

Boulder A.I.R. L.L.C; 2820 Lafayette Dr., Boulder, CO 80305, U.S.A.; dh.bouldair@gmail.com

May 29, 2025

To: Town of Erie 645 Holbrook Street Erie, CO 80516

Attn: David Frank

Year 2025-2028 3.5-years Cost Proposal for Continuing the Operation of the Erie Community Center (ECC) Air Quality Monitoring Station and the Implementation and Operation of a Dispersed Sampling Network

Dear Mr. Frank,

Thank you for your inquiry about a cost estimate for providing air quality monitoring to the Town of Erie. Please find below a cost proposal for a 3.5-years contract spanning July 1, 2025, to December 31, 2028. The following work is included:

A. Continuation of the air quality monitoring at the Erie Community Center (ECC) that is currently under contract with the Town of Erie. The proposed work will continue the monitoring of all variables and pollutants, with the same real-time data reporting that was implemented at the beginning of the program in the summer of 2021. We have again quoted the monitoring of ozone and particulate matter (PM) following 'regulatory-grade' protocols. This entails adhering to instrument configuration, calibration, and maintenance protocols as mandated by the EPA, and followed by the Colorado Department of Public Health and Environment (CDPHE). Both measurements have been audited by CDPHE and were found to fully meet regulatory quality requirements. The monitoring of volatile organic compounds (VOCs) relies on operation of a gas chromatography-flame ionization instrument. This will provide sensitive and VOC-specific monitoring of a series of primary oil and natural gas hydrocarbons. A minimum of twenty-five species of the most prominent VOCs observed in ambient will be reported. Quantification of VOCs will follow the protocol and be based on the calibration scale of the World Meteorological Organization Global Atmospheric Watch program with calibration standards from the U.K. National Physics Laboratory.

This bid includes automated data processing and reporting to the Erie project web portal that was implemented and is maintained by Boulder AIR (https://www.bouldair.com/erie.htm). In addition, data from the Erie monitoring will be included in the AirLive Combined Northern Colorado Front Range website (https://www.bouldair.com/NoCoFrontRange.htm). All historical data can be viewed and analyzed at the Boulder AIR Interactive Data Analysis Tool (https://bouldairtools.com/interactive/). Final, fully quality-controlled VOCs data will be submitted to AMTIC, the EPA Ambient Monitoring Archive for Hazardous Air Pollutants (https://www.epa.gov/amtic/amtic-ambient-monitoring-archive-haps); data for all other chemical measurements will be submitted to the EBAS (https://ebas.nilu.no/) archive.

The cost for all monitoring and associated services for July 1, 2025 – December 31, 2025, will be the same as for the current January 1 – June 30, 2025, contract (\$113,600). Rates for 2026 will increase by 3% to adjust for inflation. However, Boulder AIR will drop the rate for methane monitoring by 20% effective January 1, 2026. Furthermore, we have eliminated the charge for the security system operation and maintenance. With these reduced charges, the January 1 – December 31, 2026, budget comes in at \$224,631, which is 3% lower than 2025 charges. Rates for 2027 and 2028 factor in a 3% increase per year to adjust for the anticipated rate of inflation.

- B. Acquisition, installation, and operation of five SGS SmartSense solar powered (with battery backup) air monitoring stations (https://www.sgsgalson.com/smart-sense-home/). Monitored variables will include wind speed, wind direction, air temperature, particulate matter (PM1, PM2.5, PM10) and total VOCs by photoionization detection (PID). Each station will be equipped with a sampling trigger mechanism and air sampling canister to collect whole air samples when elevated VOC signals are detected by the PID. In case the current contract for continuous air quality monitoring with Boulder AIR at ECC is renewed, then, at no cost to Erie, one additional station will be installed at ECC in parallel to the real time methane, VOCs, and PM2.5 monitoring to provide comparison between the two methods and additional quality control of the SmartSense air sampling.
- C. Analysis of up to 15 trigger canister samples per year collected by the SmartSense stations (B) for methane and VOCs, using the same instrumentation and quality assurance as under A. In the case that more than 15 trigger events (and samples) are collected, additional trigger canister deployments and analyses will be charged \$400 per sample.
- D. Real-time reporting of the SmartSense data to the public SGS LiveView data portal (https://www.sgsgalson.com/sgs-liveview/).
- E. Preparation and analysis of a maximum of ten grab sampling Summa canisters per year. Additional grab sampling canister deployments and analyses will be charged \$400 per sample.
- F. Pollution event analyses and event reports, one annual report, presentation to the Town of Erie Council.
- G. Boulder AIR commits to conduct all monitoring listed above at \geq 95% uptimes.

