Ontario Clean Water Agency
Agence Ontarienne Des Eaux

June 9, 2025

Samuel Shannon - Director of Infrastructure and Operations
Municipality of North Middlesex
229 Parkhill Main Street
Parkhill ON N0M 2K0

Re: Proposal for HVAC Systems and Controls Retrofit at Ailsa Craig WPCP

The Ontario Clean Water Agency (OCWA) Innovation, Technologies, and Alternate Delivery (ITAD) group is pleased to submit this proposal to provide project support in retrofitting the HVAC system and controls and installing/integrating an energy monitoring system at the Ailsa Craig Water Pollution Control Plant (WPCP). These initiatives aim to enhance energy efficiency, reduce electricity costs, and provide energy data to optimize equipment operation of the HVAC systems and energy intensive treatment processes.

1. Background

The Ailsa Craig Water Pollution Control Plant (WPCP), located at 4381 Elginfield Road, serves as the Municipality's largest electricity consumer, accounting for one-third of the Municipality's total energy usage. A 2021 energy analysis report conducted by CIMA+ identified inefficiencies in the HVAC systems which contributes to 43% of the plant's electrical demand.

OCWA compared the Ailsa Craig WPCP 2024 hydro bill data against similar wastewater treatment facilities. Key findings from the comparison include:

- Energy consumption at Ailsa Craig WPCP is 3 times higher than similar facilities; a typical wastewater facility requires <1 kWh to treat 1 m^3 of wastewater, Ailsa Craig WPCP required 3.36kWh to treat 1 m^3
- Seasonal variations significantly impact energy use, peaking at 4.54 kWh/m^3 in February and reducing to as low as 1.95 kWh/m^3 in July.

To address these inefficiencies, OCWA ITAD proposes to manage the retrofit of the HVAC system by installing Variable Frequency Drives (VFDs) with integrated controls and install Power Monitoring Devices (PMD's) to develop a real-time energy profile that will allow OCWA to measure, monitor, and report on operating parameters including facility energy usage and specific process treatment areas.

2. Scope of Work

OCWA ITAD will manage the overall project execution of installation of VFD's and PMD's, software integration, coordination of internal and external stakeholders to ensure timely delivery and alignment with incentive program requirements.

Task 1: Overall Project Management and Support for the Project

Project Initiation & Information Gathering: Upon project approval, OCWA ITAD will serve as the central point of contact for all project stakeholders, ensuring effective communication and coordination with OCWA's Senior Operations Manager, contractors, and municipal staff. For the duration of the HVAC retrofit project, OCWA ITAD will provide comprehensive project management services to support the successful execution of the HVAC system and controls retrofit and energy management initiatives. This includes maintaining alignment with the project's defined scope, schedule, and budget, while ensuring that all activities progress according to plan.

Project Update Meetings: Project update meetings will be facilitated by OCWA ITAD, virtually. These meetings will serve to review progress, identify and mitigate risks, and assign action items. Agendas will be prepared in advance, and detailed meeting minutes will be documented and distributed to ensure transparency and accountability. Frequency of these project update meetings will be determined upon project approval.

Site & Vendor Coordination: OCWA ITAD will manage all site logistics and vendor coordination, including scheduling site visits, overseeing equipment deliveries, and ensuring that contractors have the necessary access.

Permit & Inspection Advisory: Permits and inspections will need to be paid and scheduled by a municipal staff. OCWA will advise on required permits & inspections for the HVAC retrofit project however all required permits & inspections will remain the responsibility of the Municipality.

Schedule & Budget Management: A detailed project schedule with key milestones will be developed and maintained. OCWA ITAD will monitor project expenditures, manage the invoice approval process, and provide regular updates on budget status, including variance reports to keep stakeholders informed and aligned. This includes coordination with vendors, site personnel, as well as oversight of scheduling and budgeting.

