Submitted on Friday, May 18, 2018 - 09:49

Name of person speaking: Patricia McConkey, President, WastAway Services Canada Inc.
Organization you are representing: WastAway Services Canada Inc.
Primary purpose of the organization: Alternative waste solution
Number of members: 1
Mailing address:
1050 Candle Crescent
Sherwood Park, AB T8H 0L6
Contact name: Patricia McConkey

Subject matter:
The CWSM Board recently commissioned a report to review waste technologies. I would like to present the cost saving benefits of my technology, compared to those in the report.

Specific request of the regional district, if any (i.e. letter of support, funding):
If possible, I would like to request 20 minutes to present. I will be including financial comparisons and I would like the group to have sufficient time to ask questions. Please let me know if that is possible.

Requested meeting date: June 7, 2018
Audio-visual equipment needed: projector (if possible)

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Sustainable Waste Solutions
Proven Technology

WastAway Plant
in Aruba

From CSWM Report March 26, 2018

For 52,000 tpy	Lowest Cost Option	
Capital Cost	27,500,000	
Operating Costs	$82.07	
Residual to landfill	11%	
Heat value of pellets	17 MJ (unconfirmed)	
Technology fee	$11.59	
Carbon Credits over 40 year period	-152,000	
Years operating	0	
Maintenance cost per tonne	$7.45	

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WastAway Information included

For 52,000 tpy	Lowest Cost Option	WastAway	Notes
Capital Cost	27,500,000	$28,200,000* See note below	See note #1
Operating Costs	$82.07	$53.40 to $65.00	#2
Residual to landfill	11%	4%	#3
Heat value of pellets	17 MJ (unconfirmed)	20-21 MJ Analysis attached	#4
Technology fee	$11.59	$4.00	#5
Carbon Credits over 40 year period	-152,000	-1,560,000 Tonnes of CO2e reduction	#6
Years operating	0	15 years Many independent reviews	#7
Maintenance cost per tonne	$7.45	$13.72	#8

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WastAway Information included

For 52,000 tpy	WastAway	Notes
Capital Cost	$28,200,000*	#1. The WastAway Capital cost in RFI included money for clearing land, which was an error. The adjusted cost should be $27,400,000.
Operating Costs	$65.00	#2. The operating cost for 52,000 tonnes is $65, however the equipment quoted in this project has the capacity to process 64,000 tonnes. The op cost for 64,000 tonnes per year is $53.40
Residual to landfill	4%	#3. Items that are not considered MSW, such as small appliances, paint, and other house-hold hazardous items will be sent to other recycling centers. 4% represents non-recyclable non-MSW type items.

WāstAway

WastAway Information included

For 52,000 tpy	WastAway	Notes
Heat value of pellets	20-21 MJ Analysis attached	#4. CANMET Energy (a National Resource Canada facility) as well as many others have performed analysis on WastAway fuel. See the Appendix for analytic values.
Technology fee	$4.00	#5. This fee includes 24x7 remote monitoring to prevent unscheduled shut-downs.
Carbon Credits over 40 year period	-1,560,000 Tonnes of CO2e reduction over the period	#6. WastAway Carbon Credits have been calculated by 2 independent consulting firms and using the Alberta protocol which results in a reduction of 1 tonne of CO2e for every tonne of WastAway Energy Fuel. Additional carbon credits would be available for the industrial partner burning WastAway fuel – but these credits have NOT been included in this calculation. BC and Alberta often share protocols therefore once BC has a protocol for this type of project we can predict we will have similar CO2 reductions.

WastAway Information included

For 52,000 tpy	WastAway	Notes
Years operating	15+ years	#7. The WastAway plant in Tennessee has been operating for 15 years, with a second plant in Aruba since 2009. It has been reviewed by many independent engineering firms, all of whom have given it high marks for operations and business model. Those firms include TetraTech, Stantech, Battelle Institute, US Department of National Defense Engineering and more…see appendix for more.
Maintenance cost per tonne	$13.72	#8. WastAway maintenance costs are higher than the Sustane's. WastAway cost estimates comes from years of experience. We think this number is conservative (meaning that the plant will have less maintenance costs) but since waste is unpredictable it is best to assume the worst and then be happily surprised with lower costs than vice versa.

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Most Important Factor in Business Case: Proven Product

The most important difference between WastAway and the other pellet producers is that WastAway has spent more than 12 years testing our pellets with various potential industrial partners:

- 7 pulp and paper mills
- 5 multinational cement kilns – Lafarge, Lehigh/Heidelburg, Cemex, Holcim, and Italcementi
- Lime kilns
- Coal Power plants
- Biomass plants

Over 90% of clients that tested WastAway fuel found it acceptable for use in their process.

