GREATER VANCOUVER WATER DISTRICT (GVWD)
BOARD OF DIRECTORS

REGULAR BOARD MEETING
Friday, February 28, 2020
9:00 A.M.
28th Floor Boardroom, 4730 Kingsway, Burnaby, British Columbia

Membership and Votes

A G E N D A[1]

A. ADOPTION OF THE AGENDA

1. February 28, 2020 Regular Meeting Agenda
That the GVWD Board adopt the agenda for its regular meeting scheduled for February 28, 2020 as circulated.

B. ADOPTION OF THE MINUTES

1. January 31, 2020 Regular Meeting Minutes
That the GVWD Board adopt the minutes for its regular meeting held January 31, 2020 as circulated.

C. DELEGATIONS

D. INVITED PRESENTATIONS

E. CONSENT AGENDA

Note: Directors may adopt in one motion all recommendations appearing on the Consent Agenda or, prior to the vote, request an item be removed from the Consent Agenda for debate or discussion, voting in opposition to a recommendation, or declaring a conflict of interest with an item.

[1] *Note: Recommendation is shown under each item, where applicable. All Directors vote unless otherwise noted.*

1. CLIMATE ACTION COMMITTEE REPORTS

1.1 2020 Water Sustainability Innovation Fund Applications

That the GVWD Board approve the allocation from the Water Sustainability Innovation Fund for the following projects:

a) UV Transmittance Analyzers for Continuous Monitoring of Disinfection By - Products: $500,000 over three years starting in 2020;
b) Earthquake Early Warning and Strategic Response System Pilot: $270,000 over two years starting in 2020;
c) Enhancing the Data Processing of the Water Flow Metering Network: $180,000 over two years starting in 2020.

F. ITEMS REMOVED FROM THE CONSENT AGENDA

G. REPORTS NOT INCLUDED IN CONSENT AGENDA

1. FINANCE AND INTERGOVERNMENT COMMITTEE REPORTS

1.1 GVWD Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020

[Recommendation a): simple weighted majority vote.] and
[Recommendation b): 2/3 weighted majority vote.]

That the GVWD Board:

a) give first, second and third reading to *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020*; and
b) pass and finally adopt *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020.*

H. MOTIONS FOR WHICH NOTICE HAS BEEN GIVEN

I. OTHER BUSINESS

1. GVWD Board Committee Information Items and Delegation Summaries

J. BUSINESS ARISING FROM DELEGATIONS

K. RESOLUTION TO CLOSE MEETING

Note: The Board must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

That the GVWD Board close its regular meeting scheduled for February 28, 2020 pursuant to the *Community Charter* provisions, Section 90 (1) (e) and (g) as follows:

"90 (1) A part of a board meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

(e) the acquisition, disposition or expropriation of land or improvements, if the board or committee considers that disclosure could reasonably be expected to harm the interests of the regional district; and

(g) litigation or potential litigation affecting the regional district."

L. RISE AND REPORT (Items Released from Closed Meeting)

M. ADJOURNMENT/CONCLUSION

That the GVWD Board adjourn/conclude its regular meeting of February 28, 2020.

GREATER VANCOUVER WATER DISTRICT
BOARD OF DIRECTORS

Minutes of the Regular Meeting of the Greater Vancouver Water District (GVWD) Board of Directors held at 9:16 a.m. on Friday, January 31, 2020 in the 28th Floor Boardroom, 4730 Kingsway, Burnaby, British Columbia.

MEMBERS PRESENT:
Burnaby, Chair, Director Sav Dhaliwal
North Vancouver City, Vice Chair Director Linda Buchanan
Anmore, Director John McEwen
Belcarra, Director Neil Belenkie
Burnaby, Director Pietro Calendino
Burnaby, Director Mike Hurley
Coquitlam, Director Craig Hodge
Coquitlam, Director Richard Stewart
Delta, Director George Harvie
Delta, Alternate Director Dylan Kruger for Bruce McDonald
Electoral Area A, Jen McCutcheon
Langley City, Director Val van den Broek
Langley Township, Director Jack Froese
Langley Township, Director Kim Richter
Maple Ridge, Director Mike Morden
New Westminster, Director Jonathan Coté
North Vancouver District, Director Lisa Muri
Pitt Meadows, Director Bill Dingwall
Port Coquitlam, Director Brad West
Port Moody, Director Rob Vagramov
Richmond, Director Malcolm Brodie
Richmond, Director Harold Steves
Surrey, Director Linda Annis
Surrey, Director Laurie Guerra
Surrey, Alternate Director Brenda Locke for Doug Elford
Surrey, Director Doug McCallum
Surrey, Director Mandeep Nagra
Surrey, Director Allison Patton
Tsawwassen, Director Ken Baird
Vancouver, Director Christine Boyle
Vancouver, Director Adriane Carr
Vancouver, Director Melissa De Genova
Vancouver, Director Lisa Dominato
Vancouver, Alternate Director Pete Fry for Kennedy Stewart
Vancouver, Director Colleen Hardwick
West Vancouver, Director Mary-Ann Booth
Commissioner Jerry W. Dobrovolny (Non-voting member)

