Toronto Zoo issues Request for Proposals (RFP) May 3, 2010 for the construction of a Biogas Facility
May 3, 2010

Questions and Answers

1. **Why does the Zoo want to build a biogas facility?**
    - As a leading conservation organization committed to sustaining wildlife and wild spaces, the Toronto Zoo embraces clean and renewable energy solutions that will ensure clean air and soil for the long term and is perfectly positioned to help educate the public at large on these sustainable solutions.
    - The Zoo already uses and will be showcasing various clean and sustainable energy options at the Zoo site:
        - Green roof technology used on our Australasia Pavillion and new Polar bear holding building
        - Solar panels on buildings and being tested on Zoo golf carts and the Zoomobile
        - Geothermal heating (the lion-tail macaque exhibit is the only exhibit of its kind heated and cooled by geothermal technology)
        - Solar thermal heating of water in our operations complex
    - The Zoo generates organic waste including animal waste and bedding, food services, horticulture, that will be one of the sources of fuel for this facility.
    - The Province is promoting renewable energy generation, particularly smaller distributed energy systems to replace coal-fired energy plants, and considers commercial biogas facilities an example.
    - Other fuel sources will be sought from the commercial organic waste sector in the GTA.
    - The RFP is seeking a Partner to design, build, own and operate the facility.

2. How will visitors to the Zoo benefit from this facility?

- A primary goal of this project is to increase awareness about the applicability and feasibility of commercial biogas power in North America.
- The public will be permitted to visit this facility to learn more and understand this clean and renewable energy option.
- In addition, a small scale biogas facility model will be installed on-site by an animal exhibit, i.e. at the elephant exhibit, where visitors can connect and learn more about sustainable energy production.
- Corporate visitors/clients will benefit from seeing solutions in action through our proprietary Toronto Zoo ECOexecutives ™ educational program.

3. What is a Biogas facility?

- Biogas is a form of renewable energy because fuel sources are sustainable and green house gas emissions are lower than conventional fossil fuel based systems
- A Biogas plant uses organic waste (fuel) to generate energy.
- Bacteria are placed in an anaerobic (oxygen free) environment with the fuel; the bacteria consume the fuel and metabolize (excrete) methane; methane, like natural gas, can be burned to power turbines for electricity or it can be cleaned and sent directly into natural gas pipelines; the system generates as much waste heat (thermal energy) as electricity equivalent.
- A Biogas facility in this context does NOT mean: 1) landfill gas (capturing old methane in garbage sites), 2) biomass power (burning waste wood or grown crops for heat and hydro) or 3) biofuel power (converting corn or other grown crop to ethanol).

4. What is the timing for this project?

- An RFP will be released Monday, May 3rd 2010.
- We hope to select and negotiate Agreement with a successful Proponent by Sept 2010.
- Public consultation will be ongoing, Sept 2010 through Feb 2011.
- Complete Design by February 2011.
- Construct and Commission by Feb 2012.

5. What size of biogas facility is being proposed in the RFP?

- Between 3 and 5 MW in capacity. For comparison, the large wind turbine at Exhibition Place is almost 1MW and the wind turbine in Pickering at the Ontario Power Generation site is 1.65 MW.
- Requires between 4 and 5.5 Ha of land.
- Will produce enough electricity and heat to power the equivalent of 5000 homes.

6. Where is the location of the proposed facility?

- The site is located adjacent to the Zoo property, east of Meadowvale Road, on land where the Zoo currently composts its organic waste.

7. What are the steps required to bring this project to successful implementation?

- Like all of our projects, the Zoo undertakes thorough due diligence, consultation and planning.
- To date, the Zoo has successfully:
  - Received Board approval to release a Request for Proposals (RFP);
  - Determined that land proposed for Facility is zoned properly, and has received the City of Toronto Building Division Permitted Use Letter;
  - Received City of Toronto Council Approval 2010-02-22;
  - Prepared and issued the Request for Proposal.

Next steps include:

- Identifying a Partner capable of designing, building, owning and operating the Facility;
- Satisfy the Ontario Ministry of Environment rigorous approvals and permit process ;
- Answer and satisfy any public concern about the Facility.

8. What happens to the energy generated?

- All electricity generated will be sold to the Ontario Power Authority through the newly developed subsidy program: the "Feed-in-Tariff".
- All thermal energy (waste heat recovered) generated will be used to heat the Facility and offset the natural gas requirements at select Zoo facilities and pavilions.
- Some excess heat might be used for other local buildings and residents.
- If appropriate and feasible, methane may be cleaned to natural gas grade and sold to market (e.g. Enbridge).
- If appropriate and feasible, the fertilizer that is an end-product of the process would be sold.

9. How does this help the Zoo's goal of being carbon neutral?

- The proposed facility will offset all carbon emissions at the Toronto Zoo, an equivalent of 7500tonnes/year.
- As well, the proposed Facility will further offset an estimated 20000tonnes of CO_2 per year.

10. Will this disrupt Zoo operations?

- No. The proposed Facility will compliment the Zoo's core mission of conservation and education.
- Delivery of organic waste to the Facility will use Meadowvale Road and a detailed Transportation Plan will ensure that our visitor and neighbour traffic will not be disrupted by Facility traffic.

11. Are there other commercial biogas facilities in the province?

- There are at least two large-scale biogas facilities in southern Ontario– one in Ottawa and one in London.
- There are currently plans to build more, for example in Elmira and London.
- City of Toronto has one large-scale biogas facility at the Dufferin Transfer station and they use municipal curb side organic waste as the fuel.
- By comparison, Germany has approximately 4,000 working facilities - from small farm biodigesters to large scale commercial biogas plants.

12. Who will be evaluating the RFP?

- An evaluation committee will be determined by the CEO.
- Energy expert(s) and analyst(s) will be involved

13. How will the Zoo benefit financially?

- This will be negotiated if a successful proponent responds to RFP – revenue streams include: electricity, heat, environmental attributes (carbon credits), tipping fees (organic waste processed) and fertilizer.
- The Zoo RFP requests for donation to Toronto Zoo Development Fund.

14. What is a private/public partnership (P3)?

- A business relationship between a public institution and a private for profit organization where revenue generation and marketing responsibilities are shared.

15. How big is the biogas sector?

- It is growing in North America, and very established in Europe, India and China.
- Because of the Province of Ontario new Green Energy and Green Economy Act (passed in 2009), there are high hopes that the biogas sector will grow most in Ontario as compared to other North American jurisdictions.
- In Ontario, there are a dozen or so companies that concentrate on biogas equipment and technologies.
- The value of biogas power plants is that they can represent small distributed energy systems in both urban and rural areas, decreasing the need for large-scale fossil fuel based power plants (coal, oil and natural gas).