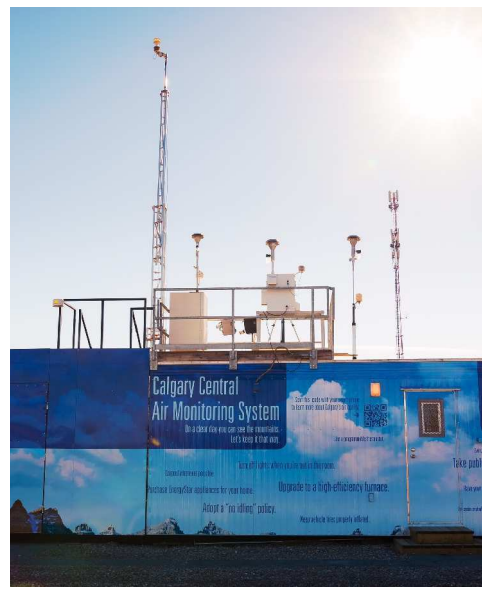


# Calgary Region Airshed Zone Annual Report 2022

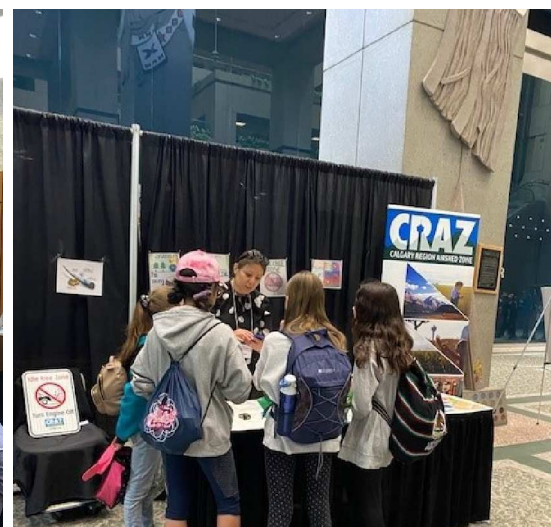


*Caring for the Air*



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## MESSAGE FROM THE CHAIR

Another eventful year! The year saw the society moving forward out of the restrictions of the last 2 years. The organization evolved by offering hybrid meetings but was excited to start hosting in-person events again. The first event held in person was a Breakfast and Learn for Industries in the region in May. It was great to see so many people gathered.

2022 saw continued deployment of Purple Air micro-sensors throughout the region. These sensors were welcomed by our municipal members. These sensors complimented the data CRAZ already collected, reviewed and published. CRAZ looks forward to continuing this project with Environment and Climate Change Canada.

CRAZ worked with Alberta Environment and Protected Areas to lay the foundation for ensuring we could be ready to take over operations of the Airdrie monitoring station. Officially CRAZ assumed operations October 2022.

Even with challenges, I am proud of the staff, Board and everyone associated with CRAZ as we stayed committed to growing the organization and increasing the air quality initiatives, programs and services provided in the region.

It's taken the dedication of members, governments, industry and our staff to have such a successful year. I'm looking forward to 2023 and new horizons for the Airshed Zone.



### David Lawlor

*Chair*

*Calgary Region Airshed Zone*

Thank you to all the volunteers that sit on the Board and on committees. Your commitment to CRAZ is beyond value.

**IN-KIND HOURS**

**\$ VALUE**

**718.25**

**\$64,750.00**

# ABOUT CRAZ

Established in 2007, the Calgary Region Airshed Zone (CRAZ) provides comprehensive air quality service and representation to more than 40 municipalities, 200 industry members, and all provincial government agencies within a region of south-central Alberta that is home to more than 1.8 million Albertans.

In its 15-year history, CRAZ has established comprehensive baseline air quality data throughout the region for key air quality parameters and has acted on behalf of all residents within the Calgary Metropolitan Area to respond to mandatory management planning in response to elevated air quality levels.

## Strategic Goals



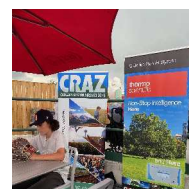
To identify, prioritize, and report on regional air quality issues to protect and improve air quality and human health



To operate science-based and trustworthy air quality monitoring throughout the CRAZ region to assure high-quality data



To develop, promote, deliver, and support programs to protect and improve regional air quality



Build awareness, understanding, and commitment to CRAZ



Develop diverse sources of funding

# Monitoring

CRAZ operates three continuous ambient air quality monitoring stations in the City of Calgary since 2008 on behalf of the Province of Alberta. On October 1, 2022, CRAZ assumed the operation of the Airdrie continuous air monitoring station. These stations are a part of the National Air Pollution Surveillance (NAPS) network across Canada. In addition, CRAZ's Portable Air Monitoring Laboratory (PAML) was deployed at the Field House in Aldersyde and Sunset Park in Chestermere, for a 6-month period at each location. The Air Quality Health Index (AQHI) is produced from data from all four permanent and one portable stations. The AQHI is available on the CRAZ website, Alberta's AQHI map website, or through Canada's WeatherCAN app.