MEMBERS ABSENT:
Vancouver, Director Michael Wiebe

STAFF PRESENT:
Janis Knaupp, Legislative Services Coordinator, Board and Information Services
Chris Plagnol, Corporate Officer

A. ADOPTION OF THE AGENDA

1. January 31, 2020 Regular Meeting Agenda

It was MOVED and SECONDED
That the GVWD Board adopt the agenda for its regular meeting scheduled for January 31, 2020 as circulated.

CARRIED

B. ADOPTION OF THE MINUTES

1. November 29, 2019 Regular Meeting Minutes

It was MOVED and SECONDED
That the GVWD Board adopt the minutes for its regular meeting held November 29, 2019 as circulated.

CARRIED

C. DELEGATIONS

No items presented.

D. INVITED PRESENTATIONS

No items presented.

E. CONSENT AGENDA

It was MOVED and SECONDED
That the GVWD Board adopt the recommendation in the following item presented in the January 31, 2020 GVWD Board Consent Agenda:

1.1 Award of Contract Resulting from Request for Proposal (RFP) No. 19-371: Supply and Delivery of Steel Pipe for 2020 Water Services Construction Projects

CARRIED

The item and recommendation referred to above is as follows:

1.1 Award of Contract Resulting from Request for Proposal (RFP) No. 19-371: Supply and Delivery of Steel Pipe for 2020 Water Services Construction Projects

Report dated December 13, 2019 from Roy Moulder, Director, Purchasing and Risk Management, Financial Services and Goran Oljaca, Director, Engineering and Construction, Water Services, advising the GVWD Board of the results of Request for Proposal (RFP) No. 19-371: Supply and Delivery of Steel Pipe for 2020 Water Services Construction Projects, and seeking that the Board award the contract to Northwest Pipe Company in the amount of up to $17,531,398.16 (exclusive of taxes).

Recommendation:
That the GVWD Board:

a) approve the award of a contract in the amount of up to $17,531,398.16 (exclusive of taxes) to Northwest Pipe Company resulting from Request for Proposal (RFP) No. 19-371: Supply and Delivery of Steel Pipe for 2020 Water Services Construction Projects; and
b) authorize the Commissioner and the Corporate Officer to execute the contract.

Adopted on Consent

F. ITEMS REMOVED FROM THE CONSENT AGENDA

No items presented.

G. REPORTS NOT INCLUDED IN CONSENT AGENDA

No items presented.

H. MOTIONS FOR WHICH NOTICE HAS BEEN GIVEN

No items presented.

I. OTHER BUSINESS

No items presented.

J. BUSINESS ARISING FROM DELEGATIONS

No items presented.

K. RESOLUTION TO CLOSE MEETING

It was MOVED and SECONDED

That the GVWD Board close its regular meeting scheduled for January 31, 2020 pursuant to the *Community Charter* provisions, Section 90 (1) (e) and (k) as follows:

"90 (1) A part of a board meeting may be closed to the public if the subject matter being considered relates to or is one or more of the following:

(e) the acquisition, disposition or expropriation of land or improvements, if the board or committee considers that disclosure could reasonably be expected to harm the interests of the regional district; and

(k) negotiations and related discussions respecting the proposed provision of a regional district service that are at their preliminary stages and that, in the view of the board or committee, could reasonably be expected to harm the interests of the regional district if they were held in public."

CARRIED

L. RISE AND REPORT (Items Released from Closed Meeting)

No items presented.

M. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED
That the GVWD Board adjourn its regular meeting of January 31, 2020.

CARRIED
(Time: 9:17 a.m.)

CERTIFIED CORRECT

Chris Plagnol, Corporate Officer

Sav Dhaliwal, Chair

36798026 FINAL

To: Climate Action Committee

From: Inder Singh, Director, Policy, Planning and Analysis
Water Services Department

Date: January 30, 2020 Meeting Date: February 14, 2020

Subject: **2020 Water Sustainability Innovation Fund Applications**

RECOMMENDATION

That the GVWD Board approve the allocation from the Water Sustainability Innovation Fund for the following projects:

a) UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products: $500,000 over three years starting in 2020;
b) Earthquake Early Warning and Strategic Response System Pilot: $270,000 over two years starting in 2020;
c) Enhancing the Data Processing of the Water Flow Metering Network: $180,000 over two years starting in 2020.

