NANAIMO LADYSMITH PUBLIC SCHOOLS

BUSINESS COMMITTEE
PUBLIC MEETING

INFORMATION SHEET

DATE: September 15, 2021
TO: Business Committee
FROM: Pete Sabo, Executive Director Planning and Operations
Mary Zuccaro, Energy Manager
SUBJECT: Environmental Upgrade Fund ($400,000 Local Capital #723) 2020-2021

Board of Education Strategic Plan – Board Goal

To be a leader in environmental stewardship and sustainability.

Background:

The BC government set Green House Gas (GHG) reduction targets for 2030 (40%), 2040 (60%), and 2050 (80%). The District is not projected to meet these targets. The District pays a carbon offset payment each year against its' carbon footprint ($69,175 on 3,138 tCO2e for 2020), and additional Federal carbon taxes have been announced that may impact BC in the future. Gasoline and diesel prices will certainly be impacted.

Reducing the carbon footprint of the District is challenging due to limited funding sources and the demands on those funds for non-energy projects. To deliver real change, GHG reducing projects need to be multi-faceted, and funded from all available streams of capital (SEP, CNCP, AFG, Local Capital, Clean BC, various grants, etc.). Low carbon electrification (LCE) is the reduction of greenhouse gas emissions using clean electricity instead of natural gas, diesel, propane, or gasoline.

The **Environmental Upgrade Fund** approved by the District in September 2020 is unique in that it allows a separate funding stream to target carbon reduction projects, or as an add on to projects addressing dated/failed infrastructure. This fund is a welcome and timely move towards the Boards goal of 4.5% GHG reduction. The Energy Management team utilizes various criteria to determine which equipment and/or site will benefit from energy efficiency upgrades such as end-of-life and energy use index (energy usage / m2 of the building) and works closely with departments within Facilities Department.

AP 509, 'Energy Conservation Program' and AP 516 'Stewardship of the Land' as well as the Board Goal of a 4.5% annual reduction of GHGs are considered when selecting projects.

Discussion

The Majority of NLPS carbon footprint is from heating buildings with fossil fuels (natural gas), however Fleet electrification will play an important role moving forward. Two ZEB (Zero Emission Busses) landed on-site May 2021 with the approval to purchase two more for 2021-2022. In addition, continuous efforts will be made to add electric vehicles to the white fleet as product becomes available in the marketplace.

Allocation of 2020-2021 funding:

Below is a Summary of Allocation of the Funds ($400K):

LC723 Environmental Upgrades	
Expense	**Notes**
$5,080	Carpentry Shop Energy Study
$2,113	CSS - Cooling Tower Energy Study
$23,036	Woodlands bandroom heat pumps
$27,991	Rutherford 4 x furnaces
$341,779	CSS - Cooling tower replacement
$400,000	

1. **Energy studies** for buildings help identify issues and costs supporting project prioritization.
   Update July 2021 - Two Energy Studies were completed - Cedar Secondary Cooling Tower replacement and Dust Extractor / Boiler Upgrade for Maintenance Shop.

2. **Two standalone band rooms** have been approved for heat pumps to replace atmospheric furnaces.
   Update July 2021 –
   i. Woodlands Band Room project completed March 2021. Eighteen-year-old furnace replaced with full electric heat pump >> reduction of 4 tCO2e.
   ii. Cedar Elementary Band Room project did not move forward due to insufficient electrical service for the site.

3. **Four furnaces at Rutherford** have been selected for replacement, all beyond end of life.
   Update July 2021 – New condensing furnaces to be installed August 2021 with anticipated of 8 tCO2e annual reduction.

4. **Cedar Secondary** – In October 2020, the cooling tower at Cedar Secondary failed. This component is responsible for rejecting heat to facilitate cooling of the building. Heating systems were not compromised due to failure of the cooling tower.
   Update July 2021 – Solution is to remove cooling tower and replace with 37 tonne air-to-water-heat pump (AWHP) to supplement boiler loop as primary source of heating and cooling; thereby lowering load on boiler and rooftop units (reduction in carbon output). Redundancy will be added to the boiler as well (positive addition). AWHP will take the rejected heat during cooling season

and put this heat back into the boiler loop. Boilers will only operate during peak heating load (approx. 10 days in Jan & Feb).

Total project cost is $544,200 and expected completion date is December 2021 with anticipated of 49 tCO2e annual reduction (represents 1.5% of 4.5% annual GHG reduction target). Sources of funding are:

a. AFG for $203,200
b. Environment Upgrade Fund for $341,000
c. Discussions with Ministry Capital Branch regarding a possible contribution were started and underway, any contribution may reduce items 1, 2 or both.

Conclusion:

Continued funding allows attention to be directed towards carbon reduction and advancement of energy savings opportunities in support of Board goals and general infrastructure challenges. The total GHG reduction for the above-named projects (#2, 3, 4) amounts to 61 tCO2e or 1.9% of annual target.

Moving forward, there are many opportunities to support the District's long-term goal of reducing our carbon footprint in conjunction with improving the reliability of the equipment, occupant comfort, and energy efficiencies.

The Energy Management department believes, as in any savings opportunities, the quicker the investment is made, the greater the effect.