
To: Utilities Committee

From: Jeff Carmichael, Division Manager, Utility Research and Innovation, Liquid Waste Services

Date: September 7, 2017 Meeting Date: September 14, 2017

Subject: **Thermal Energy Sale and Purchase Agreement at North Shore Wastewater Treatment Plant**

RECOMMENDATION

That the GVS&DD Board authorize:

- a) the expenditure of \$17.9 million for Acciona Wastewater Solutions to proceed with the effluent heat recovery portion of the North Shore Wastewater Treatment Plant project;
 - b) staff to enter into an agreement with Lonsdale Energy Corporation for the sale of thermal energy recovered from effluent at the North Shore Wastewater Treatment Plant; and
 - c) the GVS&DD Commissioner to execute the finalized agreement.
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PURPOSE

To seek GVS&DD Board authorization to spend \$17.9 million to install an effluent heat recovery system as part of the North Shore Wastewater Treatment Plant (NSWWTP) project, and to authorize the Commissioner to execute an agreement with Lonsdale Energy Corporation (LEC) for the sale of effluent heat from the NSWWTP. The agreement will acquire enough greenhouse gas (GHG) reduction credits to make the Liquid Waste utility carbon neutral.

BACKGROUND

On July 28, 2017, the GVS&DD Board passed the following resolution:

That the GVS&DD Board:

- a) *direct staff to enter into contract negotiations with Lonsdale Energy Corporation for the sale of effluent heat; and*
- b) *authorize ADApT Consortium to proceed with the effluent heat recovery portion of the NSWWTP project, subject to award of a contract with Lonsdale Energy Corporation for effluent heat sale.*

This report is being brought forward to seek authorization to execute an agreement with LEC for the sale of effluent heat from the NSWWTP. In April 2017, the Design-Build-Finance contract for the NSWWTP was awarded to ADApT Consortium operating under the name Acciona Wastewater Solutions ("Acciona") for \$525 million. Effluent heat recovery was included in the Design-Build-Finance contract as an optional item. GVS&DD has until October 5, 2017 to exercise the optional item and direct Acciona to design and construct the effluent heat recovery system. The GVS&DD's Liquid Waste utility has the opportunity to reduce its carbon footprint to zero if GVS&DD commits to effluent heat recovery at NSWWTP. As well, the NSWWTP has the potential to be a net producer of energy by implementing effluent heat recovery.

BUSINESS CASE

Lonsdale Energy Corporation (LEC) was the only respondent to a Request for Qualifications and Interest in 2014. LEC is a district energy provider wholly owned by the City of North Vancouver and wishes to purchase effluent heat from the NSWWTP. An agreement has been developed for this purpose. Under its terms, GVS&DD will commit to install an effluent heat recovery system at NSWWTP at a total investment cost of \$17,926,000. LEC will commit to install a distribution piping system to transport the heat to required locations at an estimated cost of \$3,543,000. Operating costs will be recovered from LEC.

In the 2010 *Corporate Climate Action Plan*, Metro Vancouver committed to becoming carbon neutral. New sources of GHG reductions are required. Effluent heat recovery at NSWWTP will achieve GHG reductions by displacing the use of natural gas in LEC's district energy system. GHG reductions from effluent heat recovery will be distributed on the basis of net capital contributions. Starting in 2021, approximately 5,700 tonnes per year of GHG reductions will be allocated to GVS&DD, enough to make the Liquid Waste utility carbon neutral. The cost of investing in these GHG reductions is lower than the price of \$150/tonne established in the *Carbon Price Policy*, making this a cost-effective GHG reduction project. GVS&DD, LEC and BC Hydro will share GHG reductions on the basis of capital contributions.

SUMMARY OF AGREEMENT

The Thermal Energy Sale and Purchase Agreement has the following key components:

- The term is twenty years, with option to renew on a five-year basis.
- GVS&DD is responsible for designing, constructing, installing, owning, operating and maintaining the effluent heat recovery infrastructure within the NSWWTP.
- LEC is responsible for designing, constructing, installing, owning, operating and maintaining hot water distribution piping that will transfer the heat from the NSWWTP to LEC's district energy system.
- LEC will make monthly payments that cover GVS&DD's fixed costs of operating and maintaining the effluent heat recovery facility, including escalation. The price for the sale of thermal energy to LEC is structured so that the cost of electricity for the heat pumps, which is the largest cost of running the effluent heat recovery facility, is also recovered from LEC.
- Performance requirements include specifications for thermal energy, water quality and monitoring. Provisions for service interruptions, planned and unplanned maintenance are included.
- LEC will receive sixteen per cent of the total GHG reductions each year, in accordance with LEC's capital contribution to the project, which is expected to be about 1,200 tonnes per year. GVS&DD will retain the remainder of the GHG reductions.

ALTERNATIVES

1. That the GVS&DD Board authorize:

- a) the expenditure of \$17.9 million for Acciona Wastewater Solutions to proceed with the effluent heat recovery portion of the North Shore Wastewater Treatment Plant project;
- b) staff to enter into an agreement with Lonsdale Energy Corporation for the sale of thermal energy recovered from effluent heat at the North Shore Wastewater Treatment Plant; and
- c) the GVS&DD Commissioner to execute the finalized agreement.

2. That the GVS&DD Board receive for information the report dated September 7, 2017, titled "Thermal Energy Sale and Purchase Agreement at North Shore Wastewater Treatment Plant".

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, GVS&DD would commit \$17,926,000 for the effluent heat recovery project. Of that, \$15,926,000 would be to exercise the optional item in the Acciona bid to build and commission the effluent heat recovery facility, which must be executed before October 5, 2017. The remaining \$2,000,000 is for associated BC Hydro infrastructure. These costs would be partially offset by grant contributions from BC Hydro of up to \$1,000,000 toward the project. The agreement recovers all operating costs for effluent heat recovery from LEC.

The NSWWTTP project has a total budget of \$700 million including contingency and committed funding from the federal and provincial governments of \$405 million. It is possible that some or all of the cost of the optional effluent heat recovery project may be accommodated within the \$700 million NSWWTTP budget depending on final outcome on expenditures from the project contingency. If required to support the project, additional funds of up to \$17,926,000 will be included within the 2018-2022 Financial Plan.

If the Board approves Alternative 2, no financial implications exist but the opportunity to have the equipment installed under the Acciona Design-Build-Finance contract will lapse.

SUMMARY / CONCLUSION

GVS&DD has until October 5, 2017 to exercise an optional item in the Design-Build-Finance contract for NSWWTTP that will direct Acciona to design and construct an effluent heat recovery system at NSWWTTP.

Permits for installation of the LEC pipelines in the District of North Vancouver must be received before the optional item is exercised. If the contract proceeds without permits in place, LEC will bear the risk. For this reason, the contract contains provisions requiring that LEC be satisfied that this will occur, or the contract will be terminated.

Metro Vancouver has committed to becoming carbon neutral, and needs new sources of GHG reductions to achieve this commitment. GHG reduction credits from the project will be allocated in proportion to respective contributions to project costs. GVS&DD will achieve carbon neutrality for the Liquid Waste utility by committing to build the NSWWTTP effluent heat recovery project and by entering into an agreement to sell the heat.

The project requires an expenditure authorization of \$17,926,000 and execution of an agreement to sell thermal energy to LEC. Staff recommend Alternative 1.