EXECUTIVE SUMMARY

The Climate Action Committee is responsible for overseeing the Sustainability Innovation Funds, and for making all funding recommendations to the respective Boards. Staff assist the Climate Action Committee in reviewing and evaluating all proposals that are submitted for consideration. This report presents three projects recommended for funding, totaling $950,000 over three years, which will be funded through the Water Sustainability Innovation Fund. The three projects include advancement of methods to monitor water disinfection by-products, an earthquake early warning pilot project, and enhancements to the water flow monitoring network.

PURPOSE

To present three projects recommended for Sustainability Innovation Funding for the Climate Action Committee and the GVWD Board's consideration.

BACKGROUND

The Water Sustainability Innovation Fund was created by the Board in 2004 to provide financial support to Water Utility projects that contribute to the region's sustainability. The GVWD Board adopted the *Water Sustainability Innovation Fund Policy* in 2014, with further amendments in 2016, to guide the use and management of the Fund. The Policy describes the process of generating, submitting, evaluating and recommending proposals for funding each year.

The Climate Action Committee is responsible for overseeing the Fund, and for making all funding recommendations to the Board. Staff assist the Climate Action Committee in reviewing and evaluating all proposals that are submitted for consideration.

WATER SUSTAINABILITY INNOVATION FUND POLICY

On an annual basis, Water projects are submitted to an internal staff Steering Committee, representing a cross-section of the organization, to evaluate projects and initiatives based on the Fund's evaluation criteria. As defined in the policy, projects need to fulfill the following criteria:

- Be overseen by the GVWD;
- Be consistent with the authority and responsibility of the GVWD;
- Be consistent with the objectives of the *Drinking Water Management Plan* and/or the *Board Strategic Plan;*
- Consider partnerships including, but not limited to, member jurisdictions, academic institutions, non-governmental organizations, and community groups;
- Result in a positive contribution, in the form of tangible results and/or measurable benefits, to the sustainability of the region; and,
- Demonstrate innovation and facilitate action.

On an annual basis the Climate Action Committee receives an update report on the projects supported by the Fund including the deliverables, outcomes, and the measurable benefits of these projects to the region's sustainability. A summary of past projects can be found on the Sustainability Innovation Program website.

2020 APPLICATION PROCESS

An internal call for proposals closed on November 1, 2019 and three Water proposals were considered by the cross-departmental Sustainability Innovation Fund Steering Committee, comprised of representatives from seven different departments within Metro Vancouver.

The Steering Committee evaluated the submissions and determined the proposals have strong alignment with promoting regional sustainability and innovation. The proposals recommended for funding by the Steering Committee are listed in the table below with additional detail provided in the executive summaries (Attachment 1).

Recommended Allocation from the Water Sustainability Innovation Fund		
Project Title	**Year**	**Amount Requested**
UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products	2020-2022	$500,000
Earthquake Early Warning and Strategic Response System Pilot	2020-2021	$270,000
Enhancing the Data Processing of the Water Flow Metering Network	2020-2021	$180,000
Total		**$950,000**

UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products
This project will evaluate the use of UV Transmittance analyzers for continuous improvement of water quality monitoring within the transmission system. The implementation of UV Transmittance analyzers will be used to evaluate the potential for formation of disinfection by-products (DBPs) within the system. The analyzers will also be used to optimize ozone dosage at the Coquitlam Water Treatment Plant (CWTP) to proactively help minimize the formation of DBPs. The preferred type of instrumentation will be evaluated and installed at the treatment plant and key locations in the transmission system. Monitoring, analyses and data review will be included to determine outcomes of the project.

The results of the study would provide guidance to staff on the operation of the ozone facility to reduce the formation of DBPs and data collected will be useful for identifying areas in the transmission system with higher levels of DBPs. Also, findings from this project will be shared with the local health authorities, member jurisdictions and other water utilities.

Earthquake Early Warning and Strategic Response System Pilot
This project will undertake the development, installation and testing of a pilot Earthquake Early Warning and Strategic Response System (EEW-SRS) within parts of Metro Vancouver's water supply system. This project is a follow-up to the Water Sustainably Innovation Fund Earthquake Early Warning System assessment approved in 2017, which was the first of two anticipated steps towards assessing, reviewing, refining and validating an EEW approach for Metro Vancouver.