Parameter	Airdrie	Calgary Inglewood	Calgary Southeast	Calgary Varsity	PAML
Sulphur dioxide (SO <sub>2</sub> )			•		
Oxides of nitrogen (NO <sub>x</sub> )	•	•	•	•	•
Nitric oxide (NO)	•	•	•	•	•
Nitrogen dioxide (NO <sub>2</sub> )	•	•	•	•	•
Respirable particulates (PM <sub>2.5</sub> )	•	•	•	•	•
Ozone (O <sub>3</sub> )	•	•	•	•	•
Non-methane hydrocarbons (NMHC)		•	•	•	
Methane (CH <sub>4</sub> )		•	•	•	
Hydrogen sulphide (H <sub>2</sub> S)			•		
Total hydrocarbons (THC)		•	•	•	
Carbon monoxide (CO)	•	•	•	•	
Wind speed and direction	•	•	•	•	•
Air temperature	•	•	•	•	•
Relative humidity	•	•	•	•	

CRAZ monitored the air quality at the four permanent continuous monitoring stations: Airdrie, Calgary Inglewood; Calgary Southeast; and Calgary Varsity. The PAML monitored the air quality at: Field House in Aldersyde; Sunset Park in Chestermere. CRAZ completed one full year air quality data collection through two 6-month increments at Aldersyde and Chestermere. Implementation of the CRAZ portable air monitoring program achieved the following objectives through the PAML deployments in the CRAZ region:

- Provide real-time information about air quality impacts on health based on the AQHI.
- Support CRAZ's long-term strategy for ambient air quality monitoring in its region.
- Help CRAZ stakeholders and members better understand air quality in CRAZ and what they can do to improve it.
- Provide transparent, open data for public use and scientific studies.
- Measure air quality in the areas that have little or no previous monitoring to address technical or geographical data gaps.
- Address some of the monitoring gaps identified by the regional network analysis that identified smaller urban centers should have continuous monitoring to assess emissions in relation to Alberta's Ambient Air Quality Objectives and to that in Calgary.