WāstAway

Most Important Factor in Business Case: Proven Product

In October 2017 we completed a full-scale test with Capital Power in their coal-fired boiler just near Edmonton. It was a great success!!

- Boiler maintained temperature and produced same amount of electricity as when burning only coal
- No harmful emissions
- Handling – no issues in handling and storage

We are expecting to start one or more WastAway projects later this year in the Edmonton area.

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Nanaimo Forest Products
Harmac Pulp Operations

Nanaimo Forest Products Harmac Pulp Operations has provided a letter of support and would like to use WastAway Fuel in their process. They and would like to address the CSWM committee at an appropriate time.

- See appendix for letter

Comments on the Report

The MH Report was very well done – however some clarification is required:

1. We have two full scale facilities – one in Tennessee (2003) and one in Aruba (2009).
2. MH commented that our process is more complex and that making fuel is relatively new.
   - The WastAway system has been designed to meet the rigorous fuel specifications of international industrial companies and therefore requires a number of steps in the process. If another RDF company does not have all of these steps it will have a difficult time meeting customer's quality requirements.
   - We have been making the same product for over 15 years – and it has been used in fuel applications for over 10 years.

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Recommendation: Status Quo

Obviously waste-to-energy doesn't fit in the current budget….but what if you did things differently?

- Can items be budgeted different?
- Can recycled items from the plant be counted towards diversion rates?

New Business Case:

What does the business case look like for processing commercial waste in addition to MSW?

- Adding more processing capacity can increase revenue and reduce CSWMs costs.
- Would a P3 lower costs?

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Environment is the KEY!

I believe that the goal of every waste management plan is to maximize environmental benefits and minimize cost.

WastAway can meet these goals *within* the CSWM budget.

Let's talk!

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Appendix

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Facility in Tennessee

Independent Third Party Reviews and Research Partners

Over the past decade the WāstAway® technology has been the subject of many independent third party reviews and research papers by :

Just a few of the entities conducting reviews include:

- Auburn University
- Western Kentucky University
- CANMET Energy
- CCEMC (Climate Change Emissions Management Corporation)
- Battelle Memorial Institute
- Blue Source Canada, ULC
- KCI Technologies
- Army Engineering Research and Development Center
- National Defense Center for Engineering Excellence
- Tetra Tech

These companies have produced research and opinions in many areas including environmental assessments of finished products, technical due diligence of the core technologies, fuel analysis and efficacy studies, and environmental impact evaluations.

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Results from CANMET Energy NRC

	Fluff			Highvale Coal				
Proximate Analysis	**As Analyzed**	**Dry at 105°C**	**Dry Ash Free**	**As Analyzed**	**Dry at 105°C**	**Dry Ash Free**	**Units**	**Method**
Ash	12.26	12.78	-	14.04	14.69	-	wt. %	ASTM D 5142
Volatile Matter	71.88	74.91	85.88	30.86	32.28	37.84	wt. %	ISO 562
Fixed Carbon	11.82	12.32	14.12	50.69	53.03	62.16	wt. %	by difference
Moisture	4.04	-	-	4.41	-	-	wt. %	ASTM D 5142
Total	100.00	100.01	100.00	100	100	100	wt. %	
Ultimate Analysis	**As Analyzed**	**Dry at 105°C**	**Dry Ash Free**	**As Analyzed**	**Dry at 105°C**	**Dry Ash Free**	**Units**	**Method**
Carbon	47.1	49.1	56.2	62.14	65.00	76.2	wt. %	
Hydrogen	6.40	6.67	7.65	3.81	3.98	4.67	wt. %	ASTM D 5373
Nitrogen	0.46	0.48	0.55	0.88	0.92	1.08	wt. %	
Sulphur	0.20	0.21	0.24	0.64	0.67	0.78	wt. %	ASTM D 4239
Oxygen	29.53	30.78	35.29	14.24	14.78	17.46	wt. %	by difference
Ash	12.26	12.78	-	14.04	14.69	-	wt. %	ASTM D 5142
Moisture	4.04	-	-	4.41	-	-	wt. %	
Total	100.00	100.02	100.03	100.15	100.16	100.19	wt. %	

	Fluff			Highvale Coal				
Calorific	**As Analyzed**	**Dry at 105°C**	**Dry Ash Free**	**As Analyzed**	**Dry at 105°C**	**Dry Ash Free**	**Units**	**Method**
Gross Calorific	20.29	21.15	24.24	24.53	25.61	30.01	MJ/kg	ISO 1928
	8,724	9,091	10,420	10,550	11,010	12,900	Btu/lb	
	19,233	20,042	22,972	23,259	24,273	28,440	Btu/kg	

