

To: Board of Management

From: John Tracogna  
Chief Executive Officer

Subject: **BIOGAS PROJECT**

Date: 2010-11-24

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**Summary:**

This report updates the Board on the project and outlines an unsolicited proposal received on 2010-10-25 from a consortium of companies called “Zoo Biogas Co.”

**Recommendations:**

**It is recommended that:**

- 1. the CEO be authorized to proceed with negotiations and enter into a Memorandum of Understanding (MOU) between the Board of Management of the Toronto Zoo and Zoo Biogas Co. related to a partnership to build a 500KW biogas facility on Zoo managed land; and**
- 2. Zoo staff reports back to the Board of Management on the details of the project including the proposal terms and business model.**

**Financial Impact:**

It is expected that the financial and business model negotiated with Zoo Biogas Co. will have a net benefit.

**Background:**

The Toronto Zoo Board of Management approved (2007-07-25) the Toronto Zoo Green Plan which identifies “investment in renewable energy generation” as a long-term goal and “building renewable energy generation facilities or modular components on-site” as a short-term action. The Board approved (2008-10-28) in principle the building of a biogas facility on-site and the immediate creation and release of a request for proposals for such a facility. Toronto City Council approved (2010-02-22) the “construction of a Biogas Facility at Toronto Zoo, pending the decision by the Board to award the project to a successful proponent, following completion of the Request for Proposal process” and to “report back to Executive Committee prior to making a commitment to a successful proponent, if any unfavourable impacts to future Capital and Operating budgets arise”.

The Board was updated on the responses to the Toronto Zoo Request for Proposals (RFP #07) for the Provision of a Large-Scale Biogas Facility at the Toronto Zoo at the 2010-08-24 Board of Management meeting. As outlined in this Report, the Zoo did not receive any proposals that satisfied the minimum requirements of RFP #07. Industry concerns with RFP #07, as measured by surveyed responses from attendees of our mandatory site meeting (2010-06-03), include technical risks, timelines, feedstock supply, thermal heat distribution and the price for electricity. A common suggestion from all respondents was that the above noted concerns would be reduced if the project size were reduced.

On 2010-10-25 a consortium under the name "Zoo Biogas Co." provided a detailed proposal to construct a 500KW modular (i.e. could accommodate more fuel over time) biogas facility on 2.5 acres of Zoo managed land. The consortium is currently comprised of five distinct companies with between 8 and 38 years of experience in design and development, building and grid connections, strategy and marketing, business modelling and project management of biogas facilities. Members of Zoo Biogas Co. have built five biogas facilities in Ontario (see attachment).

Zoo staff has reviewed the proposal and addressed various concerns with the City solicitor. The proposal fits with the Zoo's mission, is consistent with both the Toronto Zoo Five-Year Strategic Plan and the Zoo Green Plan, indicates potential for net financial benefit to operations and will result in the Zoo's organic waste being processed in the most environmentally friendly manner possible.

### **Comments/Discussion:**

A negotiated Agreement between Zoo Biogas Co. could span 10-20 years and would require Board of Management review, input and approval. However, in order to move forward with a design, discussions with the Ontario Power Authority and other grant sources, Zoo Biogas Co. has requested a Memorandum of Understanding (MOU) as assurance in proceeding.

The MOU will outline that:

- Zoo Biogas Co. is responsible for financing, engineering, building and operating the facility;
- Zoo Biogas Co. will form a special purpose company (SPC) to secure funds, permits and feedstock and the Toronto Zoo will have representation on the SPC Board;
- The Toronto Zoo is responsible for providing ~3000 tonnes of organic waste to the facility;
- The Toronto Zoo will have the option to receive all thermal heat and exhaust CO<sub>2</sub> (enough to sufficiently supply 95% of the needs of a 2 acre greenhouse);
- The Toronto Zoo will have exclusive rights to solid fertilizer that is a by-product of the process;
- The Toronto Zoo will receive an annual donation/contribution.

Zoo staff will include language in the MOU that will allow the Board to withdraw from the partnership and not proceed with the biogas facility if it deems necessary.

As discussions proceed, Zoo staff will also brief the City of Toronto's Solid Waste Management Services and other relevant City Divisions.

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John Tracogna  
Chief Executive Officer

**List of Attachments:**

Zoo Biogas Co. List of Team Members and Credentials

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## **Zoo Biogas Co.**

### **. Zoo Biogas Team**

ReGenerate – [www.regeneratebiogas.com](http://www.regeneratebiogas.com)

#### **Daniel Bida, CFA**

Daniel has over 8 years experience in the energy industry, with a focus on sustainability and renewable energy. He created ReGenerate in order to pursue a solution to both the energy and environmental crises we are facing, by providing communities around Ontario with the tools and assistance they need to own and operate their own biogas systems. This includes: General Resource Assessments, project coordination, permitting and FIT application, feedstock sourcing, and on-site plant operations.

