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Poul Rosen, P.Eng.  
Senior Manager, Engineering  
City of Nanaimo  
411 Dunsmuir St.  
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Dear Mr. Rosen:

**RE: Review of the City of Nanaimo's Draft Water Metering Policy and Water Metering Strategy  
Our File 566.072**

The City of Nanaimo retained Kerr Wood Leidal Associates (KWL) to complete a review of the City's draft Water Metering Policy and Water Metering Strategy. The objective is to provide feedback on the policy and strategy, make recommendations for improvements where applicable, and comment on their necessity in maintaining success of the City's water metering program.

## Background

KWL's previous relevant experience with the City of Nanaimo includes the 2011 and 2016 AWWA M36 water audits as well as an update to the City's waterworks design standards in 2016. The 2011 water audit identified the need for age related replacements, meter right-sizing initiatives for large customers, and the need for revisions to meter sizing standards.

Prior to implementing a city-wide water meter replacement program, the City retained Urban Systems Ltd. (USL) to develop a Water Metering Strategy and an accompanying Water Metering Policy document.

The purpose of the strategy document is to provide clear direction on:

- Standardizing meter locations;
- Ownership (City versus private);
- Standardizing meter sizing;
- Choosing metering technologies;
- Choosing a meter reading system;
- Procurement of meters; and
- Meter testing.

The purpose of the policy document is to provide a clear vision of metering requirements and assign the responsibilities of Council, the Chief Administrative Officer, and the Director of Engineering and Public works in the implementation of the policy.

## Strategy and Policy Review

The City has requested a review that includes discussion on the decision to limit the number of approved meter manufacturers, the criteria used to evaluate and approve manufacturers, as well as any other recommendations for improvement.



Procurement options for meter supply are closely tied to the selection of a reading system. For this reason, the strategy recommends the City first select a reading system. Options discussed include either incorporating meter supply for the first five years into the scope of the reading system RFP or issuing a request for quotations to meter manufacturers only once a reading system has been selected. We agree with the USL recommendation of the latter option.

Separating procurement of the reading system and meter purchases will assist in focussing reading system procurement on the compatibility of the system to work with other manufacturers' meters. A high degree of compatibility of the reading system with meters produced by several major manufacturers is likely to reduce the life cycle cost of the metering program by maximizing the competitiveness of procurement.

The policy and strategy recommended by USL limit the number of meter manufacturers chosen to supply meters to a maximum of three. The strategy states that this is to obtain operational efficiencies that include stocking of meters and spare parts and the operational knowledge and understanding required.

The recommended policy allows for new meter technologies to be evaluated through a 2 year pilot program in order to demonstrate ability to meet performance criteria and compatibility requirements as outlined in the Water Metering Strategy. This allows the City to test new technologies, which is an important consideration given the current pace of technological change in metering systems.

The recommended performance criteria and compatibility requirements are consistent with best practices for the industry and include:

- Materials & Dimensions: technology type, main body material, lay length, size range;
- Approvals: AWWA, NSF 61 Annex F/G, and Factory Mutual / Underwriters Laboratory Canada;
- Operating Performance specifications: range, low flow capabilities and pressure loss;
- Features: data logging for leak indication etc., compatibility with AMR and AMI rapid meter reading systems, warranty on battery life and insitu test ports for larger meters;
- Operation & Maintenance: does the meter have field replaceable components that could lower O&M costs;
- Price point; and
- Availability and quality of a local support system and demonstrated track record.

We recommend the City also consider criteria for quality control in the approval process and procurement requirements. The ability of the meter manufacturer to produce meters with similar quality and to supply enough quality instruments in a specified time should be considered.

Establishing thorough performance specifications and approval process will help the City to avoid procuring large quantities of water meters that do not provide acceptable life cycle performance. A thorough approval process that seeks to minimize metering inaccuracy and bolster billing equity is in the long-term interest of the City.

Limiting manufacturers to three, where others may fully meet all criteria, holds merit only if there is a space constraint concern for stocking of replacement parts. It may be economical to replace parts such as the register on large meters but not for small residential meters where replacement of the entire meter is more economical.

We recommend that the policy not limit the maximum number of meter manufacturers as this measure is unnecessary given the City's performance criteria. Approval should be based on products and support that fully meet all criteria including compatibility and ease of integration with the chosen meter reading system and demonstrated strong local support.

Sensus and Neptune are the two manufacturers recommended in the strategy as currently meeting the criteria across the full range of metering sizes and types. These are the two largest manufacturers supplying the local market and will be compatible with the available reading systems. We recommend that for other manufacturers to



be approved, the City should require that their product meet or exceed the performance of the recommended meter models from these two manufacturers for all performance criteria. All water meters must perform at the highest standard to ensure rate payer equity, justifying a more stringent approval process than other products purchased by the City. New products with less demonstrated track record should offer a significant advantage to the City and gain approval through the recommended two-year pilot program.

The two -year pilot program for evaluating new metering technologies allows the City to investigate advantageous emerging technologies while not taking on large levels of risk.

The draft strategy and policy are both thorough documents in keeping with best engineering and management practices. They will be an integral component of the City's metering program, providing a clear communication to the public and development community on standardized meter location, selection of size, type and approved meter models, and providing direction to the City on procurement of a meter reading system, age related replacements and new advantageous technologies as they emerge.

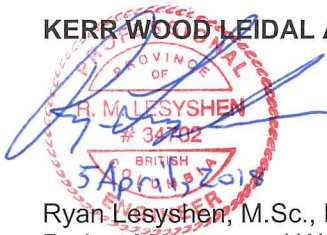
We recommend the City consider the following:

1. Consider additional criteria for quality control related to anticipated procurement volumes in the approval process and procurement requirements; and
2. Avoid limiting the maximum number of approved manufacturers to three.
3. To ensure rate payer equity, approved products should meet or exceed the performance of the recommended Sensus and Neptune meters across all criteria. New products with less demonstrated track record should offer a significant advantage to the City and gain approval through the recommended two-year pilot program.

Please contact the undersigned with any questions or concerns with our review.

Yours truly,

**KERR WOOD LEIDAL ASSOCIATES LTD.**



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