expenses and revenues. Fluctuation and inflation of the salvage values or labor costs were not factored into the estimates.

3.1 DECOMMISSIONING EXPENSES

Project decommissioning will incur costs associated with the disassembly, removal, excavation and restoration of the proposed wind turbine sites and support infrastructure as described in Section 2. Table 3 summarizes the estimates for activities associated with the major components of the Project.

Table 3 Estimated Decommissioning Expenses

Activity	Unit	Number	Cost per Unit	Total
Overhead and management (includes estimated permitting required)	Lump Sum		$500,000	$500,000
Mobilization and demobilization	Lump Sum		$125,000	$125,000
Local public road repairs (see Appendix A)	Lump Sum		$757,000	$757,000
Turbine and step-up transformer disassembly and removal from site	Each	136		
• Crane and disassembly of turbine			$48,000	$6,528,000
• Deconstruction into salvageable pieces			$38,000	$5,168,000
• Transport of materials to recycler				
– Steel transport			$7,500	$1,020,000
– Copper transport			$3,000	$408,000
• Demolition, transport and dumping for rotors (3) and nacelle cover			$2,000	$272,000
• Transformer (load only, refurbisher will haul)			$1,000	$136,000
Crane pad installation, excavation, removal and transportation (conservatively assumes 136)	Each	136	$2,500	$340,000
Wind turbine foundation	Each	136		
• Concrete demolition for 54" depth of pedestal			$12,500	$1,700,000
• Disposal and backfill			$4,500	$612,000
Substation removal and site grading	Lump Sum		$275,000	$275,000
Electrical tie-line and poles	Mile	9.5	$21,000	$199,500
Access road excavation and removal	Lump Sum		$850,000	$850,000
Topsoil replacement and rehabilitation of site	Lump Sum		$1,000,000	$1,000,000
Total estimated decommissioning cost				**$19,890,500**

3.2 DECOMMISSIONING REVENUES

Revenue from decommissioning the Project will be realized through the sale of wind farm components and construction materials. Turbine components may be sold within a secondary market or as salvage. For purposes of this report, estimated recovery values were based on the salvage value, as this is the more conservative estimate of revenue.

The market value of both steel and copper fluctuate daily, although in the long term both have generally trended upward. Steel prices are generally more stable than copper. Salvage value estimates were based on a current average price of steel and copper derived from sources including on-line recycling companies and United States Geological Survey (USGS) commodity summaries. The price used to value the steel used in this report is $370 per ton; the value of aluminum, $0.60 per pound ($1,200 per ton); the value of copper, $2.60 per pound ($5,200 per ton). The tower and nacelle are assumed to have 80 percent salvageable steel content; the hub 90 percent. Table 4 summarizes the potential salvage value for the wind turbine components, substation components, overhead transmission line, steel monopoles and construction materials.

Table 4 Estimated Decommissioning Revenues

Item	Unit	Number	Salvage Price per Unit	Salvage Price per Turbine	Total (based on 136 WTGs)
Wind Turbine Generators					
Turbine tower (steel)	Tons per turbine	112	$370	$41,440	$5,635,840
Nacelle (steel)	Tons per nacelle	60	$370	$22,200	$3,019,200
Rotor Hub	Tons per hub	18	$370	$6,660	$905,760
Anchor bolts (steel)	Tons per turbine	2	$370	$740	$100,640
Transformer	Per turbine	1	$2,500	$2,500	$340,000
Copper	Tons per turbine	6.0	$5,200	$31,200	$4,243,200
Substation and Transmission Line					
Substation Components (steel and transformer)	Total				$150,000
Transmission Line (wire and steel monopoles)	Total				$170,000
Aggregate course materials					
Aggregate base and surface course (sold for re-use as base course)	Total				$300,000
Total Potential Revenue					**$14,861,640**

3.3 NET DECOMMISSIONING COST SUMMARY

The following is a summary of the net estimated cost to decommission the Project, using the information detailed in Sections 3.2 and 3.3. Estimates are based on 2013-2014 prices, with no market fluctuations or inflation considered.

Table 5 Net Decommissioning Summary

Decommissioning Expenses	$19,890,500
Potential Revenue – salvage value of turbine components and recoverable materials	$14,861,640
Net Decommissioning Cost	**$5,028,860**
Per Turbine Decommissioning Cost (based on 136 turbines)	**$36,977**

This engineer's estimate produces a conservative estimate of the cost of decommissioning the Pleasant Ridge Wind Farm based on the following considerations;

1) Each individual component of the plan has been conservatively estimated. It is our professional opinion that the actual cost to decommission Pleasant Ridge would be lower than the estimate presented here.

2) No wind farm has been decommissioned, so actual referenced costs for decommissioning do not exist at this time. Hence the engineer's estimate is based on pricing from similar activities on other types of decommissioning projects. Once wind turbine decommissioning projects have occurred, we anticipate the process will become streamlined and the real cost will go down.

3) Given the growing demand and declining availability of raw materials, it is our opinion that the relative price paid for recycled materials will increase over time. Together with more refined recycling techniques, this will reduce the overall cost of decommissioning.

4) Decommissioning costs during the first 10 to 15 years of the Project will likely be significantly lower than estimated as the turbines and substation would be dismantled, sold, and reconstructed as used operational units. The engineer's estimates assume all materials are recycled, which will produce a much lower return.

Considering the factors above, it is the engineer's professional opinion that the conservative estimates in this report are up to 25% higher than actual costs.

3.4 FINANCIAL ASSURANCE

Pleasant Ridge will post Financial Assurance at the time of application for building permits from the Zoning Administrator, estimated to cover the cost of decommissioning the Project. Initially, the amount of Financial Assurance will be based on the professional engineer's estimate of the cost of decommissioning ($36,977 per turbine), or such other amount as approved by the County Board. Pleasant Ridge will update the estimate of decommissioning costs every three years or at such other times as determined by the Zoning Administrator.

