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The Regional Municipality of Durham Information Report

From: Commissioner of Works
Report: #2025-INFO-12
Date: February 7, 2025

Subject:

Innovation, Science and Economic Development (ISED) Mandated Changes to Radio Frequency Spectrum Use in Canada and Required Changes to The Regional Municipality of Durham's Supervisory Control and Data Acquisition Wide Area Radio Network

Recommendation:

Receive for information.

Report:

1. Purpose

- 1.1 To update Regional Municipality of Durham (Region) Council and residents on required changes to the operation and architecture of the Region's Supervisory Control and Data Acquisition (SCADA) Wide Area Radio Communications Network (WAN).
- 1.2 Amounts followed by an asterisk (*) are exclusive of applicable taxes.

2. Background

- 2.1 The current Region's Water SCADA WAN, covering over 67 sites, was constructed between 2011 and 2014. The purpose of the system is to maintain data communications between all active water supply facilities and the Water Operations control centre at the Ajax Water Supply Plant (WSP). This network facilitates the communication of all critical supervisory and operational data for

operational use and mandated compliance reporting to the Ministry of Environment, Conservation and Parks (MECP).

- 2.2 The current Region's Water SCADA WAN uses a mix primarily of 3.65 giga hertz (GHz) and 18 GHz band Radio Frequency (RF) point to point and point to multi-point connections, based on a ring backhaul design and leveraging the Durham Region Police Service (DRPS) network. This network has a current limitation of 10 mega bite (MB) of available bandwidth and a limited number of 900 mega hertz (MHz) radio links.
- 2.3 As of May 2021, the Federal Government issued a legislative mandate requiring existing users to move from the 3.65 GHz band. They have provided a four-year grace period as a part of the grandfathered plan. Consequently, the Region requested the assistance of Eramosa Engineering to perform a full WAN assessment and provide recommendations on how the Region should proceed.
- 2.4 In March 2025, the Innovation, Science and Economic Development (ISED), an arm of the Federal Government, will terminate the Region's access to the 3.65GHz radio spectrum. Replacement SCADA communications are required for all active SCADA sites before this cutoff date.

3. WAN Assessment Recommendations

- 3.1 As part of Eramosa's Water SCADA WAN assessment, it was recommended that the final WAN upgrade topology will utilize multiple communication media, as implementing a single solution across all Region facilities is neither feasible nor realistic. The upgrades will also include media redundancies, as requested by Water Operations, to address compliance requirements. The options, in order of preference and pending availability are Durham OneNet (DONi) Fibre Optic Network, 5.8GHz Radio, Third-Party Internet Service Provider (ISP), and Cellular Access Point Name (APN).
- 3.2 Negotiations have been ongoing with DONi to provide dark fibre connections at all Water SCADA sites. However, DONi cannot provide connections to all water sites until Q1 of 2026, although some sites could be ready in early 2025. Therefore, the decision was made to install Bell's Internet Protocol Virtual Private Network (IPVPN) system at the South and East water sites, as Bell can meet the required dates for installation, ensuring that Water SCADA communications will not be affected by the loss of the 3.65GHz spectrum.

- 3.3 A minimum 3-year contract has been established with Bell for the installation/upgrade of the IPVPN system. Over the next three years the Bell network will be decommissioned and replaced with the Region-owned DONi private fibre network.
- 3.4 Additionally, priority is being given to the installation of Bell's IPVPN WAN network over the replacement of 3.65GHz radio infrastructure with 5.8GHz radio systems due to the lack of time leading up to the ISED-mandated spectrum cutoff date. Eramosa will be designing the move to 5.8GHz and preparing the project documentation needed to tender the required work.

4. Next Steps

- 4.1 Preparations for the early shutdown of 3.65GHz spectrum radios in the less active areas of the North of Durham will begin in February with early replacements of 3.65GHz radios and antennas with 5.8GHz systems for several more critical links prior to the end of March 2025 and ahead of the installation of the DONi dark fibre links. Rollout of Bell's IPVPN network in the South and East areas of Durham will begin in early February.

5. Financial Implications

- 5.1 Eramosa Engineering Inc. has been retained to provide engineering consulting services for feasibility analysis, preliminary and detail design, excluding construction administration services, at a fee of \$452,954.23*
- 5.2 The gross cost for the consulting assignment and construction services will be funded from 2025 Capital Budget Item #249 – Replacement of Wireless WAN Frequency (Project ID: D2124). The work is estimated at \$4,200,000.00*

6. Relationship to Strategic Plan

- 6.1 This report aligns with/addresses the following strategic goals and priorities in the Durham Region Strategic Plan:
- a. Environmental Sustainability – Protect, preserve and restore the natural environment, including green spaces, waterways, parks, trails and farmlands.
 - b. Enhance community safety and well-being.
 - c. Optimize resources and partnerships to deliver exceptional quality service and value.

7. Conclusion

- 7.1 Ongoing efforts by Supervisory Control and Data Acquisition Division staff and resources will prevent any loss of communication within the Water Supervisory Control and Data Acquisition Wide Area Radio Communications Network brought on by the Innovation, Science and Economic Development mandated spectrum changes.
- 7.2 For additional information, contact: Mike Hubble, Director, Environmental Services, at 905-668-7711 extension 3460.
- 7.3 Prepared by: Tyler Wilson, Manager, SCADA, at 905-668-7711, extension 3117.

Respectfully submitted

**Original signed by Christine Dunkley,
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