



Stantec Consulting Ltd.
300W-675 Cochrane Drive, Markham ON L3R 0B8

August 15, 2017
File: 133560101

Attention: Jim Stewart

Windlectric Inc., a wholly-owned subsidiary of Algonquin Power Co.
354 Davis Road, Suite 100
Oakville, Ontario
L6J 2X1

Dear Jim,

Reference: Amherst Island Wind Project RUA Pre- & Post-Construction & Collection System Studies

Please find attached our submission of the Pre- & Post-Construction and Collection System Studies and associated documentation as identified by Sections 17, 18, 19 and 20 of the Road Use Agreement (RUA) dated January 26, 2016 (the "Road Use Agreement").

A description of the services provided by Stantec in the attached information is as follows:

1. Identify Municipal Infrastructure that will or may be damaged, destroyed, or otherwise adversely affected by the construction of the Project.
2. Evaluate the existing condition and service capacity of Municipal Infrastructure identified above.
3. Act as an environmental monitor to ensure construction activities comply with conditions of the Renewable Energy Approval and any other provincial or federal environmental legislation.
4. Provide plans and drawings of the Pre-Construction Preparatory and Collection System Works together with a cost estimate of the following works:
 - a. Pre-Construction Preparatory
 - b. Collection System
 - c. Construction Period and
 - d. Post-Construction Remedial Works.

The total cost estimate for all such works is estimated to be **\$19,000,000 CAD**. This includes a contingency of **20%** and the cost of engineering fees.

5. A schedule, including a phasing plan, for construction and completion of the Pre-Construction Preparatory Work and Collection System Work.

The attached information has been prepared by Stantec Consulting Ltd. based partly upon information provided by other parties. We verify that the attached cost estimates are reasonably accurate and include a contingency of 20%.

Design with community in mind



August 15, 2017
Jim Stewart
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We trust that the attached information is satisfactory. If you have any questions or concerns about the attached cost estimates or schedule, please do not hesitate to contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Vince Green, P.Eng.
Renewable Subsector Leader, Canada
Phone: (905) 944-7783
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Vince.Green@stantec.com

Attachment: Pre-Construction_Construction_Post-Construction_Work_verified
Collection System Cost breakdown by Roads_verified
F.01 - Schedule for Pre-Construction and Collection System Work - 170724

c. Homer Lensink – Algonquin Power

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Table 1

Cost Estimate: Pre-Construction Preparatory, Construction & Post-Construction Work

Road Segment	Pre-Construction Preparatory Work	Construction Period Work	Post-Construction Period Work
2nd Concession Road	\$2,669,554	\$833,038	\$272,527
Engineering	\$75,246		
Management	\$38,962	\$38,398	\$27,614
Mobilization	\$7,038	\$6,936	\$4,988
Materials	\$1,401,716	\$513,664	\$97,277
Labour and Equipment	\$701,431	\$135,200	\$97,227
Contingency (20%)	\$445,161	\$138,840	\$45,421
3rd Concession Road	\$2,235,509	\$166,607	\$247,385
Engineering	\$64,942		
Management	\$27,534	\$7,680	\$25,072
Mobilization	\$4,974	\$1,387	\$4,529
Materials	\$1,160,124	\$102,732	\$88,277
Labour and Equipment	\$605,383	\$27,040	\$88,277
Contingency (20%)	\$372,552	\$27,768	\$41,231
Stella 40 Foot Road	\$730,229	\$86,124	\$420,287
Engineering	\$25,273		
Management	\$40,570	\$4,340	\$26,785
Mobilization	\$7,328	\$784	\$4,838
Materials	\$299,641	\$51,366	\$130,000
Labour and Equipment	\$235,594	\$15,280	\$188,616
Contingency (20%)	\$121,823	\$14,354	\$70,048
South Shore Road - S03 - S33	\$1,614,917	\$646,146	\$189,841
Engineering	\$49,503		
Management	\$24,944	\$32,548	\$19,240
Mobilization	\$4,506	\$5,879	\$3,475
Materials	\$805,508	\$385,428	\$67,743
Labour and Equipment	\$461,462	\$114,600	\$67,743
Contingency (20%)	\$268,993	\$107,691	\$31,640
South Shore Road E of S33, Lower Forty Foot Road, and Front Road E of S30	\$1,726,072	\$215,310	\$664,298
Engineering	\$54,278		
Management	\$22,940	\$10,849	\$22,031
Mobilization	\$4,144	\$1,960	\$3,980
Materials	\$851,395	\$128,416	\$225,000
Labour and Equipment	\$505,971	\$38,200	\$302,571
Contingency (20%)	\$287,344	\$35,885	\$110,716
Dump Road	\$467,941	\$43,062	\$66,403
Engineering	\$12,517		
Management	\$12,157	\$2,170	\$3,689
Mobilization	\$2,196	\$392	\$666
Materials	\$246,223	\$25,683	\$25,000
Labour and Equipment	\$116,685	\$7,640	\$25,980
Contingency (20%)	\$78,163	\$7,177	\$11,067
SUBTOTALS			
Engineering	\$281,760	\$0	\$0
Management	\$167,107	\$95,985	\$124,430
Mobilization	\$30,185	\$17,338	\$22,476
Materials	\$4,764,607	\$1,207,289	\$633,297
Labour and Equipment	\$2,626,526	\$337,960	\$770,414
Contingency (20%)	\$1,574,037	\$331,714	\$310,123
Total Costs	\$9,444,222	\$1,990,286	\$1,860,741