The pilot includes placement of a network of EEW-SRS sensors at the Seymour-Capilano Filtration Plant (SCFP), Coquitlam Water Treatment Plant (CWTP) and Metro Vancouver Head Office. These integrated early warning and strong motion detection sensors, with associated peripherals, will provide early warning alarms as well as measure the earthquake shaking on the instrumented facilities. This will permit:

- early warning alarms for staff life safety and initiation of automated measures (e.g. throttle or close valves); and
- post-earthquake information on the shaking intensity to assist staff in prioritizing re-entries and facility damage assessment and repair.

The use of EEW-SRS, in general and for public water systems in particular, is at its infancy. Assessing and enabling the use of earthquake early warning and prioritized response technologies from the marketplace is an innovative and non-conventional extension of existing capabilities.

The pilot project will be completed in collaboration with Emergency Management BC, BC Ministry of Transportation and Infrastructure and Natural Resources Canada. Also, the results of the pilot will be shared with member jurisdictions and the Integrated Partnership for Regional Emergency Management to further the lessons learned and suggestions for future operationalization.

Enhancing the Data Processing of the Water Flow Metering Network
This project will evaluate software solutions that use Artificial Neural Networks (ANN) to enhance the data processing of the water flow metering network. Developed computer algorithms using ANN have powerful pattern classification and recognition capabilities that would help forecast water demand. The algorithm learns and generalizes from experience, making it useful in forecasting applications such as modeling water consumption over time and detecting unexpected trends in real-time. This project will involve setting up a software system, analyzing historic data from the flow metering network, generating forecasts and comparing them with live data, and reporting unexpected trends to staff for further investigation.

The expected benefits include faster turnaround of finalized flow data used for billing and internal and external data requests. Faster turnaround will improve the ability of member jurisdictions to monitor their water usage and implement water conservation campaigns. As the water meter network continues to grow, this project will proactively support the efficient management of the water supply system.

ALTERNATIVES

1. That the GVWD Board approve the allocation from the Water Sustainability Innovation Fund for the following projects:
   a) UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products: $500,000 over three years starting in 2020;
   b) Earthquake Early Warning and Strategic Response System Pilot: $270,000 over two years starting in 2020;
   c) Enhancing the Data Processing of the Water Flow Metering Network: $180,000 over two years starting in 2020.

2. That the Climate Action Committee receive for information the report dated January 30, 2020, titled "2020 Water Sustainability Innovation Fund Applications" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS
If the Board approves Alternative 1, $950,000 for the three projects will be disbursed from the Water Sustainability Innovation Fund over three years. The Fund has the budget to support Alternative 1.

Approved projects will be incorporated into the applicable work plans and budgets within Water Services.

CONCLUSION
The Water Sustainability Innovation Fund was created by the Board in 2004 to provide financial support for Water projects that contribute to the region's sustainability. The *Water Sustainability Innovation Fund Policy* guides the use and management of the Fund and describes the process of generating, submitting, evaluating and recommending proposals for funding each year. The Climate Action Committee is responsible for overseeing the Fund, and for making all funding recommendations to the GVWD Board. Staff assist the Climate Action Committee in reviewing and evaluating all proposals that are submitted for consideration.

This report presents the Steering Committee's recommendation to fund the following project proposals:

- UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products
- Earthquake Early Warning and Strategic Response System Pilot
- Enhancing the Data Processing of the Water Flow Metering Network

Additional details of each project are provided in the executive summaries (Attachment 1). Staff recommend that the Climate Action Committee approve the Steering Committee's recommendations for funding the proposals and forward the recommendations to the GVWD Board for consideration. Staff recommendations are presented as Alternative 1.

Attachment

1. Water Services Sustainability Innovation Fund – Executive Summaries

References

1. http://www.metrovancouver.org/services/air-quality/sustainability-innovation-program/Pages/default.aspx

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Sustainability Innovation Fund: Water Services
Executive Summary
Project Name: **UV Transmittance Analyzers for Continuous Monitoring of Disinfection By-Products**

Amount Requested from Sustainability Innovation Fund: $500,000 (2020-2021)

Purpose:
Evaluate the use of UV Transmittance (UVT) analyzers for continuous improvement of water quality monitoring within the Coquitlam Water Treatment Plant (CWTP) and transmission system. The implementation of UV transmittance analyzers will be used to evaluate levels of precursors and the formation of disinfection by-products (DBP) within the system. The analyzers will also be used to optimize ozone dosage at the treatment plant to proactively help minimize the formation of DBPs. The preferred type of instrumentation would be evaluated and installed at the treatment plant and key locations in the transmission system. Monitoring, analyses and data review will be conducted to determine outcomes of the project.