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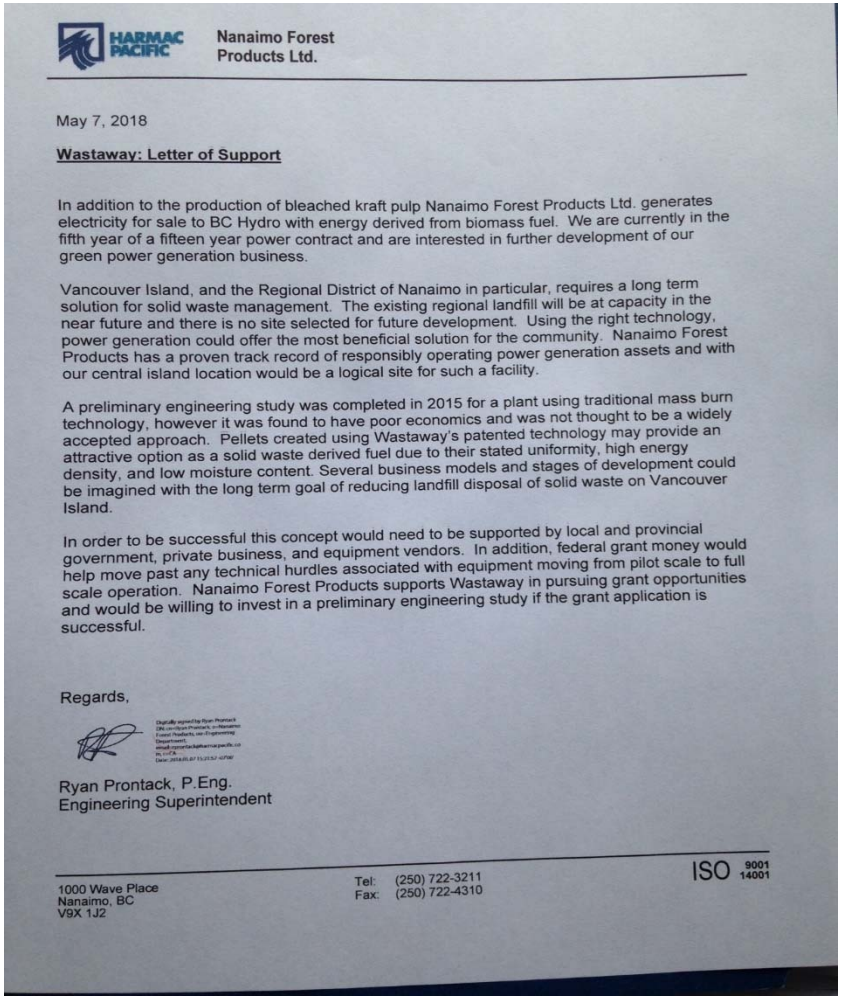
Letter of Support from Nanaimo Forest Products



HARMAC PACIFIC

Nanaimo Forest Products Ltd.

May 7, 2018

Wastaway: Letter of Support

In addition to the production of bleached kraft pulp Nanaimo Forest Products Ltd. generates electricity for sale to BC Hydro with energy derived from biomass fuel. We are currently in the fifth year of a fifteen year power contract and are interested in further development of our green power generation business.

Vancouver Island, and the Regional District of Nanaimo in particular, requires a long term solution for solid waste management. The existing regional landfill will be at capacity in the near future and there is no site selected for future development. Using the right technology, power generation could offer the most beneficial solution for the community. Nanaimo Forest Products has a proven track record of responsibly operating power generation assets and with our central island location would be a logical site for such a facility.

A preliminary engineering study was completed in 2015 for a plant using traditional mass burn technology, however it was found to have poor economics and was not thought to be a widely accepted approach. Pellets created using Wastaway's patented technology may provide an attractive option as a solid waste derived fuel due to their stated uniformity, high energy density, and low moisture content. Several business models and stages of development could be imagined with the long term goal of reducing landfill disposal of solid waste on Vancouver Island.

In order to be successful this concept would need to be supported by local and provincial government, private business, and equipment vendors. In addition, federal grant money would help move past any technical hurdles associated with equipment moving from pilot scale to full scale operation. Nanaimo Forest Products supports Wastaway in pursuing grant opportunities and would be willing to invest in a preliminary engineering study if the grant application is successful.

Regards,

Ryan Prontack, P.Eng.
Engineering Superintendent

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ISO 9001 14001

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