Agenda – Executive Policy Committee – March 16, 2022

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – March 2, 2022

Item No. 1 Landfill Gas Beneficial Use Business Case and Class 3 Estimate

STANDING COMMITTEE RECOMMENDATION:

On March 2, 2022, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service and submitted the following to Council:

1. That the Public Service enter into negotiations with Integrated Gas Recovery Services Inc. to become a raw resource landfill gas supplier on a 20-year term, as identified as "Proposal 1", to construct a facility capable of producing Renewable Natural Gas for the raw resource Landfill Gas to be sold on the open market within the Province of Manitoba through a direct connection to the existing Centra Gas Manitoba Inc. distribution system.

2. That, upon the conclusion of negotiations undertaken pursuant to Recommendation 1, the Public Service report back to Council with a recommendation to award, enter into, execute, and deliver any resulting contract option.

3. That the Public Service be authorized to collaborate with Integrated Gas Recovery Services Inc. to explore any third-party funding available to assist in offsetting project costs to increase the value paid to the City for the raw resource landfill gas.

4. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

Agenda – Executive Policy Committee – March 16, 2022

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – March 2, 2022

DECISION MAKING HISTORY:

STANDING COMMITTEE RECOMMENDATION:

On March 2, 2022, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service and submitted the matter to the Executive Policy Committee and Council.

The following persons submitted communications with respect to the matter:

- Michael Benarroch, President and Vice-Chancellor, University of Manitoba, submitted a communication dated March 1, 2022
- Terry Duguid, Member of Parliament Winnipeg South, submitted a communication dated March 1, 222

On January 12, 2022, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment granted a further extension of time of up to 60 days for the Winnipeg Public Service to report back on the following:

1. The development of a business case and class 3 estimate for the design, construction and development of a system that converts landfill gas to pipeline quality gas to be sold to the open market as Renewable Natural Gas. (Option 1)

2. An analysis of procurement and development/governance options for the construction and operation of a facility which would be most beneficial to the City - options which would include:

    A. A city owned and operated facility (Option 1)

    B. A Public Private partnership (Option 1 with alternative funding)

    C. The City being a raw resource LFG supplier (Option 2)

3. Discussions with the University of Manitoba on the value and quantity of natural gas consumption on the Fort Garry campus.

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – March 2, 2022

DECISION MAKING HISTORY (continued):

STANDING COMMITTEE RECOMMENDATION (continued):

On November 2, 2021, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment granted an extension of time of 60 days for the Winnipeg Public Service to report back on the direction of March 9, 2021 and May 7, 2021.

On May 7, 2021, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment directed the Winnipeg Public Service to continue discussions with the University of Manitoba on the value and quantity of natural gas consumption on the Fort Garry campus, and report back to the Standing Committee at its November, 2021 meeting.

On March 9, 2021, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service, as amended:

1. That the Public Service pursue the development of the following, and report back to the Standing Committee in 210 days:

    A. A business case and class 3 estimate for the design, construction and development of a system that converts landfill gas to pipeline quality gas to be sold to the open market as Renewable Natural Gas. (Option 1)

    B. An analysis of procurement and development/governance options for the construction and operation of a facility which would be most beneficial to the City - options which would include:

        i. A city owned and operated facility (Option 1)

        ii. A Public Private partnership (Option 1 with alternative funding)

        iii. The City being a raw resource LFG supplier (Option 2)

2. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

ADMINISTRATIVE REPORT

Title: **LANDFILL GAS BENEFICIAL USE BUSINESS CASE AND CLASS 3 ESTIMATE**

Critical Path: **Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – Executive Policy Committee – Council**

AUTHORIZATION

Author	Department Head	CFO	CAO
M. Gordichuk, CCLP, Manager of Solid Waste Services	M. L. Geer, CPA, CA Director, Water and Waste	C. Kloepfer	M. Jack

EXECUTIVE SUMMARY

The purpose of this report is to report back on the outcome of further analysis on the re-use of landfill gas at the Brady Road Resource Management Facility (BRRMF) as directed by the Standing Policy Committee on Water and Waste, Riverbank and the Environment (WWRME) on March 9, 2021.

