Who We Are

Mission Statement:
To provide innovative waste management services to residents, businesses and visitors within the City of Toronto in a safe, efficient, effective and courteous manner, creating environmental sustainability, promoting diversion and maintaining a clean city.

Vision:
To be an international leader in the operation of an innovative and sustainable solid waste management utility.
Our Services (2016 Highlights)

- Service: 900,000 homes, businesses, schools, and City Divisions, Agencies, and Corporations
- Approx. 8,700 street litter/recycling bins
- 10,000 parks bins
- 1,000 street events each year
- Private industrial, commercial, and institutional waste at drop-off depots and landfill
- Ongoing operations manage:
  - 897,000 tonnes (all materials) through City Transfer Stations
  - 491,000 tonnes at Green Lane Landfill
  - 209,000 tonnes of Single Stream Recycling
  - 144,000 tonnes of Source Separated Organics
  - 84,000 tonnes of Yard Waste
  - Sale of 162,000 tonnes of recyclables valued at $21M
Strategic Directions

• The Solid Waste Capital Program is focused on:
  • Waste diversion and evolution of the waste management system
  • State of good repair
  • Projects required due to legislation
• Major ongoing and future committed investments include:
  • Dufferin SSO facility expansion
  • Green Bin 2.0 rollout
  • Transfer station asset management
  • Green Lane Landfill development and perpetual care
  • Long Term Waste Management Strategy implementation
  • Strategic IT initiatives
A Green Fuel Opportunity

• The Opportunity
  • Lowering Costs and GHG emissions with Natural Gas

• CNG Proposition
  • Economic, Environmental and Social Benefits

• Path to Net Neutral Emissions
  • Greening the Solid Waste fleet with RNG
Immediate Opportunity to Lower Cost and GHG Emissions

- Natural Gas Vehicles is an economical and environmentally-friendly alternative to diesel vehicles.
- CNG/RNG can fuel many different vehicle types including heavy-duty trucks, buses and streetcars, transportation trucks, trains, freight ships and even garbage trucks.
- Converting from diesel to CNG means cleaner air.
Our History with CNG/RNG Projects

- Solid Waste Management Services has been studying opportunities to leverage our assets to generate renewable energy.
- Compressed (CNG)/Renewable Natural Gas (RNG) emerged as the priority.
- Division has decided to pursue Natural Gas (NG) vehicles based on a triple-bottom line approach.
- The focus is now on leveraging the potential to generate RNG from the Division’s anaerobic digestion (AD) facilities and landfills.
- Next step: identifying the best end-use for our RNG output to generate financial, environmental, and social benefits.
Biogas and Landfill Gas Production

Solid Waste Management Services
Developing an RNG Framework

- The Division is currently undergoing a comprehensive study examining the different options with regards to RNG production.
- Our approach uses a triple bottom line framework to evaluate all RNG options.
- The study is broken down into four main sections:
  - Biogas / landfill gas technology selection
  - RNG transportation options
  - Fueling station requirements
  - Triple bottom line evaluation
RNG Sources

- Landfill Gas
  - Very large quantities of gas
  - Lower CH₄ content
  - Higher amounts of impurities
  - Gas amounts decline over time
  - Potential odour issues

- Biogas from Anaerobic Digestion
  - Lower quantities of gas
  - Higher CH₄ content
  - Lower amounts of some impurities
  - Gas flowrates steady over time
  - Gas flows ongoing during operation
Four Priority Sites for Biogas and Landfill Gas

Disco Road OPF
5.4M m³ per year

Dufferin OPF
5.3M m³ per year

Green Lane Landfill
35.6M m³ per year

Keele Valley Landfill
24.1M m³ per year
Technologies under consideration include:

- Water Wash
- Vacuum Pressure Swing Adsorption
- Membrane Separation
RNG Transportation Options

- There are three (3) main methods for RNG delivery
- Different sites may require different strategies, or a combination of strategies

Injection into natural gas grid
Virtual pipeline
Onsite utilization
Fueling Station Requirements

• The Division is examining requirements for future NG fueling stations
• Constructed two (2) fill stations at our Bermondsey and Ellesmere Collection Yards, with the third under design, Ingram Collection Yard.

• Key considerations include:
  • Capital cost requirements
  • Fast fill vs slow fill fueling
  • Onsite storage
  • Operating engineer requirements
Biogas and Landfill Gas Markets

Solid Waste Management Services
Potential for a Closed Loop Approach

1. Organic Waste Produced
2. Collection Occurs
3. Anaerobic Digestion & Landfill
4. Inject Renewable Natural Gas into Grid
5. Develop End-use

Solid Waste Management Services
Flexible Commodity

• RNG can be used to:
  • Offset diesel fuel
  • Generate renewable electricity
  • Offset traditional natural gas
  • Be sold through the United States Renewable Fuel Standards Program

• Provides excellent flexibility to municipalities to maximize economic, environmental, and social factors

• All end-use options will be assessed using a triple bottom line framework to select the most appropriate mix

Solid Waste Management Services
Collaboration with Enbridge

• Solid Waste Management Services has benefited from an ongoing collaboration with Enbridge Gas Distribution on:
  • Design and construction of CNG fill stations and maintenance facilities
  • Planning and options assessment for RNG distribution infrastructure
  • Brokerage for RNG end uses
  • Policy development
Key Points and Future Directions

• Solid Waste Management Services has access to a renewable source of energy

• Upgrading biogas and landfill gas to pipeline-quality renewable natural gas can produce significant environmental, social and economic benefits

• Renewable natural gas projects could lead to an alternative source of revenue for the Division and provide benefits to the City of Toronto

• Next step: Biogas to RNG Project at Dufferin OPF
Thank you!

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