The Financial Assurance to be posted will be in the form of an irrevocable letter of credit or cash placed in a County escrow account. The County Board may, in its sole discretion, agree to accept all or a portion of the Financial Assurance in another form, such as a bond or corporate guarantee. If the financial assurance is in the form of a letter of credit, the letter shall be issued by a banking institution doing business either in Livingston County, Illinois or that is otherwise reasonably satisfactory to the County Board.

The Financial Assurance will be phased in over the first six years of the Project's operation as follows:

1) Prior to date of issuance of the Improvement Location Permit for the project: twenty-five percent (25%) of the estimated costs of decommissioning presented in this plan.
2) Within 30 days of the third anniversary of the Improvement Location Permit Issuance Date: fifty percent (50%) of the estimated costs of decommissioning determined as of that time.
3) Within 30 days of the sixth anniversary of the Improvement Location Permit Issuance Date: one hundred percent (100%) of the estimated costs of decommissioning determined as of that time.
4) Thereafter, subject to updates every three years, 100% of the estimated costs of decommissioning shall be maintained.

The Financial Assurance will not release the surety from liability until the Financial Assurance is replaced. All interests in the salvage value of Project components shall be subordinate to that of the County if decommissioning has not been completed within 18 months after the Project reaches the end of its useful life and no alternative to decommissioning has been sought and approved. In the event decommissioning has not been completed within the time specified, the County may take all appropriate actions for decommissioning, including drawing upon the Financial Assurance.

If there is a change in ownership of the Project, and subject to the County's right to review and approve any such change in ownership, the entity assuming ownership of the Project shall provide notice within 90 days to the County of such change and the existing Financial Assurance requirements will apply to the new owner.

Pleasant Ridge also has a contractual obligation to the landowners to remove the wind turbines and foundations per the Decommissioning Plan when the wind easements expire. Pleasant Ridge's easement agreements with each landowner also provide that the foundations (down to four feet) and wind turbines be removed at the end of their useful life. The easement agreements include a provision that if the Project is unable to meet its obligations to decommission the wind turbines and foundations, a decommissioning fund will be established during the fifteenth year of the Project, and will be held in escrow for the benefit of landowners. Any decommissioning Financial Assurance requirement by the County that exceeds these terms will be implemented and will supersede these terms.

References

USGS Minerals Information, available from:
http://minerals.usgs.gov/minerals/pubs/commodity/iron_&_steel_scrap/ [May 29, 2014]

USGS Circular 117, Aggregates from Natural Recycled Resources (1998), available from:
http://pubs.usgs.gov/circ/1998/c1176/c1176.pdf [May 29, 2014]

Steelmaking Commodity Prices, 2012-2014, available from:
http://www.steelonthenet.com/commodity-prices.html [May 29, 2014]

US Regional Scrap Prices – Midwestern, 2012-2014, available from:
http://www.steelonthenet.com/commodity-prices.html [May 29, 2014]

Copper Prices, 2014, available from:
http://www.scrapmonster.com/scrap-prices/category/Copper-Scrap/128/1/1 [May 29, 2014 (one month lag)]
http://www.earthworksrecycling.com/prices/ [May 29, 2014]

FIGURES

Figure 1 Project Location

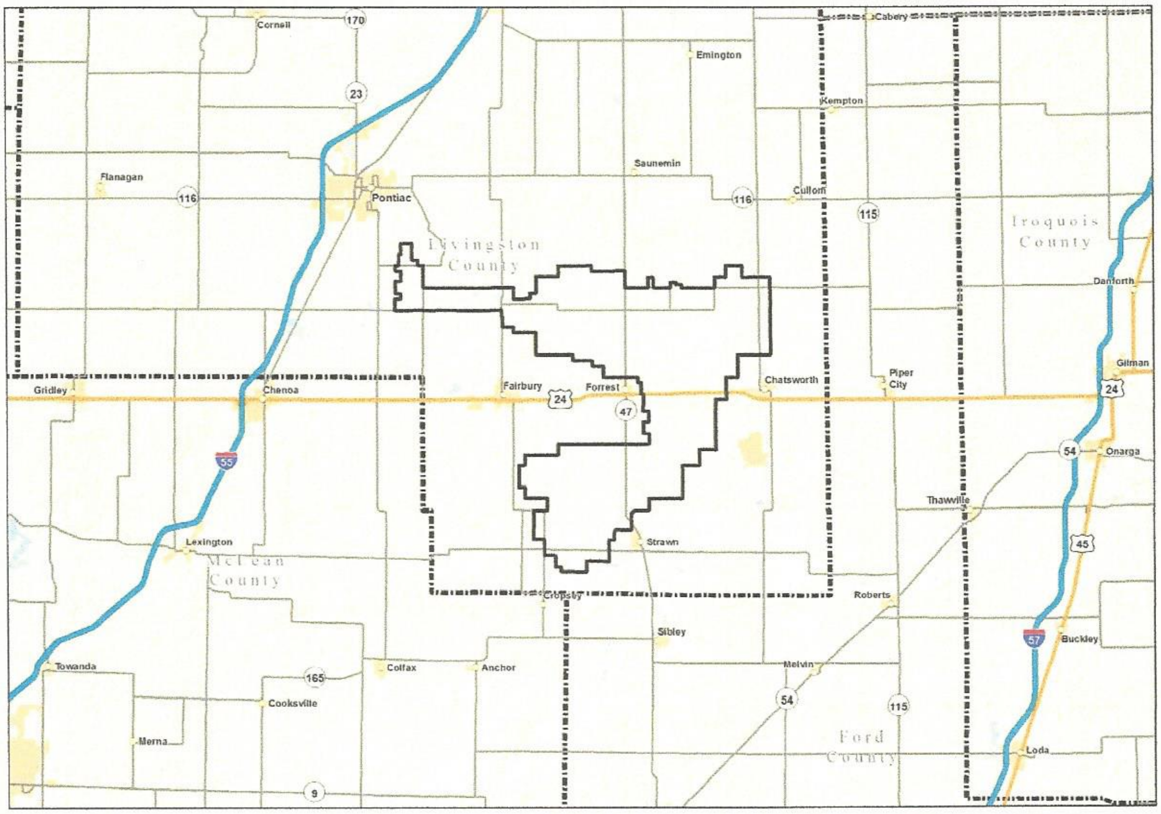


Figure 2 Proposed Project Layout (provided by Pleasant Ridge)

