

Cost to Reintroduce Fluoride in the Water Treatment Process

RECOMMENDATION(S):

That the Priorities and Finance Committee recommends that Council receive this report for the Corporate Record and subsequent Council discussion.

HIGHLIGHTS

- This report provides the estimated costs and The City of Calgary's (The City's) jurisdiction to reintroduce fluoridation to the water treatment process.
- What does this mean to Calgarians? The City is committed to providing safe and cost-effective drinking water to Calgarians.
- Why does this matter? Reliable and safe drinking water provides the foundation to a healthy and green city.
- The overall estimated cost including capital, operating and maintenance to reintroduce water fluoridation at both water treatment plants with a 20-year service life is estimated at \$30.1 million in 2020 dollars, plus \$2 to \$4 million dollars for lifecycle fluoridation maintenance activities. Conceptual capital costs were estimated at \$10.1 million with an accuracy of +50 per cent to -30 per cent.
- The estimated costs outlined above are not included within the approved Water Utility budget. If Council were to direct this work, budget revisions would be presented to Council for approval.
- The operating, maintenance and capital costs, if approved, are not of the magnitude that would require an associated increase in water utility rates.
- A jurisdictional review identified that due to changes in the Municipal Government Act, a municipal plebiscite is not required prior to passing a fluoridation bylaw. Council also has the authority to introduce water fluoridation without passing a bylaw.
- In 2019, Council directed Administration to undertake a full cost analysis for the potential reintroduction of fluoride into Calgary's water system including ongoing operational costs, The City's authority and jurisdiction about fluoride, capital costs and possible utility rate impacts (CPS2019-0965).
- Strategic Alignment to Council's Citizen Priorities: A healthy and green city
- Background and Previous Council Direction is included as Attachment 1.

DISCUSSION

A third-party firm, Associated Engineering (AE), was contracted to review relevant industry standards and guidelines, assess feasible fluoride chemical options and system locations at each of Calgary's Bearspaw and Glenmore Water Treatment Plants and to provide conceptual level estimates of capital operations and maintenance costs to potentially re-introduce fluoride to Calgary's drinking water supply.

Health Canada's *Guidelines for Canadian Drinking Water Quality* continue to recommend optimal fluoride dosing to be 0.7 mg/L and has set a maximum allowable concentration of 1.5 mg/L. Due to the natural fluctuating fluoride concentrations in Calgary's source water, the

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treatment plants would adjust fluoride dosing concentrations accordingly to ensure that the target concentration of 0.7 mg/L would be maintained.

The report reviewed three options that meet the National Sanitation Foundation certification for fluoridation of potable water and evaluated their suitability for Calgary's water system. Two options required additional equipment and processes to ensure adequate mixing and staff safety. Both of these compounds are produced in Europe and have periodic challenges with product supply to North America and are also between 3 to 5 times costlier. As a result, the recommendation is to use hydrofluosilicic acid, the compound that was used to fluoridate Calgary's water prior to 2011 and is used by approximately 75 per cent of the utilities in North America that fluoridate their water.

The capital costs analysis of the report included civil, structural, architectural, process equipment, ventilation, safety, electrical, instrumentation and ancillary systems. This Class Five cost estimate was calculated at \$10.1 Million with an accuracy of +50 per cent to -30 per cent (range of \$15.15 to \$7.7 million). The Operational and Maintenance costs were estimated at \$864,000 per year, which included chemical purchases and a total of two growth positions to operate and maintain the new systems for the Bearspaw and Glenmore Water Treatment Plants. The overall conceptual cost including capital, operating and maintenance costs for reintroducing water fluoridation at both plants with 20 years of service is estimated at \$30.1 million in 2020 dollars with the additional cost of \$2 to \$4 million dollars for lifecycle fluoridation maintenance activities.

These costs have not been included in current budgets and budget revisions will be presented for Council approval should Council decide to proceed with fluoridation of Calgary's potable water at a future date. The operating, maintenance and capital costs will result in additional investments and expenditures, if approved, however they are not of the magnitude that would require an associated increase in water utility rates.

At Council's request, a legal review was conducted to provide guidance on jurisdictional roles and responsibilities and identified that:

- The Municipal Government Act no longer requires a municipality to hold a plebiscite before passing a fluoridation bylaw. Council also has the authority to introduce water fluoridation without passing a bylaw.
- An amendment to The City's Approval to Operate 476-01-00 would be required through Alberta Environment and Parks, to allow for water fluoridation. This type of amendment is not uncommon and would not be expected to cause any significant delays in implementation.

The legal review is included as Attachment 2.

STAKEHOLDER ENGAGEMENT AND COMMUNICATION (EXTERNAL)

Public Communication or Engagement was not required

IMPLICATIONS

Social

The Community Water Fluoridation Report by O'Brien Institute at the University of Calgary (CPS2019-0965) outlined the social implications of drinking water fluoridation. Fluoridation is a

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contentious issue and many public perspectives were shared with Council last year. The scope of this current report is to provide a cost analysis for the potential reintroduction of fluoride into Calgary's water system including ongoing operational costs, The City's authority and jurisdiction regarding fluoride, capital costs and possible utility rate impacts.

Environmental

Design considerations at the Water Treatment plants would include spill containment, onsite dilution capabilities, and adequate air exchange to minimize operational risks for employees and the environment.

Economic

Current operating and capital budgets do not include the costs associated with drinking water fluoridation. Should Council direct this work in the future, a budget request will be prepared. Based on estimated costs, the required investment and expenditure will not require an increase in water utility rates.

Service and Financial Implications

No anticipated financial impact

The Water Utility does not expect to see an associated change in Water Utility rates or changes to Service Levels Should Council proceed with reintroducing fluoridation.

RISK

Estimated costs are at a Class Five level and cover a significant range. Future work, if directed, may result in a higher cost estimate.

ATTACHMENT(S)

1. Previous Council Direction Background
2. Jurisdictional Considerations to reintroducing fluoridation to the water treatment process

Department Circulation

General Manager	Department	Approve/Consult/Inform
Dan Limacher	Utilities and Environmental Protection	Approve