GRAND TOTAL - ROADS**\$13,295,249**

Cost Estimate - Collection System

Item #	Activity	Dump Road	2nd Conc. Road	Front Road	South Shore Rd.	Lower Road	Stella Road	TOTAL
1	Mobilization and Indirects - Avertex	\$5,000	\$46,518	\$13,708	\$19,706	\$22,306	\$62,763	\$170,000
	Trenching and boring							
2	Soil Trenching - Single collector circuit	\$46,053	\$160,820	\$133,386	\$0	\$0	\$0	\$340,259
3	Rock trenching - Single collector circuit		\$0	\$0	\$126,945	\$173,394	\$0	\$300,339
4	Soil Trenching - Double collector circuit		\$226,321	\$0	\$0	\$0	\$129,326	\$355,648
5	Directional Boring - Soil		\$19,758	\$0	\$0	\$0	\$49,128	\$68,886
6	Directional Boring - Rock		\$382,728	\$116,370	\$232,740	\$258,600	\$1,000,776	\$1,991,214
7	Excavate Rock in Pits - JB's and Splice Pits		\$20,057	\$0	\$5,014	\$0	\$5,014	\$30,086
8	Install Junction Box (JB) c/w grounding		\$34,880	\$0	\$8,720	\$0	\$8,720	\$52,320
9	Additional for Bollards for JB's		\$12,796	\$0	\$3,199	\$0	\$3,199	\$19,194
10	Jetting of fibre with in 32mm HDPE	\$4,571	\$32,331	\$12,982	\$4,613	\$6,342	\$18,854	\$79,693
	Splicing							
11	MV Cable Shield Break Splice - 4/0 AWG		\$9,960	\$9,960	\$0	\$0	\$0	\$19,920
12	MV Cable Shield Break Splice - 500mcm		\$5,392	\$0	\$0	\$5,392	\$0	\$10,784
13	MV Cable Shield Break Splice - 1250mcm AL (COPPER)		\$7,582	\$0	\$7,582	\$0	\$30,326	\$45,490
14	Fibre 2-4way Splice c/w Hand Hole - 24F (JB locations)		\$12,744	\$0	\$3,186	\$0	\$3,186	\$19,116
	Collector Cable Supply Costs							
15	4/0 AWG 35 kV Cable	\$42,258	\$203,346	\$120,020	\$0	\$58,671	\$0	\$424,296
16	500 kcmil 35 kV cable		\$79,443	\$0	\$47,616	\$0	\$85,619	\$212,679
17	1250 kcmil 35 kV cable		\$150,343	\$0	\$0	\$0	\$400,914	\$551,257
18	Fiber cable	\$2,029	\$14,349	\$5,761	\$2,049	\$2,816	\$8,365	\$35,369
19	Contingency (20%)	\$19,982	\$283,874	\$82,438	\$92,274	\$105,504	\$361,238	\$945,310
	SUMMARY	\$119,892	\$1,703,242	\$494,626	\$553,643	\$633,025	\$2,167,429	\$5,671,857