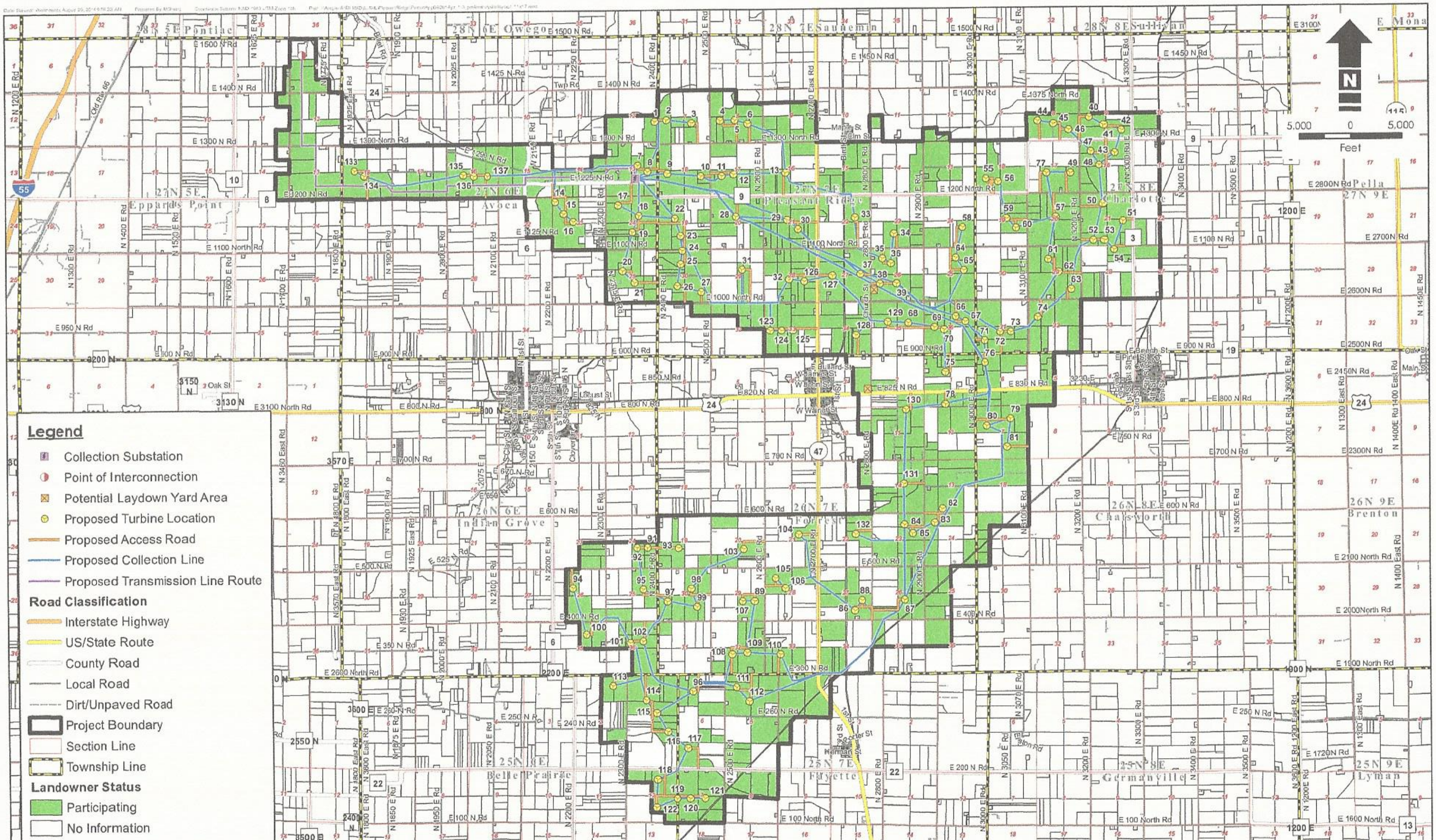


Figure 2 Proposed Project Site Plan

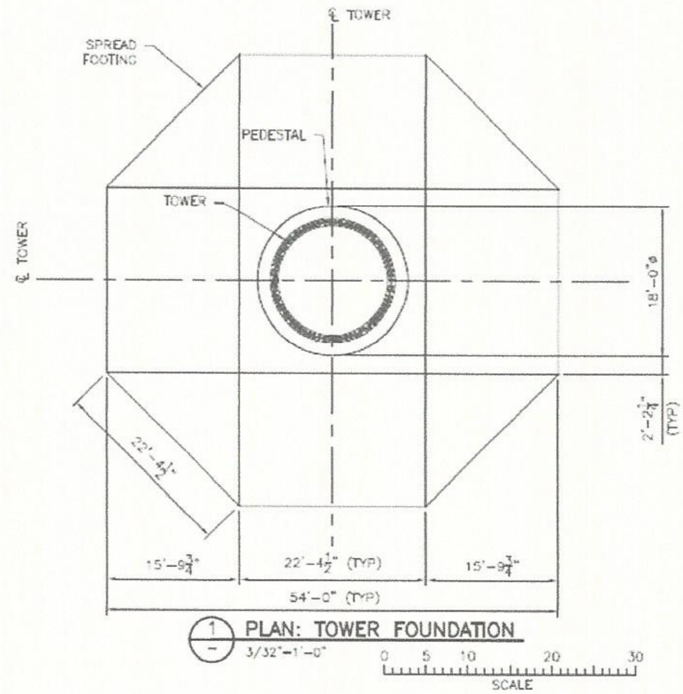
Pleasant Ridge Wind Energy Project, Livingston County, Illinois