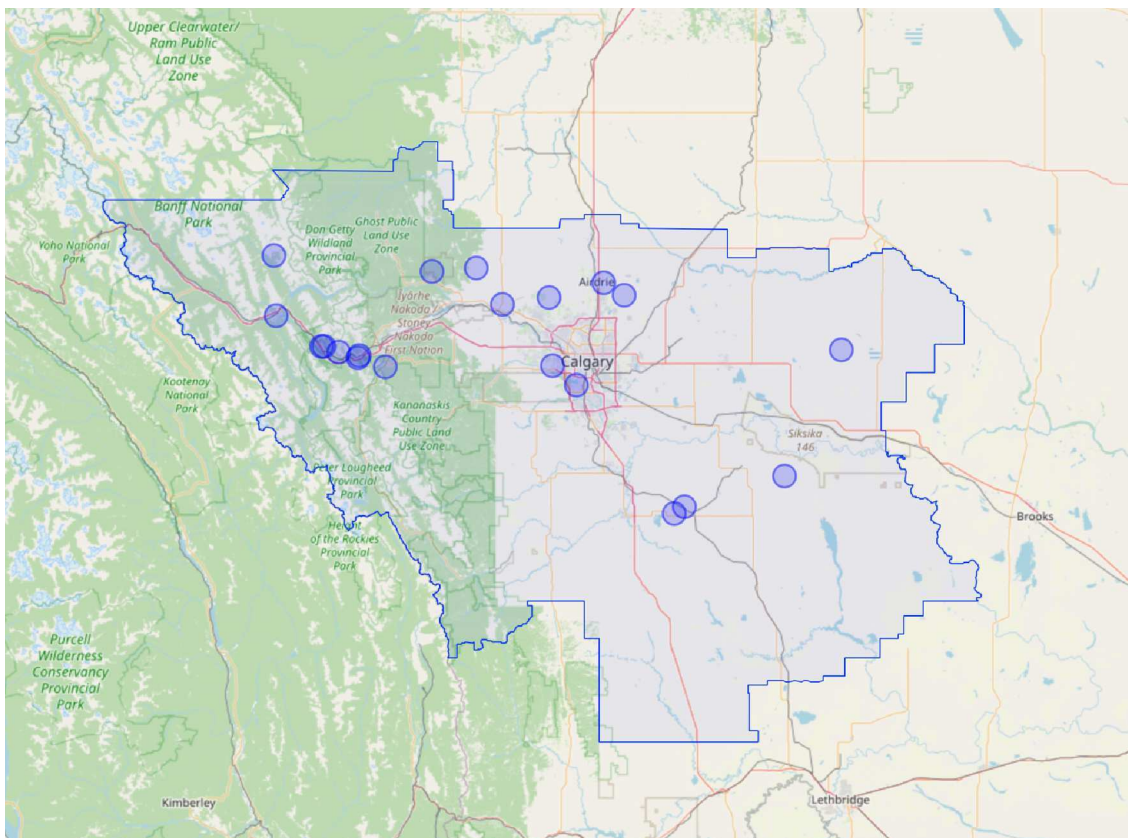
# Monitoring - Continued

CRAZ as a third party provides more transparency to the system as all data is reviewed by its Technical Committee comprised of experienced, knowledgeable trained personnel from CRAZ’s three sectors (government, industry, public/non-governmental agencies). Monthly data is checked by the Technical Committee at their meetings, posted on the CRAZ website, and submitted to the Alberta’s Air Data Warehouse. The stations undergo an audit yearly which is conducted by personnel from Alberta Environment & Protected Areas (EPA). This separation from the operation & management of the stations increased the validity and credibility of the data.

## Summary of Purple Air Monitors in CRAZ – 2022

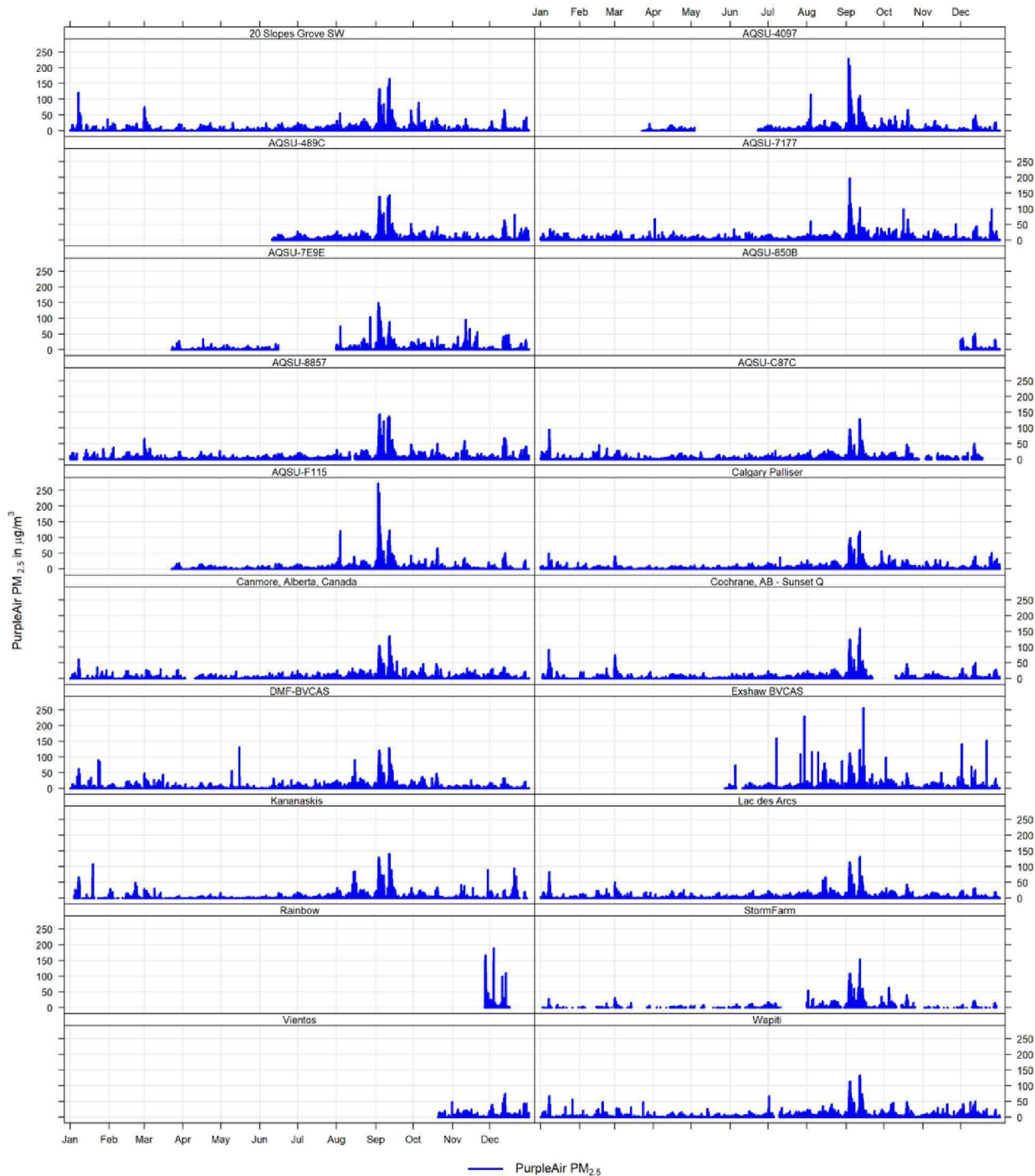
Purple Air monitors are air quality sensors designed to measure particulate matter (PM) levels in the atmosphere. They have gained significant popularity due to their affordability, ease of use, and widespread deployment by individuals, communities, and organizations. Purple Air monitors that are deployed in CRAZ monitor PM that is 2.5 microns or smaller in diameter, PM2.5. Figure 1 shows the Purple Air monitors that were operational in 2022 in the CRAZ region. Figure 2 shows the PM2.5 hourly average levels monitored at each site in 2022. Figure 3 shows the PM2.5 daily average levels monitored at each site in 2022.

