
REPORT TITLE: Pre-Purchase of Biogas Co-Generation Unit and Waste Gas Burner Unit for the Clarkson Wastewater Treatment Plant

FROM: Kealy Dedman, Commissioner of Public Works

RECOMMENDATION

- 1. That the Director of Procurement be authorized to directly negotiate with Enerflex Ltd. document 2023-196N, for the provision of a Biogas Co-generation unit at an estimated cost of \$3,500,000.00 (exclusive of applicable taxes and duties) and to directly negotiate with Bigelow-Liptak Ltd. document 2023-291N, for the provision of a waste gas burner unit at an estimated cost of \$1,750,000.00 (exclusive of applicable taxes and duties) for the Clarkson Wastewater Treatment Plant, pursuant to Procurement By-law 30-2018, as amended; and,**
- 2. That once finalized pricing is received for both units and, subject to available budget, that the Commissioner of Public Works and the Commissioner of Corporate Services and Chief Financial Officer, be authorized to approve the respective contract awards to Enerflex Ltd. and Bigelow-Liptak Ltd., pursuant to Procurement By-law 30-2018, as amended, on terms and conditions satisfactory to the Regional Solicitor.**

REPORT HIGHLIGHTS

- Clarkson Wastewater Treatment Plant (WWTP) is currently generating electricity by burning biogas (methane) created in the treatment process using one GE Jenbacher co-generation unit and two Bigelow-Liptak waste gas burners.
- As wastewater flows to the Clarkson facility increase, there will be sufficient biogas to power a second co-generation unit. Additionally, due to the increase in overall biogas production, Clarkson WWTP will require a third waste gas burner.
- Regional staff carried out a market analysis to confirm the procurement strategy for the second co-generation unit (the currently installed co-generation unit was purchased under Procurement Award 2013-362N), as well as the third waste gas burner and the findings support purchasing the new units from the original manufacturers of the existing units.
- Regional staff are seeking to directly negotiate with both Enerflex Ltd. for the supply of the co-generation unit and Bigelow-Liptak Ltd. for the supply of the waste gas burner unit in accordance with the Region's Procurement By-Law where the need has been identified for compatibility with goods and services previously acquired and there are no reasonable alternatives or substitutes.

DISCUSSION

1. Project Background

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The Clarkson Wastewater Treatment Plant generates electricity by burning biogas (methane) created during the wastewater treatment process. This system, which includes a GE Jenbacher co-generation unit, has been in operation since 2015. The original design anticipated requiring a second unit when additional capacity is required in the plant, therefore provisions for a second co-generation unit were included as part of the original design.

The co-generation system, which is part of the Region of Peel's Strategic Energy Plan, allows for beneficial use of biogas through generation of electricity that is used within the Clarkson facility. The system also reduces greenhouse gas emissions at the Clarkson Wastewater Treatment Plant by utilizing waste heat from the generation process for internal wastewater process heating needs.

As the Region continues to grow and wastewater flow to the Clarkson facility increases, there will be sufficient biogas to power a second co-generation unit. The second unit will also provide the flexibility required to allow for maintenance of the existing unit.

While almost all of the biogas created is used for beneficial use, a flare system is required to burn excess biogas under maintenance and/or emergency operation. The addition of a waste gas burner associated with the additional co-generation unit will provide sufficient capacity with the additional flows.

a) Procurement of Co-Generation Unit

Staff and a consultant completed a co-generation technology and compatibility review. Co-generation units from the two leading co-generation suppliers were compared for performance, cost effectiveness, operation and maintenance requirements and cost.

When the first cogeneration system was installed in 2014 structural, mechanical and electrical needs for expansion of the co-generation unit of similar size was provided. The technology and compatibility review has concluded the original generator supplier best fits the intent of the original design and will result in the lowest overall capital cost to construct.

In addition, the review also concluded the following:

- adding a second co-generation unit requires the computer systems of the existing and proposed units to work together. Installing a unit from a different manufacturer makes operating the units simultaneously difficult.
- Co-generation units are very complex and require the use of an outside maintenance contractor to conduct regular servicing and trouble shooting. Enerflex Ltd. is the local sales and servicing representative for the GE Jenbacher unit. Installation of another unit will require an additional maintenance contract.
- Maintaining two systems would require two separate sets of spare part inventory and oil supply. Managing a single spare part inventory for two units of the same engine would be more efficient and cost-effective.