Project Objectives:
The long-term objectives of this project are:
- To continuously monitor DBPs in the transmission system with UVT analyzers; and
- To optimization ozone dosage at CWTP to reduce the formation of DBPs and improve water quality in the transmission system.

Contributions to Regional Sustainability:
Gaining knowledge on the levels of DBPs will help Metro Vancouver better prepare for anticipated future regulatory changes by mitigating DBP formation through treatment plant operational changes. This knowledge facilitates the maintenance of a reliable, and resilient regional water supply system.

<u>Social/Community</u>
Reducing DBPs in the transmission system has region-wide benefits for public health by maintaining high quality drinking water.

<u>Economic/Financial</u>
There are significant economic benefits by continuing to monitor and provide high quality drinking water to the region. There are potential economic benefits to optimize and potentially reduce the usage of ozone.

Innovation Element:

Metro Vancouver would be one of the first utilities in Canada to use UVT to continuously monitor DBPs in the transmission system. Current research on the use of UVT for disinfection by-product detection is new and experience is relatively limited. Gaining a better understanding of DBPs in the transmission system will place Metro Vancouver in a better position to implement upgrades that might be required to meet future more stringent DBP regulations.

Tangible Benefits and Outcomes:

The results of the study will be compiled in a report which would provide guidance to Metro Vancouver staff on the operation of the ozone facility to reduce the formation of DBPs. The data collected would be useful for identifying areas in the transmission system with higher levels of disinfection by-products.

The findings from this project would be shared with the local health authorities, member jurisdictions and other water agencies through presentations and publications by Metro Vancouver staff, and the consultant.

The findings of the report will provide a better understanding of levels of DBPs in our transmission system and how adjustments to our existing treatment processes can reduce DBP formation. The knowledge gained would also be helpful in planning future treatment processes for the Coquitlam source.

Members and other Partners:

Water Services, Operations and Maintenance will lead this project, with participation from Water Services Interagency Projects and Quality Control (IPQC). Engineering and Construction will assist with the design and construction of the UVT monitoring locations. The results of the study will be shared with local health authorities and municipalities.

Sustainability Innovation Fund: Water Services
Executive Summary

Project Name: **Earthquake Early Warning and Strategic Response System Pilot**

Amount Requested from Sustainability Innovation Fund: $270,000 (2020 - 2021)

Purpose:

Undertake development, installation and testing of a pilot Earthquake Early Warning and Strategic Response System (EEW-SRS) within parts of Metro Vancouver's water supply system.

This is a follow-on from the 2018 SIF-sponsored EEW assessment project which was the first of two anticipated steps towards assessing, reviewing, refining and validating the approach for Metro Vancouver.

The pilot will entail placement of a network of EEW-SRS sensors at the Seymour-Capilano Filtration Plant (SCFP), the Coquitlam Water Treatment Plant (CWTP) and at Metro Vancouver Head Office. These integrated early warning and strong motion detection sensors, with associated peripherals, the "EEW-SRS", will provide earthquake early warning false-tolerant alarms for earthquakes as well as measure the actual earthquake shaking on the instrumented facilities. This will permit both mitigation actions and after-quake assessment of damage (to be tested under the pilot). Mitigation will include life safety and initiation of automated measures through CDAC/SCADA to throttle/close valves, command rotating equipment to go to a safe state, etc. After-quake assessment of damage includes alerting staff on the shaking intensity of the earthquake at the instrumented facilities, thereby assisting staff in prioritizing re-entries and further field damage assessment.

The project will seek best practices and developing technologies from the market place for the pilot. The pilot system design will use non-proprietary, open specifications, as much as possible, so as to ensure that the system is capable of ingesting EEW notifications from Emergency Management BC (e.g. from Natural Resources Canada's (NRCan)/ Ocean Networks Canada's offshore network of instrumentation designed to detect subduction zone earthquakes off SW BC) and contribute strong motion data to the BC/NRCan networks that monitor earthquake impacts.

Project Objectives:

To Pilot the EEW-SRS at Metro Vancouver's water system facilities so as to minimize the impacts of a potential large magnitude earthquake:

- Early warning mitigation, e.g. shut down one cell of multi-cell reservoir to preserve water; initiate a valve closure at a vulnerable main;
- Providing early warning for staff to duck, cover and hold-on in safety, enhancing safety;
- Enabling SCFP Control Room and Head Office staff to remotely assess shaking intensities post-event so as to assist in prioritizing response activities;
- Reporting on EEW-SRS effectiveness, lessons learned and recommended next steps to operationalize EEW-SRS within Water Services and Metro Vancouver

- Sharing the pilot results with municipalities, Integrated Partnership for Regional Emergency Management (IPREM) and others who may be looking into the application of EEW-SRS within their operations.