WWRME directed the Public Service to report back with a business case and class 3 estimate for the design, construction and development of a system that converts landfill gas (LFG) to pipeline quality gas to be sold to the open market as Renewable Natural Gas (RNG). The Public Service was also directed to review procurement, governance and operations options including the feasibility of the City simply being a raw resource LFG supplier. Also, as directed, the Public Service has continued discussions with the University of Manitoba (UofM) regarding the value and quantity of gas they might acquire from the landfill gas captured at BRRMF.

Upon completion of further analysis, the Public Service now recommends that the City become a raw resource LFG supplier to Integrated Gas Recovery Services Inc. (IGRS). IGRS would then convert the raw LFG to RNG which could be distributed through Centra Gas Manitoba Inc. network. This option has a positive business case, presents the least risk and liability for the City, and provides a diverse customer base.

IGRS currently operates the LFG wellfield and flaring system at BRRMF under a long-term contract (RFP 299-2012). The agreement with IGRS contains a beneficial use clause that provides them the opportunity to present a business case to modify/alter the contract before the City could approach other third parties to process the raw resource LFG.

The business case in this report was prepared by IGRS pursuant to this beneficial use clause and conservatively estimates a 20-year net present value (NPV) of $10.5 million.

If Council approves the recommendation to enter into negotiations with IGRS, the Public Service will report back to Council for approval of the resulting contract terms.

The recommendations of this report are compliant with the Materials Management Policy and applicable trade agreements.

RECOMMENDATIONS

1. That the Public Service enter into negotiations with Integrated Gas Recovery Services Inc. to become a raw resource landfill gas supplier on a 20-year term, as identified as “Proposal 1”, to construct a facility capable of producing Renewable Natural Gas for the raw resource Landfill Gas to be sold on the open market within the Province of Manitoba through a direct connection to the existing Centra Gas Manitoba Inc. distribution system.

2. That, upon the conclusion of negotiations undertaken pursuant to Recommendation 1, the Public Service report back to Council with a recommendation to award, enter into, execute, and deliver any resulting contract option.

3. That the Public Service be authorized to collaborate with Integrated Gas Recovery Services Inc. to explore any third-party funding available to assist in offsetting project costs to increase the value paid to the City for the raw resource landfill gas.

4. That the proper officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

REASON FOR THE REPORT

On March 9, 2021, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service, as amended:

1. That the Public Service pursue the development of the following, and report back to Standing Committee in 210 days:
    a. A business case and class 3 estimate for the design, construction and development of a system that converts landfill gas to pipeline quality gas to be sold to the open market as Renewable Natural Gas. (Option 1)
    b. An analysis of procurement and development/governance options for the construction and operation of a facility which would be most beneficial to the City – options which would include:
        i. A city owned and operated facility (Option 1)
        ii. A Public Private partnership (Option1 with alternative funding)
        iii. The City being a raw resource LFG supplier (Option 2)

Further, on May 7, 2021, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment directed the Winnipeg Public Service to continue discussions with the University of Manitoba on the value and quantity of natural gas consumption on the Fort Garry campus, and report back to the Standing Committee at its November 2021 meeting.

IMPLICATIONS OF THE RECOMMENDATIONS

Approval of providing raw resource LFG to IGRS as recommended by the Public Service, conservatively estimates 20-year net present value to the City of Winnipeg of $10,451,000.

HISTORY/DISCUSSION

The City has a longstanding contract with IGRS that includes the construction, operation and maintenance of an LFG wellfield and flaring system at the BRRMF (RFP 299-2012). Within the contract is contained the following clause:

D2.10 Beneficial Use Clause

> D2.10.1 During the contract period, the City or the Contractor may identify an opportunity to modify the collection and/or the flaring which would result in a positive business case for utilization of the gas. The City would first negotiate with the Contractor to develop a positive business case. The City reserves the right to negotiate with other entities to develop a positive business case. If the implementation of the business case for utilization of the gas is approved by the City, the investment in labour and/or equipment as well as the increased revenue, would be shared by the City and the Contractor according to the negotiated terms.