Figure 1: Purple Air Monitoring Sites in CRAZ (2022)



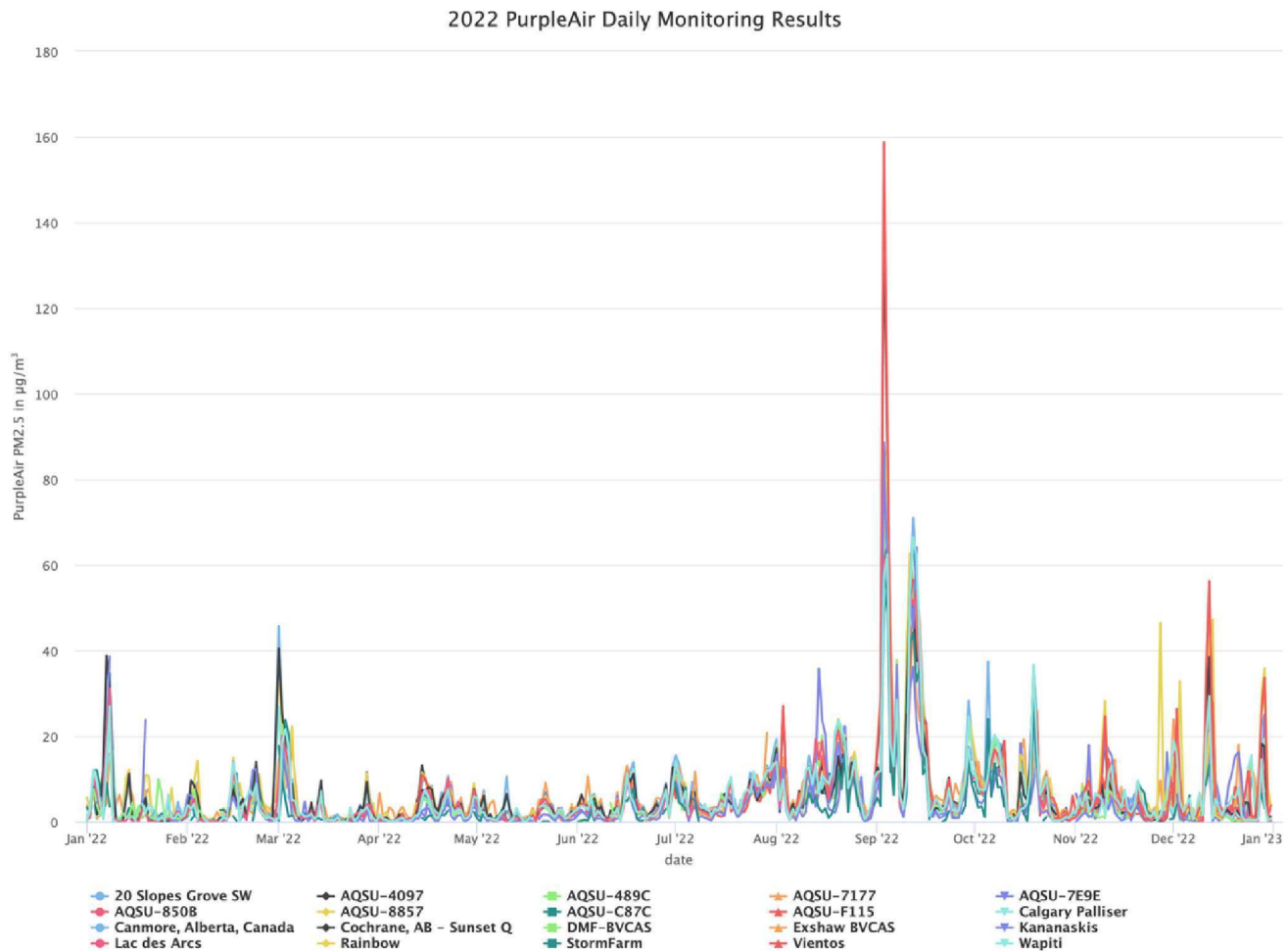
# Summary of Purple Air Monitors in CRAZ – Continued

Figure 2: PM<sub>2.5</sub> Hourly Averages in CRAZ (2022)



# Summary of Purple Air Monitors in CRAZ – Continued

Figure 3: PM2.5 Daily Averages in CRAZ (2022)



As observed in Figure 2 and Figure 3, elevated levels of PM2.5 were observed in September 2022 due to the wildfire smoke. The 1-hour average PM2.5 concentrations were observed to be lower than 250 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The 24-hour average PM2.5 levels remained under 160  $\mu\text{g}/\text{m}^3$ .