Rev. 00

August 20, 2014

Invenergy
One South Wacker Drive Suite 1900
Chicago, Illinois 60606
(312) 224-1400

Figure 3 Foundation Detail



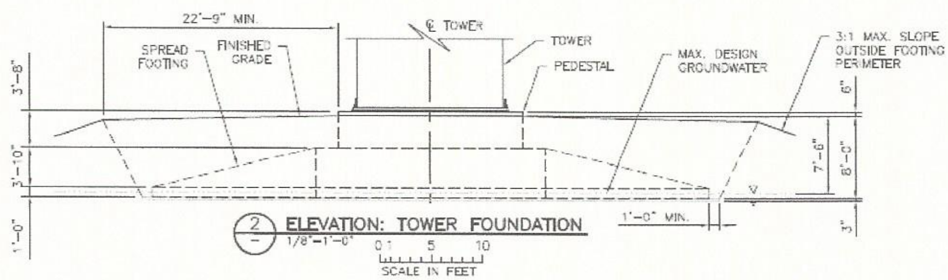
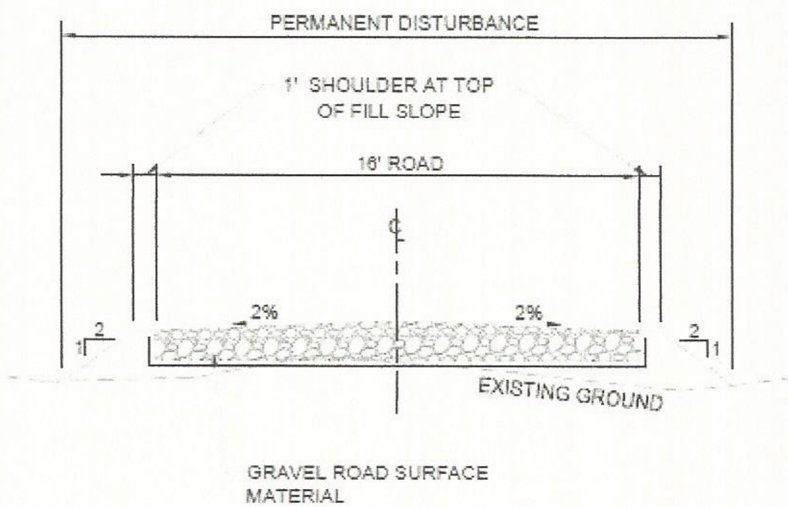


Figure 4 Access Road Detail



APPENDIX A

Roadway Impact Calculations

Per Site Truck Assumptions

	Total Trucks	ESAL/Truck	Assumptions
Concrete Trucks	33	62.964	Assume 325cy concrete/foundation
Side/Bottom Dumps	310	1217.99	Assume 40' avg access road width, 2500' avg length, 2 ' gravel section, 30T per delivery
Turbine Delivery	9	60.849	Assume 3 blades, 4 tower sections, 2 nacelle pieces, 13 axle vehicle @ max 180,000lbs gvw
General Delivery	40	142.76	General rebar, cable, bolts, etc in standard semi
	ESAL/Site	**1484.563**	

LEF Determination (1993 AASHTO) from Pavement Interactive

		Concrete Trucks (70,000)	Side/Bottom Dumps	Turbine Delivery (180,000)	General Delivery
Steering Axel	14000	0.399	0.399	0.399	0.399
Drive Axel	34000	1.11	1.11	1.11	1.11
Additional Axel	14000	0.399	0.36	3.192	
Trailer Axel	40000		2.06	2.06	2.06
	TOTAL ESAL	1.908	3.929	6.761	3.569

Assume SN 3.0, Pt 2.5

Summary

Design ESALS		100,000
Percentage of Design		1.48%
Cost/Mile Rural Road	$	250,000
Damage Impact per Mile	$	3,711
Total Sites		136
Avg Haul per Site (miles)		3
Total ESAL Damage Impact	**$**	**1,514,254**

A final damage impact factor of 50% is applied to the total estimate to account for age of roads at time of decommissioning. $1,514,254 x 50% = $757,127 (rounded to $757,000)

Appendix B

Engineer's Opinion of Cost

PATRICK ENGINEERING

ENGINEER'S OPINION OF COST

Project: Pleasant Ridge Energy Project
Location: Livingston County
Designer: Stantec Consulting Services Inc.
Contractor: TBD
Project #: 21476.189