Under the above clause, IGRS has developed a class 3 estimate for the construction, operation and maintenance, as well as, business case proposals for two options where the City of Winnipeg would become a raw resource LFG supplier.

- Proposal 1 is to sell the raw resource LFG to IGRS who would then process RNG and distribute it through Centra Gas Manitoba Inc. to interested end users.

- Proposal 2 is to sell the raw resource LFG to IGRS who would then process and sell treated LFG to the University of Manitoba.

Both options conservatively estimate a positive business case as summarized below. As IGRS would be the owner and operator of the facilities, there would be no capital cost incurred by the City. In both scenarios, the City would no longer pay IGRS to operate the City owned landfill gas capture and flare system.

Proposal	O&M Cost Savings (Million)	Gross Revenue (Million)	Wellfield Improvements (Million)	20-year NPV Net Revenue (Million)
Proposal 1 Raw LFG supplier to IGRS to refine as RNG	$4.718	$4.733	$1.00	$10.451
Proposal 2 Raw LFG supplier to IGRS to supply of gas to the University of Manitoba *	$4.718	$5.392	$0.50	$10.61

All present value calculations are calculated using Nominal Discount Rate of 3.5%

* does not include 10km pipeline Capital and required Operation and Maintenance

The business case assumes that IGRS would construct and operate the facility. The City does not have the expertise to operate this highly specialized facility. IGRS is a Canadian entity that specializes in the utilization of LFG and would take on the risk of operations, regulatory requirements, evolving technical specifications and fluctuations in market prices for renewable energy. The class 3 estimate is $21.8 million in capital investment and annual operating costs of $2.5 million.

These will be factors in the future negotiations between IGRS and the City of Winnipeg. The Public Service will report back on future contract recommendation.

The Public Service would not have to guarantee the supply or quality of the raw resource LFG under either proposal.

Proposal 1 – Produce Renewable Natural Gas from the raw resource LFG with a connection to the Centra Gas Manitoba Inc. distribution system and sale of RNG within the Province of Manitoba.

In this proposal, IGRS would construct, operate and maintain a purification plant to convert raw resource LFG to RNG. The plant would be sized to handle 1,200 cubic feet per minute (cfm) of LFG, and process on average 1,000 cfm of LFG annually. The plant would use similar treatment technology as used on IGRS's other projects and is similar to the technology previously outlined in the City's Landfill Gas Beneficial Use Feasibility Study produced by Tetra Tech.

By converting the raw resource LFG to RNG, the product will be available to a large customer base to assist companies to use a carbon neutral form of natural gas.

This proposal involves an initial class 3 estimated capital cost of $21,800,000 for construction. This cost includes the supply of equipment and construction of the plant including all necessary infrastructure to run the facility and inject RNG into the Centra Gas Manitoba Inc. distribution system. Included in the infrastructure is a maintenance facility and one-time upgrades to the existing BRRMF wellfield and flaring system estimated at $1,000,000.

Average annual operation and maintenance expenses for the project are estimated at $2,500,000 over the 20-year project life. The current operating and maintenance contract with IGRS, would be absorbed into this budget resulting in an annual savings of $279,500.

All capital and operating expenses would be borne by IGRS, with no cost to the City.

IGRS would be able to construct the facility and begin producing RNG within approximately 24 months of a signed option agreement.

Potential risks associated with this proposal relate to Centra Gas Manitoba Inc. as a sole distributor of the RNG and potential uncertainties regarding future distribution fees and potential changes in quality standards.

The Public Service is recommending Proposal 1 due to the large domestic customer base, no capital investment required and the timeline in which RNG can be produced and sold on the open market.