Purple Air monitors have emerged as valuable tools in monitoring and understanding air quality. Their affordability, easy deployment, and community involvement have democratized access to air quality data. While considering the inherent limitations, these monitors contribute to a more comprehensive assessment of air pollution, fostering community engagement, driving policy changes, and promoting healthier environments. Continued advancements and collaborations in this field are essential to enhance the accuracy and reliability of Purple Air monitors in the future.



# Committees

Members join various CRAZ committees and guide the organization's focus and prioritize actions that benefit the airshed. The networking, goal setting, data analyzing, education, and outreach planning are just a small section of what our committees accomplish in air quality management. Each committee outlined below is made up of representatives from government, industry, NGOs, and the public.



## POLICY AND RESEARCH

2022 was the year the Policy & Research Committee decided to revisit the committee's Terms of Reference. At the end of 2021, Alberta's Ministry of Energy released the Hydrogen Roadmap, a document in which the province outlines its intent to pivot the Alberta economy towards hydrogen development. The committee acknowledged that with new policy developments (provincially and federally), there may be opportunities for CRAZ to find ways of reaching the public and municipalities regarding air quality support. Linking air quality and climate change / adaptation on a municipal level, may strengthen our committee and those the committee serves. Efforts began and are continuing, to engage with the City of Calgary's climate adaptation group, and Foothills County. Conversations with Foothills County have led to discussions around air quality and the aggregate industry. CRAZ identified how the policy committee and our other working committees could support municipalities with aggregate producers within their boundaries, by advising on air policy development and ambient air quality monitoring.

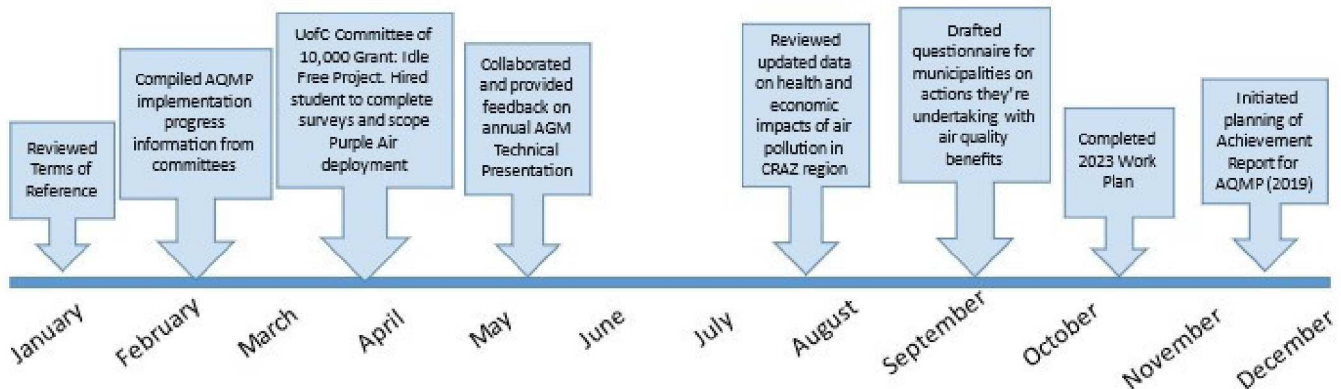
As governments of all levels continue to produce policy around "net zero", the Policy Committee requires more support. The committee is actively seeking student volunteers to support the committee with our ongoing efforts. CRAZ has reached out to universities, other airsheds and organizations (such as the Canadian Institute of Resources Law).

# Committees

## AIR QUALITY MANAGEMENT PLANNING

Annually, the Air Quality Management Planning (AQMP) Committee undertakes projects to implement and advance the CRAZ Air Quality Management Plan. In 2022, recurring annual work included compiling and tracking progress of CRAZ committees towards supporting AQMP steps and actions as well as providing support to CRAZ staff with an annual trend analysis for presentation at the Annual General Meeting. In addition, advancements were made on the University of Calgary Committee of 10,000 Student Union grant awarded to CRAZ in 2021. This project is aimed at identifying idling hot spots on campus and initiating an engagement campaign to reduce idling. Despite several setbacks and delays in getting purple air sensors installed on campus, a University of Calgary student was hired in 2022 to help undertake this project and key UofC representatives have been identified and contacted to facilitate the installation. This project is anticipated to continue through 2023. As well, the AQMP reviewed data and results specific to CRAZ census divisions from Health Canada’s 2021 Health Impacts of Air Pollution in Canada report. Finally, the committee began preparations for undertaking an Achievement Report, which included planning for review and revisions to the AQMP (2019) as well as compiling a survey directed at municipalities to understand initiatives with air quality benefits that are being undertaken. The AQMP will be reviewed and revised by the committee in 2023.

