ATTACHMENT B

NANAIMO AQUATIC CENTRE & BEBAN PARK RECREATION CENTRE

Options - Feasibility Analysis for Heating Plant Upgrades

Background

The City is committed to implementing appropriate measures which reduce energy and emissions, and lessen negative impact on the environment.

The City has a goal of reducing its' 2007 corporate GHG emissions by at least 45% before 2030, aligning with the Intergovernmental Panel on Climate Change (IPCC) recommendation to limit the increase in the earth's average temperature to 1.5C.

Current Situation

City buildings which use the most energy and emit the largest greenhouse gas emissions are the Nanaimo Aquatic Centre (NAC), (2002) and the Beban Park Recreation Complex (BPRC), (1975).

NAC Heating Plant:

- 3 – 2,000,000 BTUs/hr., Thermal Solutions (Model: EVCA2000 BN1-UAF) condensing boilers installed in 2011.
- Boilers installed were not appropriate for application as they are not serviceable in place, due to lack of ceiling clearance
- The boilers must be physically removed from the boiler room to clean their heat exchangers, with higher than normal maintenance costs.
- Recent condition assessments of these boilers and poor maintenance concerns suggest these boilers should be replaced within the next 3 to 5 years.

BPRC Heating Plant:

- Received a substantial upgrade in 2017/18.
- 1 of the 2 original 5,200,000 BTUs/hr., Clever Brooks Atmospheric boilers was replaced with 2 new high-efficiency Clever Brooks (Model: CFC 700 – 2500) 2,500,000 BTUs/Hr., condensing boilers, along with new piping, valves, controls, variable-speed circulation pumps, heat recovery coils with HV-1.
- Replacement of the second old boiler is scheduled for replacement in 2024.
- Design of an entirely new electrical service for BPRC is scheduled for 2020, and construction to following in 2022.

The City is considering a Preliminary (Stage 1) Mine water Geo-exchange Suitability Assessment to explore the underground coalmine water at both sites.

Project Scope of Work

As the equipment mentioned above is nearing the end of their economic life, the City of Nanaimo seeks professional consulting engineering services to complete a review of these facility heating plants, and provide an Options - Feasibility Analysis to improve operations, maintenance, energy efficiency, and reduce greenhouse gas (GHG) emissions, *which meets the operational needs at each facility*.

The work should include, *but not be limited to*:

- Detailed site inspection to verify and define 'as-built' conditions
- Review facility heat load requirements, and electrical utility capacity (current and future needs based on options presented)
- HVAC system upgrade options analysis and feasibility including:
    - Business-as-usual (like-for-like): condensing boilers (appropriate for room to be serviceable)
    - Heat pumps
    - Electric boilers
- Include analysis and summary of:
    - Costing (anticipated annual energy and maintenance, engineering design and contract administration for each option, capital and installation, utility upgrades necessary, etc.)
    - Savings and GHG emissions reductions (kWh, GJ, tCO2e, $, Incremental value of GHG Emission Reductions, etc.)
    - Financial life-cycle analysis (Simple payback, Internal Rate of Return, Net Present Value, etc.)
    - Environmental benefits
    - Utility, Federal or Provincial funding options
    - Facility Utility Accounts and Rates
- Conclusions / Recommendations
    - Option(s)
    - Budgets
- A detailed report
- Consultant completing an application to CleanBC Incentive Program, or other suitable Incentive Programs, for option selected by the City of Nanaimo.