Date: 3/26/15
Estimated By: MLL/MEM
Checked By: DAK

Title: Decommissioning Expenses

ITEM	DESCRIPTION	QTY	UNITS	U/P	TOTAL	NOTES	COST SOURCE
1.000	DE-ENERGIZE TURBINES AND "MAKE SAFE"			$	2,760.00		
1.001	Shutdown and Disconnect Turbine	1.0	LS	$ 960.00	$ 960.00	Assume 1 day, 2 man crew	1, 2
1.002	Drain Liquid Wastes	1.0	LS	$ 1,100.00	$ 1,100.00	Assume 1 day, 2 man crew and equipment	1, 2
1.003	Haul and Dispose of Wastes	700.0	GAL	$ 1.00	$ 700.00	Assume 100 gal non-hazardous gearl oil/turbine, assume 600 gal non-hazardous mineral oil/transformer	5
2.000	REINFORCE ACCESS ROADS AND PREPARE SITE			$	11,352.00		
2.001	Miscellaneous Site Prep	1.0	LS	$ 1,000.00	$ 1,000.00	Site prep activities undefined by Stantec, assume 2 man crew for 2 days	2
2.002	Strip/Stockpile/Place Topsoil and Subgrade Cut	82.0	CY	$ 25.00	$ 2,050.00	Assume 1 turning radius improvement per site based on WB-62 truck, 12' aggregate pavement section, 95% Proctor to 12" depth, geotextile weight equals 6oz/sy	3
2.003	Subgrade Grading	250.0	SY	$ 2.75	$ 687.50		1
2.004	Subgrade Compaction	250.0	SY	$ 1.75	$ 437.50		1
2.005	Geotextile Fabric	250.0	SY	$ 3.20	$ 800.00		3
2.006	Place and Compact Aggregate	82.0	CY	$ 25.00	$ 2,050.00		1
2.007	Remove Geotextile prior to Disposal	250.0	SY	$ 8.00	$ 2,000.00	Geotextile can't be disposed of with aggregate	2
2.008	Load/Haul/Dispose of Geotextile	0.25	LOAD	$ 420.00	$ 105.00	Dispose via 30-cy roll-off box, U/P based on 10-day rental with delivery and pickup	4
2.009	Excavate, Load, and Haul Aggregate to Disposal Facility	82.0	CY	$ 21.00	$ 1,722.00	No tipping fee, no salvage value	1, 2
2.010	Decompact Subgrade	250.0	SY	$ 2.00	$ 500.00		2
3.000	CRANE PAD SETUP/REMOVAL			$	16,629.65		
3.001	Strip/Stockpile/Place Topsoil and Subgrade Cut	178.0	CY	$ 25.00	$ 4,450.00	60'x40' based on Stantec Assumption	3
3.002	Subgrade Compaction	267.0	SY	$ 1.75	$ 467.25	Walk Behind Compactor	1
3.003	Geotextile Fabric	267.0	SY	$ 3.20	$ 854.40	6oz/sy	3
3.004	Place and Compact Aggregate	178.0	CY	$ 25.00	$ 4,450.00	2' section	1
3.005	Remove Geotextile prior to Disposal	267.0	SY	$ 8.00	$ 2,136.00	Geotextile can't be disposed of with aggregate	2
3.006	Load and Haul Aggregate to Disposal Facility	178.0	CY	$ 21.00	$ 3,738.00	No tipping fee, no salvage value	1, 2
3.007	Decompact Subgrade	267.0	SY	$ 2.00	$ 534.00		1
4.000	TURBINE DISASSEMBLY AND REMOVAL			$	92,877.73		
4.001	Crane Rental and Operation	2.0	DAY	$ 15,000.00	$ 30,000.00	Assume 2 days for takedown work, assume 1 crawler crane and 1 hydraulic truck mounted crane, assume crawler crane has a walking path between sites requiring a single mobilization	1, 2, 7
4.002	Restoration of Crane Impacts (harrow and seed)	0.50	ACRE	$ 2,200.00	$ 1,100.00	Assume impacts from walking between sites equal to two 5' wide tracks and linear disturbance equal to access road	3, 7
4.003	Physical Disassembly of Turbine including Demolition	320.0	MH	$ 60.00	$ 19,200.00	Assume 1 week, 8 man crew	1, 2
4.004	Cut Tower to Recyclable Sections (60"x24")	5,564.0	LF	$ 3.50	$ 19,474.00	262' tall, avg. dia = 10'	1
4.005	Load Trucks with Tower Steel Sections	12.0	LOAD	$ 250.00	$ 3,000.00	Assume 1 load = 10 ton = 1.5 cy, 112 tons/tower, steel density = 490 pcf	2
4.006	Haul Tower Steel to Recycling Center	12.0	LOAD	$ 250.00	$ 3,000.00	Average haul = 30 miles based on location of local steel yards (Pontiac Recycling and G&D Salvage), cost based on haul of aggregate	2
4.007	Load Roll-Off Boxes with Blade Remnants	5.0	LOAD	$ 250.00	$ 1,250.00	Assume 14,000 lbs/blade, Dispose via roll-off box with 5-ton max, U/P based on 10-day rental with delivery and pickup	2
4.008	Haul Blade Remnants to Waste Facility	5.0	LOAD	$ 420.00	$ 2,100.00		4
4.009	Load Trucks with Salvageable Nacelle Material	6.0	LOAD	$ 250.00	$ 1,500.00	Assume 1 load = 10 ton = 1.5 cy, 60 tons/tower, steel density = 490 pcf	
4.010	Haul Salvageable Nacelle Material to Recycling Facility	6.0	LOAD	$ 250.00	$ 1,500.00	Average haul = 30 miles	2
4.011	Haul Waste Nacelle Material to Waste Facility	3.0	LOAD	$ 420.00	$ 1,260.00	15-ton waste material, dispose via roll-off box with 5-ton max, U/P based on 10-day rental with delivery and pickup	4
4.012	Remove, Load, and Haul Miscellaneous Items	1.0	LS	$ 5,000.00	$ 5,000.00	Control cabinets, electronic components, and internal eletrical wiring	2
4.013	Cut Hub/Rotor into Recyclable Sections	1.0	LS	$ 2,823.73	$ 2,823.73	Assume % of Tower Steel cutting based on steel tonnage (16.2/112 = 14.5%)	2
4.014	Load Trucks with Hub/Rotor Recyclable Sections	2.0	LOAD	$ 250.00	$ 500.00	Assume 1 load = 10 ton = 1.5 cy, 16.2 tons/Hub and Rotor, steel density = 490 pcf	2
4.015	Haul Hub/Rotor Recylcable Sections to Steel Recycling Center	2.0	LOAD	$ 250.00	$ 500.00	Average haul = 30 miles based on location of local steel yards (Pontiac Recycling and G&D Salvage), cost based on haul of aggregate	2
4.016	Load Roll-Off Boxes with Hub/Rotor Waste Material	1.0	LOAD	$ 250.00	$ 250.00	1.8 ton waste material (10% of 18 ton), Dispose via roll-off box with 5-ton max, U/P based on 10-day rental with delivery and pickup	2
4.017	Haul Waste Hub/Rotor Material to Waste Facility	1.0	LOAD	$ 420.00	$ 420.00		4