### *AQMP Committee - 2022 in Review*



# Committees

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## ENGAGEMENT

The purpose of the Engagement committee is to work with people who live and work in the airshed zone. To increase membership and understanding about the causes of air pollution and heighten awareness of the changes we can make to reduce air pollution.

2022 highlights include:

- 15th Anniversary celebration (Okotoks Dawgs)
- Increased awareness in local association newsletters and politician's media fronts.
- Disbursement of Air Quality Lesson Plans for schools in the CRAZ region
- Media event at High River PAML location
- Continued implementation of the Idle Free program at schools, with Inside Education, including tours, presentations and signage
- Member value videos
- Promotion of Wildfire Smoke Protocol Guide
- Completed odour workshop (lots of interest, very successful)

2023 plans include:

- City of Airdrie turn-key operation of that station and wrap contest with students
- Updating AQHI rack cards and spring distribution
- Spring media tours before wildfire season
- Online videos of Inglewood station and monitoring types (summer)
- Continue the Idle Free program and Grade 5 curriculum kits
- Researching Eco-driving campaign
- More member-directed workshops may be held (ex. Industry)
- Media events for PAML locations
- Continued social media, website and blog updates

## Smoke

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The Smoke committee was established in 2020, the role of the smoke committee is to work together in a multi-stakeholder capacity to create a guideline that organizations can utilize to create a healthy community during wildfire smoke events. This group's objective is to create a document/s that will provide education to members on wildfire smoke events in relation to human health. At the beginning of 2022 a draft copy of the Community Guide to Wildfire Smoke and Health: Health Effects and Exposure Reduction Resources was complete and the committee worked on the final edits. The Guide was approved by the committee and presented to the Board for information in May. Tanya Carlson, CRAZ Engagement Program Manager presented the Guide at the 2022 Annual General Meeting and distributed Guide to the communities in CRAZ and across social media platforms. The guide can be found at: <https://craz.ca/>. The committee reviews the Guide annually.

# Committees

## TECHNICAL

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### Highlights of 2022

1. Generation of AQHI for temporary sites monitored by Portable Air Monitoring Laboratory (PAML)
2. Completion of one full year air quality data collection at Aldersyde and Chestermere
3. EPA's PAML deployed at Highwood Spray Park in High River

The Technical Committee continued to provide oversight to four permanent and one portable continuous air quality monitoring stations that CRAZ operates. Additionally, in December 2022, CRAZ deployed Alberta Environment and Protected Areas (EPA) PAML at the Highwood Spray Park in High River to support its 5-year monitoring plan in Alberta.

CRAZ worked with the Aldersyde Field House, the Town of Chestermere, and the Town of High River for the deployments of the PAML and appreciated all the efforts the staff contributed to this project. The CRAZ PAML monitored the air quality at: regional field house in Aldersyde; Sunset Park in Chestermere. Parameters measured by the PAML included: NO<sub>x</sub>, NO<sub>2</sub>, NO, O<sub>3</sub>, PM<sub>2.5</sub>, ambient temperature, and wind speed and wind direction. The EPA's PAML monitored the air quality at the Highwood Spray Park in High River and the monitored parameters included: NO<sub>x</sub>, NO<sub>2</sub>, NO, O<sub>3</sub>, PM<sub>2.5</sub>, TRS, ambient temperature, and wind speed and wind direction. Mandeep Dhaliwal, Air Quality Program Manager worked with EPA to be able to generate the Air Quality Health Index (AQHI) for three sites from the data that both PAML's equipment generated. The AQHI was available through CRAZ website and Alberta's AQHI map website.

To view PAML monitoring reports:

<https://craz.ca/documents/#Documents%2FAir-Quality->

The committee has many members that bring a wealth of experience, knowledge, skills, and resources to the table. The time they give to CRAZ is very much appreciated.

## Strategic Implementation

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The Strategic Implementation committee was created at the end of 2021. The Terms of Reference were developed in 2022 and presented and approved by the Board in February. The purpose of this committee is:

- To develop specific actions/tasks/recommendations for the organization to implement from the Strategic plan.
- To focus on membership for the organization, including attracting new members, retention of current members, and increasing awareness of CRAZ in the region.
- To advise the Board on the implementation of the Strategic Plan, or as otherwise directed by the Board.

The committee set out to research new potential members of CRAZ and committee created a Benefits of Membership package. This package defines what CRAZ can offer new members and current members. An industry meeting was held and discussed the funding formula and all attendees approved of the current formula.

Our members help drive the focus of our organization and we strive to build our membership to create an airshed that protects air quality together. For more membership information, visit: [membership](#)

# Committees

## FINANCE

The Finance committee continues to keep a close watch on the organization’s financial health. We do a quarterly review of our cash flow and will report any concerns to the Board.