Proposal 2 – Supply of Treated Landfill Gas to the University of Manitoba (UofM)

In this proposal, IGRS would construct, operate and maintain a plant where the LFG would be dried, treated (siloxane and hydrogen sulfide removal) and pressurized before being transported to the UofM. This method would produce approximately eight to 10 per cent GJ of energy less than Proposal 1 due to energy losses associated with the RNG purification process.

The treated LFG would be delivered to the BRRMF property boundary where it would connect to the dedicated pipeline to the UofM. The dedicated pipeline to the University would be owned, constructed and operated by Centra Gas Manitoba Inc. In discussions with Centra Gas Manitoba Inc., while they would construct and operate the pipeline, the cost would need to be borne by others.

UofM would also be required to own and operate all appliances to use the treated LFG at its facilities. UofM would pay for the treated LFG on a per GJ take or pay basis.

Proposal 2 involves an initial class 3 estimated capital cost of $8,100,000 for construction. This cost includes all treatment systems, compression systems, a maintenance building and one-time wellfield improvements estimated at $500,000.

Average annual operation and maintenance expenses for the project are estimated at $1,709,000 over the 20-year project life. The current operating and maintenance contract with IGRS would be absorbed into this budget resulting in an annual savings of $279,500.

With Proposal 2, the plant's capital and operating expenses would be borne by IGRS, however the pipeline installation and maintenance would require a capital expenditure and agreement with Centra Gas Manitoba Inc. for the installation. This cost for the pipeline is not included in the NPV in the table above.

Centra Gas Manitoba Inc. has agreed to go before the Public Utility Board (PUB) with the support of the Public Service to present an application to obtain the regulatory requirements needed to allow for the engineering design and construction of the required pipeline.

Risks associated with Proposal 2 include:

- Centra Gas Manitoba Inc. pipeline installation risks include:
    - Required regulatory approval for installation for a 10 km LFG pipeline between BRRMF and the UofM resulting in extending the project completion;
    - Funding for costs related to pipeline construction, operation, and maintenance; and
    - Uncertain timeframe for installation of the pipeline.
- PUB approval of rates for LFG would be required.
- This proposal produces a gas that is only suitable for one customer. If there were any reduction in energy demand for this customer during the term or after the term has been completed, the Public Service would have to bear new capital costs to access new customers.
- During the summer months, raw resource LFG production is higher, and the demand by UofM is lower, which may result in flaring of excess raw resource LFG.
- The Public Service would lose its opportunity to use a carbon neutral energy source to meet GHG reduction targets outlined in OurWinnipeg 2045 and the Winnipeg Climate Action Plan.

The Public Service is not recommending this proposal due to capital expenditure required, inherent risks related to only one customer and loss of opportunity to meet City Council's goal of net zero emissions by 2050 set forth in OurWinnipeg 2045 (pending third reading), as well as Winnipeg Climate Action Plan environmental targets.

Grants and Funding

For the alternative energy proposal, there may be a number of available grants, such as the Green Municipal Fund and the Low Carbon Economy Fund that could be applied for to offset the capital and/or operating costs to IGRS. If the grants were approved, they would be factored into the LFG payment to the City, which would increase the positive business case for the City. If the Recommendations of this Report are approved, the Public Service will explore options for grant funding.

FINANCIAL IMPACT

Financial Impact Statement

Date: January 27, 2022

Project Name:

