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## **2017 OPERATING BUDGET BRIEFING NOTE**

### **Expected Revenue Potential – Renewable Natural Gas & Carbon Offset Credits**

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#### **Issue/Background:**

- Solid Waste Management Services generates biogas from the decomposition of organic waste at its Organic Processing Facilities.
  - The Disco Road Organics Processing Facility has a total capacity of 75,000 tonnes/year
  - The Dufferin Organics Processing Facility will have a total capacity of 55,000 tonnes/year once complete (Q4 2018).
- This biogas can be upgraded to renewable natural gas and used to fuel any vehicle that operates on natural gas.
- If all renewable natural gas from the Disco Road and Dufferin Organics Processing Facilities was used to offset traditional diesel fuel then the estimated financial outcomes over 20 years would be:
  - Disco Road Organics Processing Facility: \$32M – \$65M (Appendix 1: Figure 1)
  - Dufferin Organics Processing Facility: \$21M – \$45M (Appendix 1: Figure 2)
- Solid Waste Management Services is in the final stages of selecting a renewable natural gas consultant in order to assist and expedite renewable natural gas projects.
  - It is estimated that renewable natural gas can be generated at the Disco Road Organics Processing Facility by the end of 2017 to early 2018. This is highly dependent on technology selection, permitting, equipment lead-time, and construction.
  - It is estimated that renewable natural gas can be generated at the Dufferin Organics Processing Facility by the end of 2018 to mid-2019, largely coinciding with when the expansion of the facility is completed. This is highly dependent on technology selection, permitting, equipment lead-time, and construction.

#### **Key Points:**

##### Renewable Natural Gas Production & Revenues

- The Disco Road Organics Processing Facility can produce approximately 3.4M diesel litres equivalent of renewable natural gas every year.

- The Dufferin Organics Processing Facility can produce approximately 2.5M diesel litres equivalent of renewable natural gas every year.
- The capital costs associated with upgrading biogas to renewable natural gas, from an Organics Processing Facility, is approximately \$1.5 to \$5M depending on the cleaning technology selected, as well as the amount of biogas to be upgraded.
- The operating costs associated with upgrading biogas from an Organics Processing Facility to renewable natural gas are approximately \$1M to \$2M per year, depending on the cleaning technology selected, as well as the amount of biogas to be upgraded.

#### Renewable Natural Gas Emissions Reductions

- Renewable Natural Gas produced from Organics Processing Facilities and used to offset diesel fuel reduces emissions by approximately 115%.
- Each year, using the 5.9M diesel litres equivalent of renewable natural gas from both the Disco Road and Dufferin Organics Processing Facilities, the City could reduce greenhouse gas emission by approximately 18,295 tonnes. (Appendix 2 – Figure 1)
- Through the Province's upcoming Cap and Trade Program the Solid Waste Management Services Division may be able to sell its greenhouse gas reductions.
  - The sale of all 18,295 tonnes of greenhouse gas reductions (known as offset credits) would generate approximately \$256K per year in revenue.
- Currently, the City of Toronto is not able to sell offset credits due to the Cap and Trade Policy adopted in 2013. There are four main restrictions with the current policy:
  1. Offset credits may only be sold on voluntary markets;
  2. Purchasers of City offset credits must 'retire' the credit (no resale);
  3. Collectively, the City can only sell 50,000 offset credits annually, and;
  4. Offset credits cannot be sold to entities looking to meet compliance obligations.

#### **Questions & Answers:**

- How many litres of diesel does Solid Waste use each year?
  - Approximately 4.9M litres. This means that the Disco Road and Dufferin Organics Processing Facilities generate about 1M more litres of diesel equivalent than needed, and external markets would need to be explored.
- What is the estimated payback period of installing biogas upgrading infrastructure?
  - The estimated payback period for the Disco Road and Dufferin Organics Processing Facilities is between 2 and 3 years depending on the cleaning technology selected.

- You mentioned the City would need to explore external markets for its renewable natural gas, have you looked at any?
  - Yes, we are currently examining a number of possibilities, including the United States Renewable Fuel Standards Program, selling excess renewable natural gas to Canadian Natural Gas Distributors, and other internally managed fleets.
- Are there any potential external sources of capital funding?
  - Yes, we are currently exploring options for external capital funding through the Ministry of the Environment and Climate Change, as well as the Federation of Canadian Municipalities.
- How can renewable natural gas be carbon negative; i.e.: result in a 115% greenhouse gas reduction.
  - Renewable natural gas produced from Organics Processing Facilities is carbon negative because it effectively closes natural carbon loops. For example, if you were to throw an orange peel in your backyard, overtime it would decompose, thereby releasing carbon and methane into the atmosphere. However, if that same orange peel was placed in the Cities Green Bin Program, then the decomposition occurs within a closed vessel (Organics Processing Facility) and the resulting methane is then harnessed to fuel our diesel collection vehicles. When you add up the emissions reductions from both, the offset of the decomposition of the waste and using its released methane to offset diesel it amounts to a net negative figure (i.e.: 115%).<sup>1</sup>