Task 2: Applying for IESO Incentives

The Independent Electricity System Operator (IESO) offers a suite of incentives and programs to encourage energy users to reduce their electricity usage and energy cost. One of the programs that this project will be eligible for is the Retrofit Program. The IESO Retrofit Program provides incentives for capital improvements to a facility that will enable the facility to become more energy efficient. OCWA ITAD will apply for this IESO incentive on behalf of the Municipality and provide all necessary documentations as required. These documentations include invoices of project cost, calculating energy reduction achieved with the new capital installation, equipment specifications, and proof of payment. Once the incentive is secured, OCWA will transfer the incentive received from the IESO to the Municipality. It is estimated that up to $20,000 - $30,000 can be secured through the IESO Retrofit Program.

OCWA will apply for the IESO Retrofit Program for the following equipment:

- Installation of four (4) VFDs total (2 for supply fans and 2 for exhaust fans)
- Installation of two (2) Silicon Controlled Rectifiers (SCRs) for electric heating elements
- Control upgrades to interlock the Make-Up Air (MUA) system

Note: The cost for OCWA to apply for IESO incentives on behalf of the Municipality will not exceed the incentive received. Should the incentive received be less than the projected amount noted above, OCWA will adjust OCWA's cost accordingly.

Task 3: Energy Monitoring System Integration & IESO Energy Monitoring Information System (EMIS) Incentive Application

Through OCWA's Corporate Energy Management Program, OCWA has invested in energy monitoring infrastructure that will enable collection of real-time energy data at our client facilities. Real-time energy data will enable OCWA to operate our clients' infrastructure more effectively; with power monitoring devices (PMDs) installed on key process equipment, OCWA will be able to respond to equipment malfunctioning immediately, detect equipment pre-mature failure earlier and support the Municipality in prioritizing capital plan upgrades and improvements to the facility.

For the Ailsa Craig Water Pollution Control Plant (WPCP), OCWA is proposing to implement an energy monitoring information system (EMIS). The cost of the EMIS will be covered by applying for the IESO EMIS incentive and OCWA's investment through OCWA's corporate energy management program. To provide suggestions as to where PMDs should be installed at the WPCP, a review of background information and site visits will be conducted.

The background information review will be collected from OCWA operations, as well as from the Municipality (if applicable) for an in-depth review of process data, equipment operations and hydro bills to establish trends, challenges and identify areas for improvement related to process and energy. OCWA will supply up to 5 PMD's for the facility, to develop an energy baseline capturing all identified energy intensive process equipment from Background review and site visit.

Once OCWA has determined the appropriate areas/equipment to monitor energy, PMD's will be installed at the WPCP. Additionally, OCWA will provide a Business Transformation Program (BTP) panel to transfer and communicate energy and process data through its cellular private network. PMD's and BTP panel will be installed by a certified electrician.

The following equipment will be supplied by OCWA on key pre-determined process equipment to establish the energy baseline:

- Up to 5 PMD's to measure power, voltage and power factor at the main electrical panel, and measure current draw on selected process equipment (i.e. aeration blowers, sludge pumps, low lift pumps, etc.).

The IESO EMIS Incentive Program is a recent initiative under the Save on Energy framework that offers financial support for the implementation of advanced energy monitoring systems.

As part of this initiative, OCWA ITAD will apply for and manage the implementation of the Energy Management Information System (EMIS) IESO incentive program. The incentive will be used to cover the cost of the implementing the EMIS, with the remaining balance paid for by OCWA as part of OCWA's investment through OCWA's corporate energy management program. This project will empower the facility to monitor energy performance in real time, validate savings from recent HVAC modifications, and support strategic planning for future capital improvements.

OCWA ITAD will oversee the entire process—from application submission to system installation and compliance reporting—ensuring full alignment with IESO program requirements and maximizing the value of the incentive.