The review concluded that the GE Jenbacher unit was superior in meeting the specific needs of the Clarkson facility. Therefore, staff recommend the purchase of the new co-generation unit directly from the original GE Jenbacher co-generation unit representative,

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Enerflex Ltd and the subsequent installation of the unit be secured by competitive public tender.

Staff recommend that in accordance with Procurement By-law 30-2018, Section 5.2.2 and as per the recommendations herein – that the required goods be purchased as they are similar to goods supplied under and existing contract, have increased compatibility with existing installations and represent long term operational cost savings. Authority to directly negotiate with the recommended vendor requires Regional Council approval. Once final pricing has been confirmed, a procurement award will be drafted to seek Public Works Commissioner and Chief Financial Officer approval of the contract award.

b) Procurement of Waste Gas Burner

Staff and a consultant completed a technology and compatibility review with five of the leading waste gas burner suppliers. The findings are summarized below:

In 2004, two Bigelow-Liptak Ltd. burners were installed on a concrete platform at the west side of the Clarkson facility. Space was allocated for a third waste gas burner and was designed to fit a burner from the same vendor as the two existing units. Burners are required to waste residual and excess biogas that cannot be stored within the storage facility constructed for the cogeneration unit and/or during emergency operations.

For almost two decades, staff, and Peel's operator, the Ontario Clean Water Agency, have been satisfied with the reliability of the Bigelow-Liptak burners. As compared with the closest competitor, the Bigelow-Liptak has a similar life cycle cost. The review concluded that the Bigelow-Liptak unit was superior in meeting the specific needs of the Clarkson Facility and was best integrated into the existing control system. Therefore, staff recommend the purchase of the new waste gas burner unit directly from Bigelow Liptak Ltd. and the subsequent installation of the unit be secured by competitive public tender.

Staff recommend that in accordance with Procurement By-law 30-2018, Section 5.2.2 and as per the recommendations herein – that the required goods be purchased as they are similar to goods supplied under and existing contract, have increased compatibility with existing installations and represent long term operational cost savings. Authority to directly negotiate with the recommended vendor requires Regional Council approval. Once final pricing has been confirmed, a procurement award will be drafted to seek Public Works Commissioner and Chief Financial Officer approval of the contract award.

2. Proposed Direction

The Region of Peel received preliminary pricing from GE Jenbacher via their local representative Enerflex Ltd. for the supply and delivery of one co-generation unit, plus commissioning, start up and performance testing. The above recommended approach keeps with the strategy of providing the highest value to the Region for the lowest capital cost, as well as ongoing operating and maintenance costs. Regional staff recommend directly negotiating with Enerflex Ltd for the supply of a Co-Generation Unit and ancillary services contract in the estimated amount of \$3,500,000 (excluding applicable taxes and duties).

The Region of Peel received preliminary pricing from Bigelow-Liptak Ltd. for the supply and delivery of one waste gas burner unit, plus commissioning, start up and performance testing.

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The above recommended approach keeps with the strategy of providing the highest value to the Region for the lowest lifecycle costs. Regional staff recommend directly negotiating with Bigelow-Liptak for the supply of a waste gas burner unit and ancillary services contract in the estimated amount of \$1,750,000.00 (excluding applicable taxes and duties).

RISK CONSIDERATIONS

The Clarkson Wastewater Treatment Plant is currently equipped with one cogeneration unit and two waste gas burners and based on their operation as well as integration and maintenance considerations, it is the recommendation to proceed with the direct purchase of an additional GE Jenbacher co-generation unit and Bigelow Liptak waste gas burner. The risk of going with the alternative co-generation unit would include significant modifications to accommodate the larger equipment and required concrete pad. For the waste gas burner, the design is best suited for installing a third burner from the same manufacturer; simplifying installation as well as the ongoing operation and maintenance of the unit.

By not proceeding with the procurement and installation of the cogeneration unit and burner the Clarkson facility would not be able to manage the biogas produced by the existing processes at the facility. In addition, additional cost would be required to import electricity to power the resource recovery facility.

FINANCIAL IMPLICATIONS

Sufficient funds are available under Capital Projects 20-2951 and 20-2992 to carry out the report's direction.



Kealy Dedman, Commissioner of Public Works

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