Contributions to Regional Sustainability:

Environmental

The EEW-SRS pilot will help identify the potential reduction in adverse environmental impacts (e.g. due to prevention of some water discharges)

Social/Community

Increased water availability for fire-fighting; prevention of some injuries due to early warning; and faster response to repair and restoration of some of the water supply.

Economic/Financial

Potential for time and money saved due to water safe-guarded in one cell of a two-cell reservoir. Efficiency savings with prioritized response activities after earthquake damage.

Innovation Element:

The use of P-wave early warning and S-wave damage assessment, in general and for water systems in particular, is at its infancy. While Metro Vancouver Water Services has taken and is undertaking measures to protect its infrastructure during an earthquake, the capability to use EEW-SRS has not been explored to-date. Assessing and applying that potential in the context of emerging early warning and prioritized response technologies in the marketplace constitute an innovative and non-conventional extension of present capabilities to protect the water supply system.

Tangible Benefits and Outcomes:

The deliverables from the pilot will include:

- An installed pilot EEW-SRS
- Functionality testing of EEW-SRS. Selected vendor must provide capability for MV to perform:
    - an end-to-end test using simulated earthquake signals at various intensities and real earthquake signals as received during the pilot phase;
    - ongoing capability to monitor and report actual earthquake events, triggering automated actions; and
    - optimization of EEW-SRS thresholds for Metro Vancouver operations
- Staff report on EEW-SRS effectiveness, lessons learned and recommended next steps for operationalizing the system, at the end of the pilot in 2021

Members and Other Partners:

The project will seek collaboration with Natural Resources Canada, BC Ministry of Transportation and infrastructure and Emergency Management BC.

Sustainability Innovation Fund: Water Services
Executive Summary

Project Name: **Enhancing the Data Processing of the Water Flow Metering Network**

Amount Requested from Sustainability Innovation Fund: $180,000 (2020-2021)

Purpose:

Evaluate Artificial Intelligence (AI) software solutions that use Artificial Neural Networks (ANN) to enhance the data processing of the water flow metering network. Developed computer algorithms using ANN have powerful pattern classification and recognition capabilities that would help forecast water demand. The algorithm learns and generalizes from experience, making it useful in forecasting applications such as modeling water consumption over time and detecting unexpected trends in real-time. This project will involve setting up a software system, analyzing historic data from the flow metering network, generating forecasts and comparing them with live data, and reporting unexpected trends to staff for further investigation.

The expected benefits include faster turnaround of finalized data used for billing and internal and external data requests. Faster turnaround will improve the ability of municipalities to monitor their water usage and implement water saving campaigns. As the water meter network continues to grow, this project will proactively support the efficient implementation of Goal 3.2.3 of the *Drinking Water Management Plan* (i.e. all new municipal connections require a water meter), and will align with Goal 2.1.7 ("Reassess the merits of developing residential water metering programs and municipal rebate programs for water efficient fixtures and appliances").

Project Objectives:

- Increase automation of the existing data quality control process thereby reducing the staff time required to review the raw data; and
- Improve customer service by decreasing the time required to confirm final flow data used for billing, data requests, and data sharing with municipalities.

Contributions to Regional Sustainability:

<u>Environmental</u>

Successfully reducing the lag time between consumption and releasing the finalized flow data will enhance the ability of municipalities to manage periods of high consumption (e.g. assess the effectiveness of water conservation campaigns, or by monitoring compliance with watering restrictions). Reducing the lag time can lead to more efficient water use.

<u>Social</u>

Increased water use accountability will increase the sustainability of region's water resources, which will have a positive social impact. By implementing new technology to enhance the delivery of our services, Metro Vancouver will continue to be viewed as a progressive utility. Using the new application will result in a more automated and efficient data process, resulting in a more efficient communication process with municipalities.

Financial

Utilizing software to complete repetitive tasks results in reducing the turnaround time for staff to finalize the water consumption data. The reduced staff time can then be re-allocated to other priorities and will allow staff to manage the increasing number of new meters without additional staffing.

Innovation Element:

The project team will have access to leading edge AI/ANN software and expertise. To our knowledge, this project is unique in British Columbia. Metro Vancouver has a large data historian and a large number of well-maintained flow meters, both of which are essential to the successful implementation of an ANN solution. The success of this project may encourage municipalities to implement similar analytical tools in their metering and billing programs, which aligns with goal 2.1.7 of the *Drinking Water Management Plan*.

