



RAEON Equipment Fee Business Model

RAEON provides instruments to support research and grant proposals by Canadian academic researchers and their partners in the Great Lakes basin. To support the maintenance, calibration, and replacement of these instruments, RAEON has established fees for each instrument (*see below for formula and costs for each instrument type*). These fees are based on a percentage of initial purchase price, battery replacement costs, calibration/maintenance costs, and real-time costs (cellular and satellite, if applicable). The percentage of initial purchase price is to provide funds for the general budget or RAEON to help support staff and other costs associated with the network, and to generate a reserve of funds to help off-set the costs of equipment lost and related insurance deductibles. The 5% was *ad hoc* but based on our limited experiences to date on equipment loss and general costs of running RAEON. CFI-IOF funds offset the real costs of this work, but COVID has complicated assessing the real cost “of business” for the Network. RAEON will work to share equipment and costs when possible, this is particularly relevant for the gliders.

Because of CFI-IOF funds, any researcher from the original proposal (Windsor, Trent, Carleton, Western and Saskatchewan) will receive a 25% reduction in costs. Any project that has been approved prior to this date (July 7, 2021) will pay fees established in grant funding or agreements with RAEON. We have also established a 10% discount for researchers that meet EDI criteria.

Cost of equipment is based on a yearly basis (glider has a per day cost). We have established an early return rebate for equipment, that will reduce the cost of use based on returning the equipment safely and in working order (25% reduction if returned < 6 months, 15% reduction if returned < 9 months; and 10% reduction if returned < year). Equipment not returned at the end of the contract will release a late penalty of 10% per month. In the event of any lost or damaged equipment, a full year fee will be required, along with a report detailing how and when the equipment was lost/damaged.

Finally, the *nature* of each instrument will influence how that instrument is used and whether it is available to the network. Types of instruments include:

- 1) *In situ* instruments: These are instruments (acoustic telemetry receivers, SUNA, CO2 instruments) that make up the bulk of RAEON’s equipment and are the key component to the network. The business model works well for these instruments.
- 2) Instruments “owned” by a PI: These are instruments purchased as part of a university’s CFI/province allotment and are fully utilized by the PI. Examples include the HABs Lab of PI Creed and fish respirometry equipment of PI Neff. Although not available to Network researchers (*we can discuss*), data from this work will be provided to RAEON,



projects will be detailed on the RAEON website, and RAEON should be acknowledged in publications and presentations.

- 3) Lab instruments: RAEON has a small number of lab instruments (water isotopes, nutrients, ...) that are installed at UWindsor and are available for sample analysis. Prices for analysis are being established and we will provide a discount to researchers from the original proposal (Windsor, Trent, Carleton, Western and Saskatchewan). HQP can also come to Windsor and be trained on the equipment and run their own samples.
- 4) Vessels: RAEON purchased several trucks, trailer (fish hauling and portable labs), an e-fishing boat, and renovated a Windsor boat (RV Loon). The trucks are largely unavailable for RAEON researchers use and we are developing costs for using the RAEON boats. RAEON also has three other vessels that can be used for a fee, they vary in size and application.

Formulas for instrument use costs:

***In situ* instruments without real-time data =**

(5 % of instrument cost) + (battery cost) + (accessories cost) + (calibration cost)

***In situ* instruments with real-time data =**

(5 % of instrument cost) + (battery cost) + (accessories cost) + (calibration cost) + (comms cost)

Gliders =

(\$200/day) + (iridium/argos costs) + (ship time)

Examples of *in situ* instruments and costs/year:

Instrument	#	Initial price	Batteries	Accessories	Calibration	Comms	Cost (real-time) 1 year	Cost (non-real time) 1 year	Cost participating Universities 1 year
Dissovled oxygen Aquameasure sensors	30	\$2,625.00	\$15.00	\$3.00	\$220.00	\$0.00		\$369.25	\$295.40



CB450 Integrated buoys (AquaHubs + Airmare weather stations)	2	\$15,446.50	\$0.00	\$100	\$0.00	\$100/month	\$2072.33		\$1657.86
Submersible nitrate analyzers	20	\$44,140.00	\$108.00	\$0.00	\$0.00	\$0.00		\$2,315.00	\$1,852.00

Note: Batteries, accessories, calibration, and comms are an estimate based on previous use/deployments, costs may vary slightly. Any related shipping/customs fees will be the responsibility of the researcher.