Memorandum

To:	Julie Pavey-Tomlinson	File #:	11-5310-PD240025
CC:	Kim Law, Val Tepes	Date:	September 9, 2024
From:	Sandy Tolentino		
Subject:	**Rocky Point Pool Pool Covers**		

The following memorandum summarizes the cost and benefit considerations for the Rocky Point Pool Pool Covers project.

Background

According to an energy study conducted by Prism Engineering in 2023, one of the carbon reduction measures is installing pool covers. Installing insulated pool covers when the pools are not in use both during the day (when the pools are closed) and overnight could eliminate over half of the pool heating energy. And by reducing evaporation, less make-up water is needed, reducing water use as well as pool treatment chemicals. By covering the pools at Rocky Point Pool, the estimated annual fuel savings is 416 GJ, with an annual energy savings of $5,500. The estimated annual GHG reduction is 20.8 tons CO2e, which forms 35% of the pool building's GHG emissions. In Spring 2024, several suppliers were invited to provide supply and installation of thermal pool covers for both the main pool and the kid pool at Rocky Point Pool.

Discussion

The submitted proposals offered similar materials for the thermal pool covers, with manual or automatic mechanisms for deployment and retrieval of the covers. The manual option ranges between $21,000 to $35,000, and the automatic (electric) option is about $91,000. The covers are rolled up on a winder or roller stand for storage and are rolled out onto the pool for deployment when needed. Due to the size and shape of the main pool, multiple pool covers of different custom-made sizes are required to cover the entire pool surface. This also means the roller stand would need to be moved along the pool for deployment and retrieval of the covers. Both the main pool and kid pool would have their own covers and roller stands. Since the Aldergrove Community Centre has been using the thermal pool covers, with electric winder, proposed by one of the suppliers for their two outdoor lap pools, a site demonstration was arranged with their Facilities Operations Maintenance Supervisor to provide some experience sharing for a few Port Moody staff. Here are some of the major observations:

- The roller stand is fairly heavy and takes ideally 3 people to move around, or 2 people minimum.
- With the electric winder, the deployment / retrieval of the covers still is a two-person operation; one person at the winder, and another person to guide the cover.

- The outdoor lap pools at Aldergrove Community Centre are open throughout the year; but the pool covers are not used over the summer season when the ambient temperature are higher.
- The pool covers were installed at Aldergrove Community Centre a few years ago because they received a sustainability grant to cover the cost of the project. No study was conducted afterwards to verify any energy savings or to determine the effectiveness of the pool covers.
- Liquid pool covers, in addition to the thermal pool covers, are used for the lap pools at Aldergrove Community Centre. Liquid pool covers are aqueous solutions that, once added to the pool water, would form an invisible barrier on the water surface to reduce evaporation. However, no study has been conducted at the lap pools to verify any energy savings or to determine the effectiveness of the liquid pool covers.

Because the pool cover deployment and retrieval process is rather labour intensive, the decision is to go with the electric winder rather than the manual winder. The following identifies the main factors considered in the cost-benefit analysis of an automatic thermal cover system at Rocky Point Pool:

Staff Capacity

As noted above, a minimum of 2 people are required for deployment and retrieval of the pool covers. However, due to staffing constraints, the second person is not always available, which would lead to reduced usage and subsequent reduced benefits of the pool covers

Staff Safety

The staff at Rocky Point Pool are more senior staff and may not find the physical demand suitable for them. Regardless, the risk of injury is higher with the more rigorous physical demand than currently required.

Cost Savings

The annual energy cost savings, as estimated in the energy study prepared by Prism Engineering, is $5,500. The estimated time to deploy and retrieve the thermal covers at both the main pool and kid pool is 2 hours per day. Assuming $45 per hour for minimum 2 staff members over 10 weeks a year, the staff costs would amount to $12,600, which is more than the estimated energy savings. If Rocky Point Pool was to open longer than the summer season, the energy cost savings may be more justifiable.

Life Expectancy

The life expectancy of a thermal cover, in an application as Rocky Point Pool, is estimated to be 8 to 10 years. Based on the received quotations, the replacement cost spread out over 10 years would range between $1,200 to $1,800 per year.

Also considering Rocky Point Pool has reached end of life and the future of a new pool is unknown at this point, the full value of a thermal pool cover system may be prematurely cut short. If the new pool(s) turn out to be indoors, then the system would become useless. If the new pool(s) will be outdoors, then at least the roller stands and electric winder can be re-used (as the pool dimensions is unlikely to be the same as those for Rocky Point Pool).

Recommendations

Based on the above analysis, staff do not recommend the installation of a thermal cover system at Rocky Point Pool. There is no financial benefit to this project but rather a likely increase in operating cost.

Cost Savings due to Energy Reduction of Pool Covers	**$5,500**
Operating Cost (staffing)	$12,600
Annual Cost to cover Capital Replacement Cost (10 years)	$1,800
Total Annual Cost of Pool Covers	**$14,400**

Staff do recommend further investigation and potential trial of liquid pool covers as an alternative. The cost of the chemical is estimated to be less than $1,000 and the chemical could be added to the pool manually during the trial period, or via a dosing pump for a more permanent installation. This could potentially achieve similar energy savings and GHG reduction benefits. However, there are some challenges to measure the effectiveness of the liquid pool covers given that:

- There is no dedicated hydro meter measuring the energy use at the pools. The existing hydro meter measures energy use at the whole site, including the washrooms / showers and site lighting.
- There are many variables e.g. ambient temperature, wind speed, number of bathers, that change every day. Given the many variables, data should be collected over a much longer period to average out the variables as much as possible in order to achieve a higher degree of confidence.
- Since staff already have a good baseline model for pool heating which takes into climate data from the 2022 season, the same model could be used to predict baseline heating needs for another season (possibly 2025). This can then be compared to actual measured heating after the introduction of liquid pool covers to provide a high level comparison. However, this comparison would be complicated by the planned replacement of the existing pool boilers with heat pumps for the 2025 season.