ITEM	DESCRIPTION	QTY	UNITS	U/P	TOTAL	NOTES	COST SOURCE
5.000	TURBINE PEDESTAL REMOVAL			$	10,059.00		
5.001	Demo and Load Concrete	38.0	CY	$ 100.00	$ 3,800.00	54" of concrete pedestal, sub-structure to be buried	2
5.002	Cut Rebar	333.0	EA	$ 1.50	$ 499.50	Assume 12" bar spacing around circumferential ring, 12" spacing of circumferential rings, Assume 1" dia rebar	1
5.003	Cut Anchor Bolts	106.0	EA	$ 3.00	$ 318.00	Assume 12" bolt spacing around perimeter of pedestal (interior and exterior of tower), assume 2" dia bolts	1
5.004	Load Roll-Off Box with Concrete	4.0	LOAD	$ 250.00	$ 1,000.00	Assume 1 load = 10 cy (max per roll-off box provided by Republic Service/Allied Waste)	2
5.005	Haul to Concrete Disposal Facility	4.0	LOAD	$ 341.00	$ 1,364.00	No salvage value, disposal fee included in U/P provided by Cost Source	4
5.006	Import Fill and Backfill	37.8	CY	$ 45.00	$ 1,702.50	Exclude 6" of topsoil	3
5.007	Rough Grade w/ Stockpiled Topsoil	1.0	LS	$ 1,375.00	$ 1,375.00	Assume topsoil stripped during construction is available on-site for re-spreading	1
6.000	STEP-UP TRANSFORMER REMOVAL			$	1,480.00		
6.001	Demo Concrete Footing	64.0	SF	$ 7.50	$ 480.00	Assume footing is 6" thick with WWF, 8'x8'	1
6.002	Load Concrete in Truck	1.0	LS	$ -	$ -	Assume concrete load, haul, and disposal is included with turbine foundation removal	
6.003	Haul to Concrete Disposal Facility	1.0	LS	$ -	$ -		
6.004	Deactivate and Drain/Dispose Oil	1.0	LS	$ -	$ -	Drain/disposal is included with "Make Safe" activities	
6.005	Disassemble and Remove	1.0	LS	$ 1,000.00	$ 1,000.00	Assume scrapped or disposed	2
6.006	Restoration	1.0	LS	$ -	$ -	Assume restoration is included with adjacent restoration activities	
7.000	UNDERGROUND ELECTRICAL REMOVAL			$	200.00		
7.001	Miscellaneous Removal	1.0	LS	$ 200.00	$ 200.00	Assume 20'± ofplastic conduit installed within 5' of ground surface	2
7.002	Restoration	1.0	LS	$ -	$ -	Assume restoration included in adjacent restoration activities	
8.000	ACCESS ROAD REMOVAL AND RESTORATION			$	23,608.00		
8.001	Excavate, Load, and Haul Aggregate to Disposal Facility	584.0	CY	$ 21.00	$ 12,264.00	Assume 50% of roads are removed, no tipping fee, no salvage value	1
8.002	Decompact Subgrade	1,752.0	SY	$ 2.00	$ 3,504.00		2
8.003	Import/Place Fill to Replace Removed Aggregate	292.0	CY	$ 20.00	$ 5,840.00	Exclude 6" of topsoil, assume fill source located within Livingston County	2
8.004	Rough Grade w/ Stockpiled Topsoil	1.0	LS	$ 2,000.00	$ 2,000.00	Assume a 30'x30' disturbed area, assume topsoil stripped during construction is available on-site for re-spreading	1
	DECOMMISSIONING OF A SINGLE SITE SUBTOTAL			$	158,966.38		
	DECOMMISSIONING OF 136 SITES SUBTOTAL			$	21,619,427.68		
9.000	PUBLIC ROADWAY IMPACTS			$	757,000.00		
9.001	Impacts Based on ESAL Evaluation	1.0	LS	$ 757,000.00	$ 757,000.00	Cost assumed equal to Stantec Evaluation	6
10.000	TRANSMISSION LINE AND POLE DEMO			$	199,500.00		
10.001	Deactivate, demo, haul off, and restore site	9.5	MILES	$ 21,000.00	$ 199,500.00	No information provided on transmission line and pole layout, quantities, demo and restoration plans, etc. Cost assumed equal to Stantec estimate.	6
11.000	34/345 KV SUBSTATION REMOVAL			$	275,000.00		
11.001	Substation Demo and Removal	1.0	LS		$ -	No information provided on substation removal including site layout, demo and restoration plans, etc. Cost assumed equal to Stantec estimate.	6
11.002	Import of Topsoil and Site Grading	1.0	LS		$ -		6
11.003	Fence Removal/Disposal	1.0	LS		$ -		6
	DECOMMISSIONING OF COMPLETE PROJECT SUBTOTAL			$	22,850,927.68		
12.000	GENERAL CONDITIONS			$	964,037.11		
12.001	Mobilization/Demobilization	2.0	%	$ 22,850,927.68	$ 457,018.55		2
12.002	Stream/Waterway Crossing Impacts	5.0	EA	$ 5,000.00	$ 25,000.00	Assume 5 crossings	2
12.003	Roadway Crossing Impacts	10.0	EA	$ 2,500.00	$ 25,000.00	Assume 10 crossings	2
12.004	Project Management	1.0	%	$ 22,850,927.68	$ 228,509.28		2
12.005	Design and Permitting	1.0	%	$ 22,850,927.68	$ 228,509.28		2
12.006	Contractor Markup	0.0	%	$ 22,850,927.68	$ -	Contractor Markup included in Unit Prices	
13.000	COST ADJUSTMENTS			$	(5,255,713.37)		
13.001	Scheduling Efficiencies and Activity Overlap	-38.0	%	$ 22,850,927.68	$ (8,683,352.52)	Assumed cost savings due to potential for scheduling efficiencies	2

ITEM	DESCRIPTION	QTY	UNITS	U/P	TOTAL	NOTES	COST SOURCE
13.002	Contingency	15.0		$ 22,850,927.68	$ 3,427,639.15	Contingency to cover uncertainties	2
	PROJECT TOTAL COSTS			$	18,559,251.42		

Opinion of Cost Notes/Assumptions:

1. Quantities and unit prices have been determined based on various assumptions outlined herein and within Patrick's report titled, Critical Review of Decommissioning Costs for Pleasant Ridge Energy Project. Assumptions, quantities, and unit prices are subject to change.
2. Unit prices are shown in 2015 U.S. Dollars.
3. No material testing is required.
4. No survey crew needed to identify structures, utilities, etc.
5. Materials to be transported to a recycling facility to be salvaged are assumed to be transported by the contractor within a standard transport truck having a capacity of 10-cy.
6. Materials to be transported to a waste facility are assumed to be transported at the expense of Republic Service/Allied Waste located in Pontiac, IL.
7. Design and permitting requirements are unknown and will vary depending on the governing regulations at the time of decommissioning.