A cost breakup of these line items and a summary budget detailing the 6-months costs for July 1 – December 31, 2025, and then the annual costs for years 2026, 2027, 2028 is provided below. For each year, the total cost considers a discount if both the ECC continuous station monitoring and the dispersed sampling program are contracted to Boulder AIR.

We appreciate this opportunity to provide air quality monitoring for the Town of Erie.

Thank you,

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Detlev Helmig, PhD Boulder A.I.R. LLC

Erie Community Center (ECC) Air Monitoring Station:

| Item | Variable | 2025 rate 2025 July 1 - 2026 full 2027 full 20 | | | | |
|--------|--|--|--------------|-----------|-----------|-----------|
| item | Variable | full year US\$ | Dec 31, US\$ | year US\$ | year US\$ | year US\$ |
| 1 | Ozone, TEI_49, regulatory-grade | 17,918 | 8,959 | 18,456 | 19,009 | 19,579 |
| 2 | Volatile Organic Compounds (including ethane, ethene, acetylene, propane, propene, i-butane, n- butane, i-pentane, n-pentane, cyclopentane, isoprene, n-hexane, cyclohexane, benzene, n- heptane, toluene, n-octane, o-xylene, ethylbenzene, o-xylene, m-xylene, p-xylene); WMO-grade by gas chromatography - flame ionization detection | 105,665 | 52,833 | 108,835 | 112,100 | 115,463 |
| 3 | Methane, PICARRO G2301, WMO-grade | 35,837 | 17,919 | 29,530 | 30,416 | 31,328 |
| 4 | PM_2.5, regulatory-grade, PM_10, GRIMM EDM180 | 30,102 | 15,051 | 31,005 | 31,935 | 32,893 |
| 5 | Meteorological variables (wind speed, wind direction, temperature, relative humidity, radiation), research- | 3,584 | 1,792 | 3,692 | 3,802 | 3,916 |
| 6 | Webcam for public website images | 2,150 | 1,075 | 2,215 | 2,281 | 2,349 |
| 7 | Website data reporting, data management, data archiving, event reports | 30,000 | 15,000 | 30,900 | 31,827 | 32,782 |
| Total: | | 225,256 | 112,628 | 224,631 | 231,370 | 238,311 |

Town of Erie Community Center (ECC) Air Quality Monitoring, 2025-2028

Five SGS Dispersed Air Monitoring Stations for Six Months:

Five Meteorology/PID/VOCs Trigger Canister Sampling Stations; July 2025 through December 2025 Budget

| Item | Variable | Cost per | Number of | Months | Total Number | 2025 rate |
|------|--|----------|-----------|--------|--------------|-----------|
| | | | Sites | | of samples | (US\$) |
| 1 | Acquisition, installation, and operation of SGS PID/trigger solar powered canister sampling stations with meteorology, PM1, PM2.5, PM10, total VOCs | 1450 | 5 | 6 | | 43,500 |
| 2 | Trigger canister analyis by gas chromatography for methane and minimum of 30 Volatile Organic Compounds (including ethane, ethene, acetylene, propane, propene, i-butane, n-butane, i-pentane, n-pentane, isoprene, n-hexane, benzene, toluene, o-xylene, ethylbenzene, o-xylene, m-xylene, p-xylene); custom-gas chromatograph with flame ionization detection (FID), 15 canisters per year | 400 | | | 7.5 | 3,000 |
| 3 | Weekly site visits, trigger canister preparation, setup, and collection | 250 | 5 | 6 | | 7,500 |
| 4 | Reporting, website maintenance, event analyses | 1000 | | 6 | | 6,000 |
| | Total | | | | | 60.000 |

Summary Budget:

ECC and Dispersed Sampling Network 2025 - 2028 Summary Budget

| Program component | July 1, 2025 - Dec. 31, 2025 | Jan. 1, 2026 - Dec. 31, 2026 | Jan. 1, 2027 - Dec. 31, 2027 | Jan. 1, 2028 - Dec. 31, 2028 |
|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Town of Erie Community Center (ECC) continuous air quality monitoring | 112,628 | 224,631 | 231,370 | 238,311 |
| Five meteorology, PM, PID/VOCs SGS trigger canister sampling stations | 60,000 | 123,600 | 127,308 | 131,127 |
| Grab sampling Summa canisters, preparation and GC/FID sample analysis, up to 10 per year | 0 | 0 | 0 | 0 |
| ECC - Dispersed network bundle discount | 29,000 | 48,231 | 49,678 | 51,168 |
| Total requested funds | 143,628 | 300,000 | 309,000 | 318,271 |