HH Angus – [www.hhangus.com](http://www.hhangus.com)

#### **John R. Hawkes**

John is currently CEO of Angus Power (HH Angus Renewable Energy business unit), where he's developed the new division's business plan and several biogas, solar and wind power projects. John has spent his entire career in the power industry, holding various management positions at MAN Diesel, GE Energy and Rolls Royce over the last 35 years, installing and servicing power plants from 2 to 50 MW in size. He also currently owns and operates a 10,000 square feet garden centre with 5 greenhouses.

Koenig and Consultants – [www.koenigconsultants.ca](http://www.koenigconsultants.ca)

#### **Dr. Ingo Koenig, MBA, PhD**

Ingo studied Business Administration and Economics at Kiel University where he received a PhD in Economic Policy. He earned an MBA from the University of Southern California in Los Angeles, USA. As an Associate Principal at McKinsey & Co., Ingo dove into the fascinating world of consulting, which included challenging clients, great teams, top-notch ideas and many long hours. More recently he enjoyed starting-up his own companies in the areas of life-sciences, wind power technology and consulting. Ingo has a long-term involvement with renewable energies, founding a wind energy company in 1998.

His main consulting focus at the present is on the development and review of strategies in the renewable energies industry. He is an internationally regarded and demanded expert for community power projects. His mission is to involve and engage as many people in renewable energy projects as possible.

#### **Dr. Christine Koenig, PhD**

Christine majored in biology and biochemistry and graduated from Goettingen University with a PhD in biochemistry. In her post-doctoral work she gained long-time experience in research and development. She has been awarded a number of prizes and gained high recognition for her entrepreneurial work and a patent in the biotechnology branch. Since 2002 she has been engaged as business manager of a diagnostics company and at the same time as a marketing and innovation consultant for Life Science/Biotechnology and renewable energies companies helping to advance their innovative products and find new markets for them.

## **Zoo Biogas Co.**

Christine leads the CSR practice at Koenig & Consultants Inc. and teaches CSR at York University's Schulich Business School.

Kronos Project Management Group – [www.kronospmg.com](http://www.kronospmg.com)

### **Jean Sawaya**

Kronos Project Management Group Inc. is a full service project and construction management consultancy firm for the energy and power generation industries. Kronos was founded by an experienced professional with over 25 years experience in the energy sector, with specific emphasis in power generation to service project developers, EPC contractors and power plant operators. The principal of the company has extensive experience in power generation and infrastructure projects and has managed international projects in the renewable energy sectors, in nuclear, hydro, gas, heavy fuel and diesel.

Riepma Consultants – [www.riepma.ca](http://www.riepma.ca)

### **Clare Riepma, B.A.Sc., M.E.S., P.Eng., R.P.P.**

Clare Riepma is the President of Riepma Consultants Inc. and is one of Canada's foremost authorities on Anaerobic Digestion. He has a degree in engineering from the University of Toronto and a Masters in Environmental Studies from York University. For the last 38 years he has worked as an environmental consultant and project manager. He is the past President of PlanET Biogas Solutions Inc., a leading anaerobic digester design-builder. Under his watch PlanET analyzed and designed dozens of biogas projects and built five digesters in Ontario and one in BC. He was one of the industry leaders that developed the current biogas FIT contract with the Ontario Power Authority.

## **Zoo Biogas Co.**

### **References:**

- **Vandermeer Greenhouses, Niagara-on-the-Lake, 335kW, \$2.4m**
  - 335 kW, heat used in greenhouse
  - \$2.8 million
  - FIT contract, currently operational
  - Owned and operated by the farmer
  - Feedstock = grape pomace and manure
  
- **Bayview Greenhouses, Jordan Station**
  - 250 kW, heat used in greenhouse operation
  - \$1.8 million
  - Owned and operated by the farmer
  - Feedstock = pet food
  
- **Ledgcroft Farms, Seeley's Bay**
  - 500 kW, heat used in farmhouse and barns
  - \$2.5 million
  - Generating electricity since March 2010 under FIT
  - Owned and operated by the farmer
  - Feedstock = dairy manure + fats, oils and greases (FOG)
  
- **Delft Blue Veal Inc, Hamilton**
  - 500 kW, heat used in veal barns
  - \$2.5 million + engines
  - FIT contract awarded, currently operational
  - Owned and operated by the farmer
  - Feedstock = veal manure + FOG
  
- **Catalyst Energy, Abbotsford, B.C.,**
  - 1.5MW equivalent, gas supply contract to Terasen Gas
  - \$3.5 million + scrubbers
  - Owned and operated by the farmer
  - Feedstock = manure, FOG, DAF, vegetable waste
  
- **University of Guelph, Ridgetown College,**
  - 250kW, heat used in adjacent building
  - \$2.5 million
  - FIT contract, currently under construction
  - Owned and operated by the University
  - Feedstock = manure, FOG and glycerin

*Contact information can be provided upon request.*