First Year of Program **2024**

Landfill Gas Beneficial Use Business Case and Class 3 Estimate

	2024	2025	2026	2027	2028
Capital					
Capital Expenditures Required	$ -	$ -	$ -	$ -	$ -
Less: Existing Budgeted Costs	-	-	-	-	-
Additional Capital Budget Required	$ -	$ -	$ -	$ -	$ -
Funding Sources:					
Debt - Internal	$ -	$ -	$ -	$ -	$ -
Debt - External	-	-	-	-	-
Grants (Enter Description Here)	-	-	-	-	-
Reserves, Equity, Surplus	-	-	-	-	-
Other - Enter Description Here	-	-	-	-	-
Total Funding	$ -	$ -	$ -	$ -	$ -
Total Additional Capital Budget Required	$ -				
Total Additional Debt Required	$ -				
Current Expenditures/Revenues					
Direct Costs	$ -	$ -	$ -	$ -	$ -
Less: Incremental Revenue/Recovery	312,552	314,099	315,654	317,216	318,717
Net Cost/(Benefit)	$ (312,552)	$ (314,099)	$ (315,654)	$ (317,216)	$ (318,717)
Less: Existing Budget Amounts	279,480	285,070	290,771	296,586	302,518
Net Budget Adjustment Required	$ (592,032)	$ (599,169)	$ (606,425)	$ (613,802)	$ (621,235)

Additional Comments: The net present value of the recommended option is $10.451M over a 20-year term. The current operating and maintenance contract budgeted is Solid Waste Account Number -Landfill Gas Op Maintenance 445-522035-201904-999 for $279,480 in 2024, inflated annually thereafter will be eliminated, A new revenue - Sale of Landfill Gas will result in an annual revenues of $312,552 inflated annually thereafter.

L Szkwarek

Lucy Szkwarek, CPA, CGA
Manager Finance and Administration

CONSULTATION

This Report has been prepared in consultation with:

Legal Services (as to Legal Issues)
Materials Management

OURWINNIPEG POLICY ALIGNMENT

This report is in accordance with the OurWinnipeg policies through:

OurWinnipeg 2045 (pending third reading) Reference:
02-2 Environment (pg. 68)
Direction:

- Reduce the environmental impact of our activities, through strategies such as planning for sustainable energy use and greenhouse gas reduction.

SUSTAINABLE WATER AND WASTE

05-2 Comprehensive Waste Management Strategy (pg. 32)
Direction:

- There is a need to integrate and optimize the service level and efficiency of all facets of the solid waste management system, while minimizing environmental impacts. The beneficial outcome of this process would include for example, reduced GHG emissions and less reliance on landfilling.

05-2d Methane Gas Capture (pg. 34)
Direction:

- Methane is widely recognized as a harmful greenhouse gas that contributes to global warming.

A SUSTAINABLE WINNIPEG

05 The Foundation: Leading by Example (Pg. 16)
Direction 2: Incorporate sustainable practices into internal civic operations, programs and services.

09 Continue to Respect and Value our Natural and Built Environment (Pg. 36)
Direction 1: Reduce the environmental impact of our actions
Enabling Strategies:

- Create and maintain a Climate Change Action Plan to reduce Winnipeg's community-wide greenhouse gas emissions by 6 per cent below 1998 levels.
- Establish a community-wide greenhouse gas reduction target for 2020 and 2035.
- Continue to expand the active transportation network and other active transportation initiatives.
- Measure our Ecological Footprint and develop strategies to reduce it.

WINNIPEG CLIMATE ACTION PLAN ALIGNMENT

Strategic Opportunity #1: Corporate Leadership

Key Direction 1.2 Understand and Integrated Business and Economic Implications of Climate Action into Decision Making Processes, and many actions therein, but most specifically:

- Establish City policy that outlines an approach to incorporating the lifecycle costs of GHG emissions into its analysis and decision for long term investments (Medium Term 2022-2026)

Key Direction 1.3 Implement Low Carbon and Energy Efficiency City Facilities and Buildings, and many actions therein, but most specifically:

- Evaluate opportunities to invest in renewable energy technologies at City buildings (Medium Term 2022-2026)

Strategic Opportunity #5: Low Carbon and Energy Efficient Buildings
Key Direction 5.1 Increase Energy Performance of Existing Buildings

Key Direction 5.2 Improve Energy Performance of New Buildings

WINNIPEG POVERTY REDUCTION STRATEGY ALIGNMENT

N/A

SUBMITTED BY

Department: Water and Waste Department
Division: Solid Waste Services
Prepared by: Duy Doan, C.E.T.
Date: February 22, 2022
File No.: G-190