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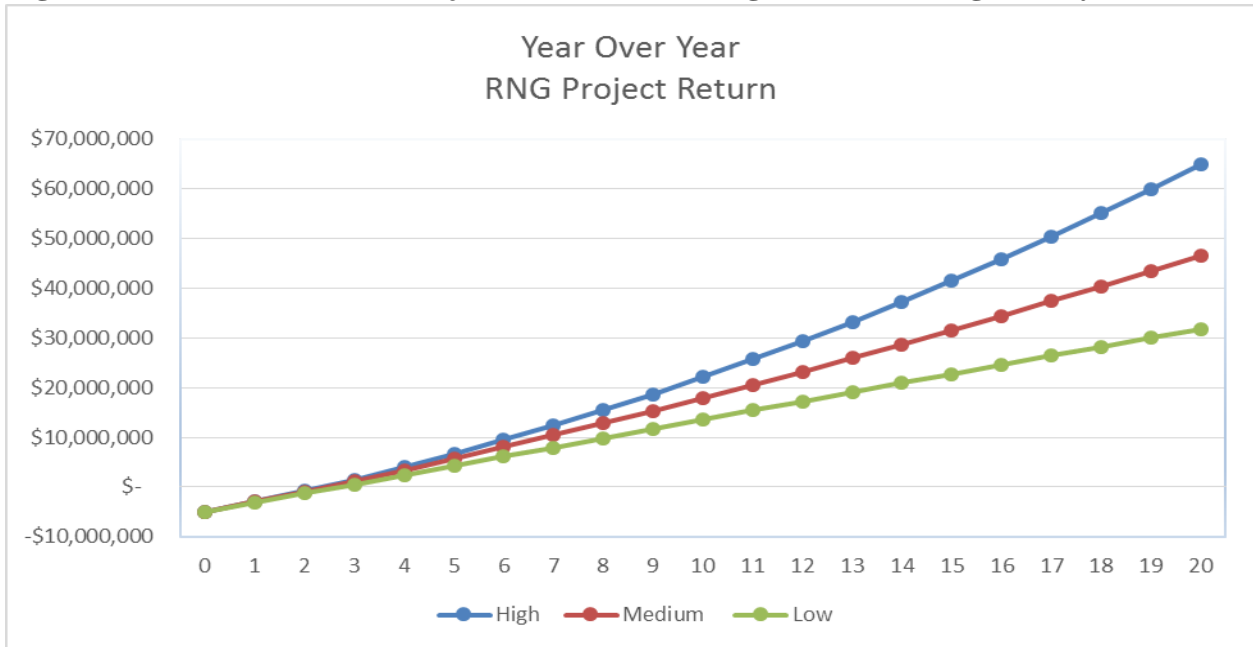
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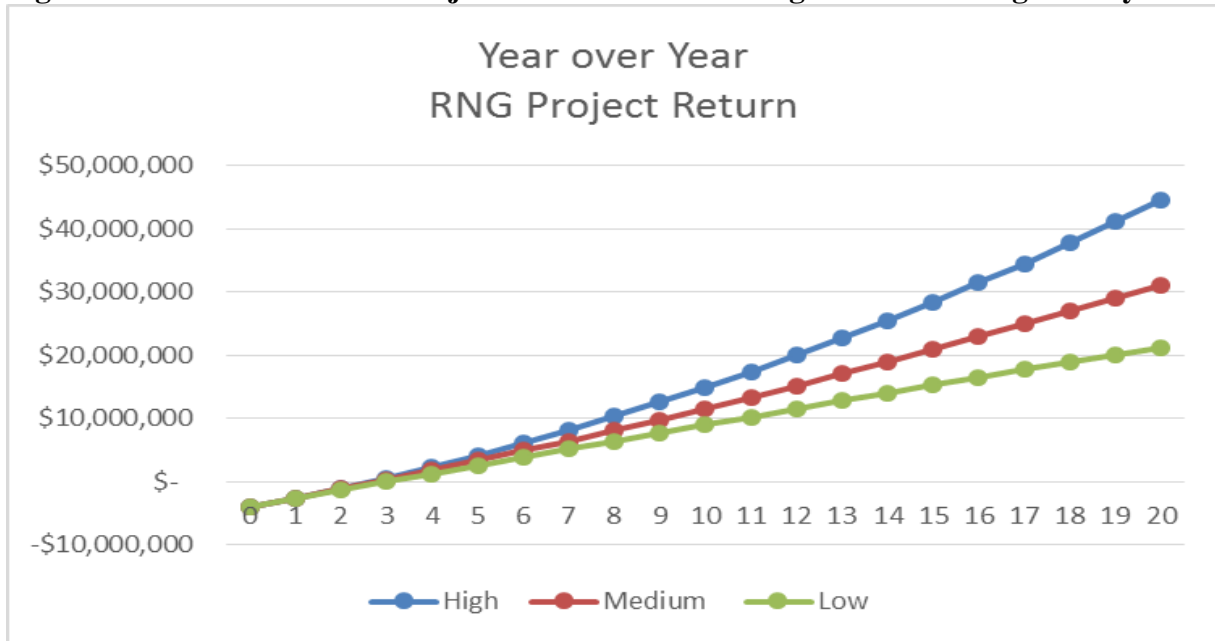
<sup>1</sup> California Air Resources Board, Internal Pathway for the Production of Biomethane from High Solids Anaerobic Digestion (HSAD) of Organic (Food and Green) Wastes.

**Appendix 1**

**Figure 1 – Cumulative RNG Project Return: Disco Organics Processing Facility**



**Figure 2 – Cumulative RNG Project Return: Dufferin Organics Processing Facility**



**Appendix 2**

**Figure 1 – Emissions Reductions: Diesel vs. RNG**