Task 4: Monitoring & Post Implementation Review

After the HVAC modifications are completed at the WPCP, OCWA ITAD will gather and analyze real-time energy data over a 30-day period to calculate energy savings achieved by the HVAC modifications. This monitoring phase will ensure that the installed PMD's are functioning correctly and capturing consistent, high-quality data. At the end of this period, a final project update meeting will be held to provide a comprehensive overview of the installation process, review the performance data, and discuss any observed improvements or recommendations for further action.

3. Project Timeline & Costs

The total project budget is **$51,995 + HST**, covering all scopes summarized in section 2 above. This includes OCWA professional fees, disbursements and travel expenses. It is an upset limit which will not be exceeded without your written approval. Should additional services be required due to a change in the scope of work, we will advise you immediately. A breakdown of the estimated budget is provided below.

Please note that the EMIS incentive will be used to cover OCWA's cost of the energy monitoring system that we will be putting in place. Upon securing eligible VFD retrofit incentive, the incentive amount will be provided directly to the Municipality.

Budget Summary

Task	Budget
Overall Project Management and Support for the Project	$20,500
VFD Retrofit installation & Incentive Application	$12,238
Energy Monitoring System Setup & EMIS Incentive Application	$16,498
Monitoring & Post Implementation Review (OCWA)	$2,714
Total (excluding HST)	**$51,995**

Estimated timeline:

PHASE	Duration	Milestone
Task 1 - Project Initiation & Information Gathering	1-3 week	Approve detailed project management plan
Task 2: Applying for IESO Incentives	Duration of project implementation	System Commissioning
Task 3: Energy Monitoring System Integration & IESO Energy Monitoring Information System (EMIS) Incentive Application	Duration of project implementation	Securing Incentive
Task 4: Monitoring & Post Implementation Review	1 month post project completion	

This proposal outlines only the scope of work to be completed by OCWA ITAD, which includes project management, coordination of PMD & VFD installation, and administration of the IESO incentive programs (EMIS and VFD Retrofit). All labour and material required for the onsite HVAC retrofit work are not included in OCWA's scope. A separate quotation from Air Design Services, detailing the labour and material costs for the onsite work, is attached to this proposal for the Municipality's consideration. The two documents together provide a comprehensive overview of the full project scope and associated costs.

4. Project Team

Kerry Tuyen, P.Eng – Director of Innovation, Technology and Alternate Delivery

Kerry brings extensive experience in municipal wastewater projects and alternative delivery methods. She will oversee the project's quality assurance and financial management.

Mohammad Khan, P.Eng, CMVP – Water and Energy Efficiency Manager

Mohammad has over 10 years of experience in energy optimization projects within the water and wastewater sector. He will serve as the primary project lead and point of contact.

Jisna Jose, M.Eng, EIT– Energy and GHG Analyst

Jisna has been serving as an Energy and GHG Analyst at OCWA since 2022, bringing experience in energy data analysis and **GHG** reporting. For this project, Jisna will provide technical support, lead the development of the project proposal, and participate in site visits**.**

5. Conclusion

The Ailsa Craig WPCP HVAC system retrofit presents a significant opportunity to improve energy efficiency, reduce operating costs, and secure financial incentives. With a strong Return on Investment (ROI) and long-term savings, this project aligns with the Municipality's sustainability goals. We look forward to working together to implement these upgrades.

Sincerely,

Kerry Tuyen, P.Eng
Director – Innovation, Technology and Alternate Delivery
Innovation, Technologies and Alternate Delivery (ITAD), OCWA

cc. Mohammad Khan, P.Eng, CMVP
Water and Energy Efficiency Manager, Innovation, Technologies and Alternate Delivery (ITAD), OCWA

cc. Rodney Dupuis
Senior Operations Manager, Midwest Region – North Middlesex Cluster, OCWA

COUNTERSIGNATURE:

By signing below, I acknowledge the scope of work described in the above proposal and provide permission on behalf of the *Municipality of North Middlesex* to proceed.

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(Signature) Date