DECISION/DIRECTION NOTE

Title:	**Water Street Heated Sidewalks (Snow Melt System) Study**
Date Prepared:	February 5th, 2020
Report To:	Committee of the Whole
Councillor and Role:	Ian Froude, Public Works Lead
Ward:	All

Decision/Direction Required:

Re: Installation of snow melt system as a pilot project for Phase 3 of the Water Street Infrastructure Improvements.

Discussion – Background and Current Status:

Background:

Early in 2019, Council asked if heated sidewalks (snow melt system) could be reviewed for a possible pilot project as part of the Water Street Infrastructure Improvements project. Over the past year, city staff and the engineering consultant for the Water Street project have researched snow melt systems.

Accompanying this decision note is a brief report that includes a general overview of the technologies and cost estimates for those that were most applicable for the location.

Some of the Benefits/Challenges of a snow melt system are noted below:

Benefits:

- Improved sidewalk access (under certain conditions).
- Potential reduction in slips and falls in melted snow (water) can be removed from the sidewalk before the next freeze cycle.
- No equipment on the sidewalk during business hours for snowfall events that do not exceed the capacity of the system.

Challenges:

- Snowstorms may result in the accumulation of snow on sidewalks at a rate that exceeds the melt rate. Snow melt systems are not designed to melt a thick layer of snow. In such cases, snow removals would still be required.
- Snow clearing operations would need to be carried out such that snow from the street is not placed on sidewalks during plowing operations.
- Melted snow or ice (water) must be permitted to freely drain from the sidewalk. Accumulated snow on the roadside of the curb and gutter could result in blocking the drainage of water from the sidewalk. Therefore, snow would need to be removed from the street immediately following a snow fall to ensure that water can freely drain from the sidewalks.
- Any sidewalk damage from external forces or poor construction may result in damage to electric cables or piping system.
- Limited space for electrical/mechanical equipment.
- Excavation of water and sewer services for maintenance purposes would result in having to remove and replace sections of the snow melt system adding to the complexity and cost of the repairs
- Excluding the upfront capital cost of the system, the annual energy costs to operate the system exceeds the existing contract cost to clear the sidewalk by 20 times.

Cost Implications:

In the report only the most practical options for snow melt systems considering the location were looked at into further detail. The cost considers initial capital cost as well as operational (i.e. energy) costs. It does not include maintenance costs. As noted in the attached report, the capital cost to implement snow melt systems is significant.

The operating cost is something that would have to be considered annually if the system is utilized. The unknown at this time would be electrical rates which could increase the operating costs significantly moving forward. Current estimates for the annual operating costs of just this one section of Water Street from Ayre's Cove to Clift's-Baird's Cove is approximately $70,000.

Operational/Miscellaneous Concerns:

1. Drainage Requirements – Snow melt systems in ideal conditions provide benefits such as those identified herein. Note that even if the system can melt the snow at the rate of snowfall, there are some concerns about the melt runoff. If there are windrows that are not removed immediately a new drainage system (which is not included in the estimates attached) would be required to remove the runoff. Runoff has the potential to be blocked by the snow accumulated at the face of the curb and gutter. Trapped water has the potential to freeze. To avoid this, the removal of snow in the parking

stalls adjacent to the curb would have to be in line with the optimal functioning of the system.

In addition to this, it is not practical to assume that snow melt systems would eliminate the need for all sidewalk snow removal. Snow events that exceed the capability of the systems would still require the sidewalks to be cleared. Also windrows from plowing the street will have to be removed.

2. Water and Sewer Lateral Repairs - The property owner would have to be responsible for repairs to the snow melt system in the case they have to make repairs to their water or sewer laterals beneath the sidewalk. The property owners for commercial properties are responsible for the maintenance of their own laterals and all the associated costs.

3. Other Downtown areas - Costs that are provided include the proposed costs to install and maintain the snow melt system for this one section of Water Street from Ayre's Cove to Clift's-Baird's Cove (Phase 3). For this system to be most beneficial it would have to be expanded throughout Water Street. The City would have to consider other areas in the downtown as well. This introduces further significant capital and operating costs.

4. Impact on Completion of Phase 3 – To implement the snow melt system, additional capital costs would be required. Furthermore, it would extend the construction period for the Water Street project into the summer tourist season.

5. Unknowns/Risk - While there are some examples of successful snow melt systems in North America, our research did not find any with climates or the conditions like the City of St. John's. In the case of Holland Michigan, there is a waste energy heat source that significantly reduced operating costs. In other jurisdictions, such as for downtown Montreal, it was ultimately abandoned due to high capital costs and potential costly breakdowns. Due to the lack of successful case studies, especially with conditions similar to St. John's, there is a significant risk that this funding intensive system will not work as intended.

Key Considerations/Implications:

1. Budget/Financial Implications

Additional capital and operating funds would be required to implement the snow melt system. If a decision was made to install a system, a commitment to operating and maintenance costs would have to be budgeted annually. This would increase based on the amount of snow melt system installed and the potential rising cost of electricity. The

annual operating costs would be significantly higher than the current contract cost to plow and salt the sidewalk.

2. Partners or Other Stakeholders

   Downtown St. John's and its business subgroup for Water Street project
   Utility Companies (NL Power, Bell Aliant, Rogers, Eastlink)
   Destination St. John's
   Restaurants Association of NL
   Board of Trade
   Canadian Federation of Independent Business
   Retail Council of Canada
   Building Owners and Managers Association
   All business owners/operators on Water Street
   Patrons and visitors to the downtown
   City of St. John's Visitor's and Business Centres
   Other organizations on Water Street such as Canada Post
   Taxpayers

3. Alignment with Strategic Directions/Adopted Plans
   A sustainable City – Be financially Responsible and Accountable
   A Connected City – Increase and improve opportunities for residents to connect with each other and the city.

4. Legal or Policy Implications
   N/A.

5. Engagement and Communications Considerations
   The impact on the construction schedule would have to be communicated to the affected businesses and stakeholders.

6. Human Resource Implications
   N/A.

7. Procurement Implications
   The Public Procurement Act would apply for procurement of materials and installation.

8. Information Technology Implications
   N/A

9. Other Implications
   N/A

Recommendation:

Given the additional capital and operating costs, the required changes to other snow clearing on the adjacent street, and the uncertainty of success, it is recommended to not install heated sidewalks in Water Street.

Prepared by/Date: February 5, 2020

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Attach.