The 2022 Audit was conducted by the Federation of Calgary Communities and was a clean Audit. It did however note that the current financial situation is most likely not sustainable.

2022 continued to challenge the organization as our largest Municipal member reduced the membership fee paid to CRAZ by 40%. This continues to impact our programs and services and could result in reducing our staff levels. The Finance committee, Executive Director, and the Board continues to endeavour to keep expenses as low as possible while still delivering programs and services.

The Provincial Government provides funds via a 4-year operational grant. The certainty of this amount provides CRAZ with the ability to plan for future years.

The organization continues to focus on sustainability which includes increasing our membership as well as securing additional funding for programs. This work is continuous, but the support of the current members, staff, and board is evident.

Contracts	\$278,025
Grants	\$130,000
Membership Fees	\$120,061
Bay Rent	\$20,453
Sponsorship	\$10,500
Interest	\$623
Community Support	\$1,663
Program	\$1,040
<b>Total Revenue</b>	<b>\$562,365</b>
Air Quality Monitoring	\$241,899
Engagement/Education/Outreach	\$15,673
Staffing	\$239,204
Governance	\$27,074
Administration	\$50,938
<b>Total Expenses</b>	<b>\$574,788</b>



# Committees

## Thank you to all CRAZ committee members

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### Policy and Research:

Judy Stewart (Chair, Jan-June, public), Carolyn Carruthers (Chair, June - present, SLR Consulting), Emily Traxel (EPA), Austin Weleschuk (City of Calgary), Caitlin Van Gaal (Town of Canmore), Sheri Young (Town of Okotoks), Jennifer Koole (Rocky View County), Lisa Neville (RWDI), Priyal Suryawala (RWDI), Suzanne Oel (Foothills County), Wade Gieni (Stantec), Jordon Copping (CMRB)

### Air Quality Management Planning:

Emily Traxel (Chair, Jan - May, EPA), Frauke Spurrell (Chair, EPA), Renee Howard (Chair, Sept-present, EPA), Austin Weleschuk (City of Calgary), Nicole Tomes (Town of Cochrane), Jim Shorey (CD Nova), Yan Wong (Millennium EMS), Alison Weeks (Signalta)

### Engagement:

Nicole Thomas (Chair, Heidelberg Materials), Lindsay Lahnau (City of Calgary), Elise Chamberland (Lafarge), Ken Donnelly (Volunteer), Jim Shorey (CD Nova), Ted Sutton (Public), Paul Ryan (Public), Cynthia Wannamaker (Town of Claresholm), Cody Field (City of Calgary)

### Smoke:

Dan Hartmann (Foothills County), Lynn Que (Alberta Health Services), Clint Goodman (City of Airdrie), Annie MacNeil (Parks Canada), Kelsey Eade (Parks Canada), Alexandria Jones (Parks Canada), Elise Chamberland (Lafarge), Geraldine Sawyer (Indigenous Services Canada), Caitlin Van Gaal (Town of Canmore), Nailish Samanani (Millennium EMS), Jim Shorey (CD Nova), Ted Sutton (Public), Darcy Coombs (Bow Valley Clean Air Society), Colleen Wanner (RWDI)

### Strategic Implementation:

Jonathan Moser (Chair, Public), Shane Adam (ENMAX), Ted Sutton (Public), Paul Ryan (Public), Jen Silverthorn (City of Calgary), David Lawlor (Public), Jim Shorey (CD Nova), Ruth Goodwin (Public), Mike Eddy (Public), Heather Sinton (Public)

### Technical:

Shane Adam (Chair, ENMAX), Frauke Spurrell (EPA), Gagandeep Khalsa (EPA), Mike Eddy (Public), Shawn Miner (Public), Austin Weleschuk (City of Calgary), Craig Knaus (EPA), Darcy Coombs (Bow Valley Clean Air Society), Charles Grimm (Suncor), Ankur Sharma (WSP), Piotr Staniaszek (AECOM), Qamar Iqbal (SLR Consulting), Caitlin Van Gaal (Town of Canmore), Tiffany Wei (EPA), Marty Collins (EPA), Lannie Anderson (CEMA), Patrick Andersen (Andersen Science), Jeff Cooper (WSP), Lenin Flores (WSP)

### Finance:

Paul Ryan (Public), Ted Sutton (Public)



**Thank you!**

# EVENTS AND SPONSORS

## 15TH ANNIVERSARY

CRAZ was happy to celebrate 15 years of air quality monitoring on June 19th, 2022 at the Okotoks Dawgs game! Attendees had lot's of fun in the sun. Thank you to CD Nova for sponsoring the event!