Tangible Benefits and Outcomes:

Several metrics will be used to determine the success of the project. For instance, the time to analyze and finalize data will be measured and reported as follows:

Quantitative metrics (current process versus the enhanced process):

- Average time to produce municipal monthly water bills.
- Average time spent on checking data quality per meter.
- Average response time to alert field crews to unexpected flows.

Qualitative metrics:

- Analysis of individual flow meter trends during the implementation process.

Members and Other Partners:

Water Services, Technical Services Metering & Billing Program staff will lead this project. As this project involves emerging technology, there is potential for partnership with university research groups (e.g.: PhD candidates in Civil Engineering or Computing Science faculties). Purchasing and Information Technology will also be engaged to assist with procurement and system compatibility and development, respectively.

To: Finance and Intergovernment Committee

From: Dean Rear, General Manager, Financial Services/Chief Financial Officer

Date: January 29, 2020 Meeting Date: February 12, 2020

Subject: **Metro Vancouver Signing Officers Amending Bylaws – MVRD, GVS&DD and GVWD**

RECOMMENDATION

That the MVRD Board:

a) give first, second and third reading to *Metro Vancouver Regional District Financial Services Administration and Signing Authority Amending Bylaw No. 1302, 2020*; and
b) pass and finally adopt *Metro Vancouver Regional District Financial Services Administration and Signing Authority Amending Bylaw No. 1302, 2020.*

That the GVWD Board:

a) give first, second and third reading to *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020*; and
b) pass and finally adopt *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020.*

That the GVS&DD Board:

a) give first, second and third reading to *Greater Vancouver Sewerage and Drainage District Financial Services Administration and Signing Authority Amending Bylaw No. 334, 2020*;
b) pass and finally adopt *Greater Vancouver Sewerage and Drainage District Financial Services Administration and Signing Authority Amending Bylaw No. 334, 2020.*

EXECUTIVE SUMMARY

Board approved bylaws were adopted to establish authority for the execution of financial matters relating to Metro Vancouver's Districts. The Districts are currently functioning under the existing bylaw. The previous Signing Officer Bylaws are in need of updating for position titles and modern banking practice language. A reduction in the number of positions with signing authority was also desired to reduce the administrative maintenance for individuals that would not likely be called on to sign documents.

PURPOSE

To consider adopting updates to the Signing Officers Bylaws that will provide revised language for modern banking practices, amend signing authority positions and for financial matters relating to Metro Vancouver's Districts.

BACKGROUND

Board approved bylaws were adopted to establish authority for the execution of financial matters relating to Metro Vancouver's Districts. The general structure of signing officers' authority for financial matters is one signatory from Financial Services, together with a second signatory at the senior management or Board level.

The Districts are currently functioning under the existing Signing Officers Bylaws.

BYLAW UPDATES

The previous Signing Officer Bylaws:

i) *Greater Vancouver Regional District Signing Officers Bylaw No. 1184, 2013*,
ii) *Greater Vancouver Sewerage & Drainage District Signing Officers Bylaw No. 279, 2013,* and
iii) *Greater Vancouver Water District Signing Officers Bylaw No. 246, 2013*

are updated by the attached Amending Bylaws:

i) *Metro Vancouver Regional District Financial Services Administration and Signing Authority Amending Bylaw No. 1302, 2020,*
ii) *Greater Vancouver Sewerage and Drainage District Financial Services Administration and Signing Authority Amending Bylaw No. 334, 2020*, and
iii) *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020*

respectively, for updated position titles and modern banking practice language. A reduction in the number of positions with signing authority was also desired to reduce the administrative maintenance for individuals that would not likely be called on to sign documents.

The Bylaws, as presented, are consistent with the current Board approved signing authority structure. Authorization requires one signatory from Financial Services, together with a second signatory at the senior management or Board level.

The Bylaws, as presented, will have no direct impact on financial operations, except to simplify approval language and reduce administrative efforts as mentioned above. Amended copies of the above noted Signing Officers Bylaws along with supporting documentation will be forwarded to banks and investment institutions having dealings with Metro Vancouver's Districts.