Amherst Island Wind Project

ID	Task Name	% Complete	Duration	Start	Finish	Predecessors	2018											
							Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
1	Construction	0%	273 days	9/1/17	9/18/18		[Gantt bar from Sep 2017 to Sep 2018]											
2	EPC Construction Works	0%	317 days	9/1/17	9/18/18		[Gantt bar from Sep 2017 to Sep 2018]											
3	Civil Works	0%	317 days	9/1/17	9/18/18		[Gantt bar from Sep 2017 to Sep 2018]											
4	Mobilize to Island Site	0%	11 days	9/1/17	9/14/17		[Green bar from Sep 1 to Sep 14, 2017]											
5	Public Road Restoration	0%	193 days	9/11/17	9/18/18		[Gantt bar from Sep 11, 2017 to Sep 18, 2018]											
6	2nd Conc. Rd - (Stella 40' Rd to S31 Access)	0%	6 days	9/11/17	9/16/17	4SS+7 days	[Green bar from Sep 11 to Sep 16, 2017]											
7	Construction - Dump Road (Tower S31 Access)	0%	3 days	9/18/17	9/20/17	6	[Green bar from Sep 18 to Sep 20, 2017]											
8	2nd Conc. Rd - (S31/Dump Rd to S22 Access)	0%	4 days	9/21/17	9/25/17	7	[Green bar from Sep 21 to Sep 25, 2017]											
9	2nd Conc. Rd - (S22 Access to S04 Access)	0%	4 days	9/26/17	9/29/17	8	[Green bar from Sep 26 to Sep 29, 2017]											
10	2nd Conc. Rd - (S04 Access to S01/S29 Access)	0%	5 days	9/30/17	10/5/17	9	[Green bar from Sep 30 to Oct 5, 2017]											
11	Stella 40' RD - (2nd Conc. To 3rd Conc.)	0%	4 days	10/6/17	10/11/17	10	[Green bar from Oct 6 to Oct 11, 2017]											
12	Stella 40' RD - (3rd Conc. To S37 Access)	0%	4 days	10/12/17	10/16/17	11	[Green bar from Oct 12 to Oct 16, 2017]											
13	South Shore Rd. - (S02 Access to S14 Access)	0%	5 days	10/17/17	10/21/17	12	[Green bar from Oct 17 to Oct 21, 2017]											
14	South Shore Rd. - (S14 Access to S33 Access)	0%	13 days	10/23/17	11/8/17	13	[Green bar from Oct 23 to Nov 8, 2017]											
15	Lower 40' Rd.	0%	6 days	11/9/17	11/15/17	14	[Green bar from Nov 9 to Nov 15, 2017]											
16	Front Rd - (Marshal 40' Rd to Lower 40')	0%	8 days	11/16/17	11/24/17	15	[Green bar from Nov 16 to Nov 24, 2017]											
17	3rd Concession Rd	0%	14 days	11/25/17	12/11/17	16	[Green bar from Nov 25 to Dec 11, 2017]											
18	Post Construction Road Remediation - Sitewide	0%	13 days	9/4/18	9/18/18	17	[Green bar from Sep 4 to Sep 18, 2018]											
19	Access Road Construction	0%	64 days	9/14/17	11/28/17		[Gantt bar from Sep 14, 2017 to Nov 28, 2017]											
41	Island Transmission Lines	0%	103 days	10/2/17	2/2/18		[Gantt bar from Oct 2, 2017 to Feb 2, 2018]											
42	Transmission Line Installation	0%	88 days	10/2/17	1/16/18	4SS+25 day	[Green bar from Oct 2, 2017 to Jan 16, 2018]											
43	Transmission Line Testing and Commissioning	0%	15 days	1/17/18	2/2/18	42	[Green bar from Jan 17 to Feb 2, 2018]											
44	Collector System	0%	96 days	10/7/17	1/31/18		[Gantt bar from Oct 7, 2017 to Jan 31, 2018]											
45	Collector Circuit 1 - Trenching/Installation/Testing	0%	96 days	10/7/17	1/31/18		[Gantt bar from Oct 7, 2017 to Jan 31, 2018]											
46	Collector Line - S09 to junction JB105	0%	4 days	10/7/17	10/12/17	4SS,42SS+5	[Green bar from Oct 7 to Oct 12, 2017]											
47	Collector Line - S11 to junction JB105	0%	4 days	10/13/17	10/17/17	46	[Green bar from Oct 13 to Oct 17, 2017]											
48	Collector Line - Junction JB105 to S03	0%	1 day	10/18/17	10/18/17	47	[Green bar on Oct 18, 2017]											
49	Collector Line - S16 to junction JB105	0%	12 days	10/19/17	11/1/17	48	[Green bar from Oct 19 to Nov 1, 2017]											
50	Collector Line - S16 to junction JB104	0%	14 days	11/2/17	11/17/17	49	[Green bar from Nov 2 to Nov 17, 2017]											
51	Collector Line - S31 to junction JB104	0%	6 days	11/18/17	11/24/17	50	[Green bar from Nov 18 to Nov 24, 2017]											
52	Collector Line - S29 to S01	0%	5 days	11/25/17	11/30/17	51	[Green bar from Nov 25 to Nov 30, 2017]											

Project: Amherst Island Wind Project - Summary Scedule
Date: 7/24/17

Task Milestone Summary Project Summary Progress