## CRAZ AGM

Annually CRAZ members are excited to meet up at Ralph Klein Park, this year on June 7th, 2022. Presentations on: Air Quality Data - Mandeep Dhaliwal (CRAZ), Air Quality Management Toolkit: For Municipalities – Judy Stewart (CRAZ Policy and Research Committee), Community Guide to Wildfire Smoke -Tanya Carlson (CRAZ), Natural Assets and Valuation of Ecosystems Services - Sheri Young, Climate Change and Energy Specialist (Town of Okotoks). Presentation can be found:

<https://craz.ca/documents/#Documents%2FPresentations%2F2022%20AGM>

Thank you to Lafarge for sponsoring the 2022 CRAZ AGM



**BUILDING PROGRESS FOR  
PEOPLE AND THE PLANET.**

## ENVIRONMENTAL SOCIAL GOVERNANCE

CRAZ held a workshop on Environmental Social Governance with guest speaker Jonathan Moser, Senior Vice President & ESG Practice Lead, Rubicon Strategy Inc

Thank you to AGAT Laboratories for sponsoring the ESG workshop!



## ODOUR WORKSHOP

The odour workshop was held on November 22nd, 2022 at Genesis Place in Airdrie. Presentations on:

The WBEA's Community Monitoring Program  
Odour Management at the Edmonton Waste Management Center Approval and Compliance Processes - Natural Resources Conservation Board

Odour Complaints - Nuisance and Others - Alberta Environment and Protected Areas

On-Farm Composting - Recycling Council of Alberta

Presentation slide decks can be found:

<https://craz.ca/documents/#Documents%2FPresentations%2FOdour%20Workshop%20-%202022>



Thank you to the City of Airdrie for sponsoring the Odour Workshop!

## Board

CRAZ Board of Directors consists of 5 Industry members, 5 NGO/Public, and 6 Government bodies (AEP, AHS, AER, City of Calgary, and a rural/small urban rep). Directors hold a two-year position, and each sector agrees as a group to put a representative forward for voting at the Annual General Meeting. Being a member of the Board allows members to shape the strategic direction of CRAZ and advance action on priorities in air quality management.

David Lawlor, Chair, Public member  
 Jen Silverthorn, Vice Chair City of Calgary  
 Ted Sutton, Secretary, Public member  
 Paul Ryan, Treasurer Public, member  
 Frauke Spurrell, Alberta Environment and Parks  
 Janice Gallwey, AGAT  
 Cailee Ellis, Lafarge Canada Ltd. (till November 2022)  
 Darcy Coombs, BVCAS  
 Helen Fu, Pieridae Energy (till June 2022)

Toofan Ostovar, Graymont (November 2022 - present)  
 Lynn Que, Alberta Health Services  
 Nicole Thomas, Lehigh Hanson  
 Sean Dawson, Public member  
 Shane Adam, ENMAX  
 Julie McLean, Foothills County (June 2022-present)  
 Sheri Young, Town of Okotoks (June 2022-present)  
 Nicole Tomes, Town of Cochrane (June 2022-present)



## Members

Our members help lead our path in creating a vision to have great air quality in our region.

Alberta Energy Regulator	ENMAX	Paul Ryan
AGAT Laboratories	Foothills County	Process Ecology
Alberta Environment and Protected Areas	Graymont Western Canada	Rocky View County
Alberta Health Services	Heather Sinton	RWDI
Baymag	Jonathan Moser	Sean Dawson
Biosphere Institute	Lafarge	Signalta Resources
B & J Stewart	Lehigh Hanson	SLR Consulting
Bow Valley Clean Air Society	Metis Nation of AB Region 3	Spray Lakes Sawmills
Caledonian Midstream	MD Bighorn	Stella Jones Canada
Calgary District Heating	Mike Eddy	Ted Sutton
Canada Malting	Millennium EMS	Town of Banff
CD Nova	Noreen Irvine	Town of Black Diamond
Cochrane Environmental Action Committee	Nova Gas Transmission - TC	Town of Canmore
Chloe Cartwright	Energy	Town of Claresholm
City of Airdrie	Nutrien	Town of Cochrane
City of Calgary	Orica	Town of High River
Cochrane Extraction - InterPipeline	Pieridae Energy	Town of Okotoks
David Lawlor	Parks Canada	Vulcan County
		West Coast Reductions

### Welcome new members

Baymag	Nova Gas Transmission	Signalta Resources
Calgary District Heating	(TC Energy)	SLR Consulting
Heather Sinton	Process Energy	Town of Claresholm
Jonathan Moser	Rocky View County	



# CONTACT US

## Calgary Region Airshed Zone

A13 6120 2nd St SE  
Calgary, Alberta T2H 1K4  
Canada

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## Website

[www.craz.ca](http://www.craz.ca)

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## Staff

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Executive Director  
[jill.bloor@craz.ca](mailto:jill.bloor@craz.ca)

Mandeep Dhaliwal  
Air Quality Program Manager  
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Tanya Carlson  
Engagement Program Manager  
[tanya.carlson@craz.ca](mailto:tanya.carlson@craz.ca)

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## Social Media

[@calgaryairshed](https://www.instagram.com/calgaryairshed)