ALTERNATIVES

1. That the MVRD Board:
   a) give first, second and third reading to *Metro Vancouver Regional District Financial Services Administration and Signing Authority Amending Bylaw No. 1302, 2020*; and
   b) pass and finally adopt *Metro Vancouver Regional District Financial Services Administration and Signing Authority Amending Bylaw No. 1302, 2020.*

   That the GVWD Board:
   a) give first, second and third reading to *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020*; and
   b) pass and finally adopt *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020.*

That the GVS&DD Board:

a) give first, second and third reading to *Greater Vancouver Sewerage and Drainage District Financial Services Administration and Signing Authority Amending Bylaw No. 334, 2020*;
b) pass and finally adopt *Greater Vancouver Sewerage and Drainage District Financial Services Administration and Signing Authority Amending Bylaw No. 334, 2020.*

2. That the Finance and Intergovernment Committee receive for information the report dated January 29, 2020 titled "Metro Vancouver Signing Officers Amending Bylaws – MVRD, GVS&DD and GVWD" and provide direction on alternate signing authority language and structure.

FINANCIAL IMPLICATIONS

There are no direct financial impacts to Metro Vancouver with the adoption of these bylaws. However, the clarified language and the updating to modern banking terms will ensure that financial matters requiring prompt attention are more clearly defined in the signing structure. This clarity should reduce administrative time along with a reduced chance of any interruption of banking activities.

CONCLUSION

The Amended Signing Officers Bylaws are consistent with previous Board approved signing authority structures, but provide updated position titles and modern banking practice language. A reduction in positions with signing authority is also desired.

Staff recommend adoption of the Signing Officers Bylaws as outlined in Alternative 1.

Attachments

~~1. *Metro Vancouver Regional District Financial Services Administration and Signing Authority Amending Bylaw No. 1302, 2020*~~
~~2. *Greater Vancouver Sewerage and Drainage District Financial Services Administration and Signing Authority Amending Bylaw No. 334, 2020*~~
3. *Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020*

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GREATER VANCOUVER WATER DISTRICT
BYLAW NO. 252, 2020
A Bylaw to Amend Greater Vancouver Water District Signing Officers Bylaw No. 246, 2013

WHEREAS:

A. On June 28, 2013, the Board of Directors of the Greater Vancouver Water District (the "District") adopted the "Greater Vancouver Water District Signing Officers Bylaw No. 246, 2013" (the "Bylaw") to authorize persons to sign cheques and promissory notes; and

B. The Board of Directors of the District wishes to amend the "Greater Vancouver Water District Signing Officers Bylaw No. 246, 2013."

NOW THEREFORE the Board of the District enacts as follows:

Citation

1. This Bylaw may be cited as "Greater Vancouver Water District Financial Services Administration and Signing Authority Amending Bylaw No. 252, 2020".

Amendment of Bylaw

2. The "Greater Vancouver Water District Signing Officers Bylaw No. 246, 2013" is hereby amended as follows:

   a) Delete Section 1 of the Bylaw in its entirety and replace with the following new Section 1:

      "This Bylaw may be cited for all purposes as the "Greater Vancouver Water District Financial Services Administration and Signing Authority Bylaw No. 246, 2013"."

   b) Delete Section 3 of the Bylaw in its entirety and mark as repealed.

   c) Delete Section 4 of the Bylaw in its entirety and replace with the following new Section 4:

      "Any one of the:
      Chairperson
      Vice-Chairperson
      Commissioner
      Corporate Solicitor

      together with any one of the:
      Chief Financial Officer
      Director, Financial Planning and Operations/Deputy Chief Financial Officer
      Director, Purchasing and Risk Management

      are hereby required and authorized on behalf of the District to sign, endorse or approve, under seal if necessary or convenient:

(a) any cheques, promissory notes, negotiable instruments and orders for the payment of money;
(b) approvals, contracts or other authorizations for the incurring of overdrafts, debts or other borrowing;
(c) contracts for the issuance or acceptance of letters of credit; and
(d) documents for opening or closing of accounts with banking or investment institutions."

d) Delete Section 5 of the Bylaw in its entirety and replace it with the following new Section 5:

"For the more efficient and effective administration of the District's financial affairs, the Chief Financial Officer of the District is hereby authorized to delegate, subject to Section 4 of this Bylaw, all other general banking and financial activities, required for the normal day-to-day operations of the District, to such employees of the District over whom the Chief Financial Officer exercises control and supervision."

Read a first, second and third time this _____ day of _____, _____.

Passed and finally adopted this _____ day of _____, _____.

_____
Sav Dhaliwal, Chair

_____
Chris Plagnol, Corporate Officer

COMMITTEE INFORMATION ITEMS AND DELEGATION SUMMARIES

Greater Vancouver Water District
Board Meeting Date – Friday, February 28, 2020

This information item, listing recent information received by committee, is provided for the GVWD Board's information. Please access a complete PDF package here.

Water Committee – February 13, 2020

Delegation Summaries:
No delegations presented.

Information Items:
5.2 Water Use by Sector in Metro Vancouver: 1985 – 2017

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