Cost Source:

1. RSMeans Heavy Construction Cost Data 2014
2. Engineering Experience/Judgment
3. Historical IDOT Bid Prices (www.bidhistory.com)
4. Republic Service/Allied Waste located in Pontiac, IL
5. Machinery Lubrication Magazine, "Squeezing Every Last Cent from Your Oil", accessed 1/27/15
6. Stantec Consulting Decommissioning Plan Pleasant Ridge Energy Project Livingston County, Illinois, dated October 8, 2014
7. Bigge Crane and Rigging Company

PATRICK ENGINEERING

ENGINEER'S OPINION OF COST

Title: Decommissioning Revenues

Project: Pleasant Ridge Energy Project
Location: Livingston County
Designer: Stantec Consulting Services Inc.
Contractor: TBD
Project #: 21476.189

Date: 3/26/15
Estimated By: MLL/MEM
Checked By: DAK

ITEM	DESCRIPTION	QTY	UNITS	U/P	TOTAL	NOTES	COST SOURCE
1.000	WIND TURBINE GENERATORS			$	70,722.40		
1.001	Turbine Tower Steel	112.0	TON	$ 212.00	$ 23,744.00	Unit cost assumed to be equal to the average value (1983-2012), Rotor Hub Steel assumed to be 90% of 18-tons per Stantec	1
1.002	Nacelle Steel	60.0	TON	$ 212.00	$ 12,720.00		1
1.003	Rotor Hub Steel	16.2	TON	$ 212.00	$ 3,434.40		1
1.004	Anchor Bolt Steel	2.0	TON	$ 212.00	$ 424.00		1
1.005	Transformer	1.0	EA	$ 2,500.00	$ 2,500.00		
1.006	Copper	6.0	TON	$ 4,650.00	$ 27,900.00	Unit cost assumed to be equal to the average value (1983-2012)	1
2.000	AGGREGATE COURSE MATERIALS			$	-		
2.001	Aggregate Base and Surface Course	1.0	LS	$ -	$ -	Aggregate disposed of at no cost at local pit. No salvage value for used stone.	2
	DECOMMISSIONING OF A SINGLE SITE SUBTOTAL			$	70,722.40		
	DECOMMISSIONING OF 136 SITES SUBTOTAL			$	9,618,246.40		
3.000	SUBSTATION AND TRANSMISSION LINE			$	320,000.00		
3.001	Substation Components (steel and transformer)	1.0	LS	$ 150,000.00	$ 150,000.00	Salvage value assumed equal to Stantec estimate	3
3.002	Transmission Line (wire and steel monopoles)	1.0	LS	$ 170,000.00	$ 170,000.00	Salvage value assumed equal to Stantec estimate	3
	ECOMMISSIONING OF COMPLETE PROJECT SUBTOT			$	9,938,246.40		
12.000	GENERAL CONDITIONS			$	-		
						General Conditions costs accounted for in General Opinion of Cost	
	PROJECT TOTAL REVENUE			$	9,938,246.40		

Opinion of Cost Notes/Assumptions:

1. Quantities and unit prices have been determined based on various assumptions outlined herein and within Patrick's report titled, Critical Review of Decommissioning Costs for Pleasant Ridge Energy Project. Assumptions, quantities, and unit prices are subject to change.
2. Unit prices are shown in 2015 U.S. Dollars.
3. Local salvage prices for scrap steel were $140/ton (1/23/15) and $110/ton (1/29/15) according to Pontiac Recylcers Inc. in Pontiac, IL and $180/ton (1/23/15) and $150/ton (1/29/15) per G&D Salvage in Loda, IL. The scrap value for copper according to Pontiac Recylcers Inc., is $1.80/lb ($3,600/ton) for #2 copper (1/23/15) and $2.00/lb ($4,000/ton) on 1/29/15. Copper scrap price from G&D Salvage was $1.50/lb ($3,000/ton) on 1/29/15.

Cost Source:

1. USGS Scientific Investigations Report 2012-5188; Metal Prices in the United States Through 2010
2. Engineering Experience/Judgment
3. Stantec Consulting Decommissioning Plan Pleasant Ridge Energy Project Livingston County, Illinois

PATRICK ENGINEERING

ENGINEER'S OPINION OF COST

Project: Pleasant Ridge Energy Project
Location: Livingston County
Designer: Stantec Consulting Services Inc.
Contractor: TBD
Project #: 21476.189

Date: 3/26/15
Estimated By: MLL/MEM
Checked By: DAK

Title: Net Decommissioning Costs

ITEM	DESCRIPTION	QTY	UNITS	U/P	TOTAL	NOTES	COST SOURCE
1.000	NET DECOMMISSIONING COST SUMMARY						
1.001	Total Costs	1.0	LS	$ 18,559,251.42	$ 18,559,251.42		N/A
1.002	Total Revenues	1.0	LS	$ 9,938,246.40	$ 9,938,246.40		N/A
	TOTAL NET DECOMMISSIONING COST			$	8,621,005.02		
	NET DECOMMISSIONING COST PER TURBINE			$	63,389.74		

Appendix C

Scrap Steel and Copper Value Analysis

PATRICK ENGINEERING

Project No:	21476.189		
Project:	Pleasant Ridge Energy Project		
Calculated By:	MLL / MEM	Date:	1/30/2015
Checked By:	DAK	Date:	2/2/2015

Title: Scrap Steel and Copper Value Analysis

Purpose: Evaluate historic scrap material prices for steel and copper in order to select a reasonable current salvage value for use in estimating decommissioning revenues.

References:

1) Scrap value for steel obtained from U.S. Geological Survey (USGS) at http://minerals.usgs.gov/minerals/pubs/historical-statistics/ds140-fescr.pdf
2) Scrap prices for copper obtained from U.S. Geological Survey (USGS) at http://minerals.usgs.gov/minerals/pubs/historical-statistics/ds140-coppe.pdf
3) Factor to adjust values from 1998 dollars to 2014 dollars equal to 1.4524 as obtained from http://data.bls.gov/cgi-bin/cpicalc.pl?cost1=100.00&year1=1998&year2=2014

Calculations: See below. Standard deviation calculated based on the following formula:

$$SD=\sqrt{\frac{\sum(x-\bar{x})^2}{n}}$$

SD = standard deviation
x = each value in data set
$\bar{x}$ = mean of all values in data set
n = # of values in data set

Results/Recommendation: Based on the below analysis, a scrap value equal to the average price is assumed. The calculated average takes into consideration historic market prices for a 30-year period from 1983 to 2012.

Scrap value of steel = $212 per ton
Scrap value of copper = $4,650 per ton

PATRICK ENGINEERING

Project No:	21476.189		
Project:	Pleasant Ridge Energy Project		
Calculated By:	MLL / MEM	Date:	1/30/2015
Checked By:	DAK	Date:	2/2/2015

ANALYSIS OF STEEL VALUES

Year	Value in 1998 Dollars per Ton	Value in 2014 Dollars per Ton
1983	$ 118.00	$ 171.38
1984	$ 136.00	$ 197.53
1985	$ 104.00	$ 151.05
1986	$ 109.00	$ 158.31
1987	$ 121.00	$ 175.74
1988	$ 147.00	$ 213.50
1989	$ 139.00	$ 201.88
1990	$ 132.00	$ 191.72
1991	$ 110.00	$ 159.76
1992	$ 98.00	$ 142.34
1993	$ 126.00	$ 183.00
1994	$ 140.00	$ 203.34
1995	$ 144.00	$ 209.15
1996	$ 136.00	$ 197.53
1997	$ 133.00	$ 193.17
1998	$ 108.00	$ 156.86
1999	$ 92.00	$ 133.62
2000	$ 91.00	$ 132.17
2001	$ 69.00	$ 100.22
2002	$ 83.00	$ 120.55
2003	$ 107.00	$ 155.41
2004	$ 181.00	$ 262.88
2005	$ 160.00	$ 232.38
2006	$ 177.00	$ 257.07
2007	$ 199.00	$ 289.03
2008	$ 263.00	$ 381.98
2009	$ 155.00	$ 225.12
2010	$ 244.00	$ 354.39
2011	$ 293.00	$ 425.55
2012	$ 257.00	$ 373.27

Analysis of 2014 Values			
Maximum =	$ 425.55	Average - 2 Standard Deviation =	$ 49.40
Minimum =	$ 100.22	Average - 1 Standard Deviation =	$ 130.53
Average =	$ 211.66	Average + 1 Standard Deviation =	$ 292.80
Standard Deviation =	$ 81.13	Average + 2 Standard Deviation =	$ 373.93

PATRICK ENGINEERING

Project No:	21476.189
Project:	Pleasant Ridge Energy Project
Calculated By:	MLL / MEM	Date: 1/30/2015
Checked By:	DAK	Date: 2/2/2015

ANALYSIS OF COPPER VALUES

Year	Value in 1998 Dollars per Ton	Value in 2014 Dollars per Ton
1983	$ 2,760.00	$ 4,008.62
1984	$ 2,310.00	$ 3,355.04
1985	$ 2,240.00	$ 3,253.38
1986	$ 2,170.00	$ 3,151.71
1987	$ 2,610.00	$ 3,790.76
1988	$ 3,660.00	$ 5,315.78
1989	$ 3,800.00	$ 5,519.12
1990	$ 3,380.00	$ 4,909.11
1991	$ 2,890.00	$ 4,197.44
1992	$ 2,750.00	$ 3,994.10
1993	$ 2,280.00	$ 3,311.47
1994	$ 2,690.00	$ 3,906.96
1995	$ 3,260.00	$ 4,734.82
1996	$ 2,500.00	$ 3,631.00
1997	$ 2,400.00	$ 3,485.76
1998	$ 1,730.00	$ 2,512.65
1999	$ 1,640.00	$ 2,381.94
2000	$ 1,840.00	$ 2,672.42
2001	$ 1,560.00	$ 2,265.74
2002	$ 1,510.00	$ 2,193.12
2003	$ 1,670.00	$ 2,425.51
2004	$ 2,550.00	$ 3,703.62
2005	$ 3,190.00	$ 4,633.16
2006	$ 5,610.00	$ 8,147.96
2007	$ 5,690.00	$ 8,264.16
2008	$ 5,330.00	$ 7,741.29
2009	$ 4,040.00	$ 5,867.70
2010	$ 5,740.00	$ 8,336.78
2011	$ 6,490.00	$ 9,426.08
2012	$ 5,750.00	$ 8,351.30

Analysis of 2014 Values			
Maximum =	$ 9,426.08	Average - 2 Standard Deviation =	$ 394.06
Minimum =	$ 2,193.12	Average - 1 Standard Deviation =	$ 2,521.84
Average =	$ 4,649.62	Average + 1 Standard Deviation =	$ 6,777.39
Standard Deviation =	$ 2,127.78	Average + 2 Standard Deviation =	$ 8,905.17