Board Meeting

September 13, 2017

Federal Building – Edmonton

9820-107 Street

Memorandum

9915 108 ST, 1400
EDMONTON AB T5K 2G8
CANADA

Ph (780) 427-9793
E-mail casa@casahome.org
Web www.casahome.org

Date: **August 30, 2017**

From: **Andre Asselin, Executive Director**

To: **CASA Directors & Alternates**

Subject: **CASA Board Meeting – September 13, 2017**

Attached are the draft agenda and briefing materials for the next meeting of the CASA Board of Directors, which is scheduled from **9:00am to 2:45pm** on Wednesday, September 13, 2017. Please feel free to make the information available to any members of your sector who need to review the material. The Caucus meetings will be held from **8:00am to 9:00am**. The meeting will be held at:

Edmonton Federal Building
Windsor Room
9820 107 Street
Edmonton, Alberta T5K 1E7

You will need to provide photo identification at the security desk on the main floor of the Federal Building when you arrive. The security desk is up the stairs at the far end of the main floor when you enter the main (west facing) doors. A continental breakfast will be available outside the Windsor Room, starting at 7:30 a.m. We have allocated time for broad categories to caucus immediately prior to the meeting and rooms have been booked for this purpose

CAUCUS MEETINGS

- **Industry Caucus – 11001 Room (11th Floor)**
- **ENGO Caucus – York Room (10th floor)**
- **Government Caucus – Windsor Room (10th Floor)**

Kindly respond to the meeting invitation sent by Cara McInnis no later than **Tuesday August 5th**. We look forward to seeing you at the meeting. If you have any questions or require additional information, please contact me or Cara at cmcinnis@casahome.net.

Sincerely,

Andre Asselin
Executive Director
Clean Air Strategic Alliance
780-644-7381

Logistical Information
Federal Building
9820 107 Street
Edmonton

The Federal Building is located on 107 Street in the Legislative Assembly of Alberta Grounds. The main entrance faces west, through the glass doors facing Capital Plaza. A wider-angle map is also provided below.

Parking and Public Transit

The map below shows the location of nearby parking and public transit availability. The Federal Building is in walking distance of both the Grandin Station/Government Centre, and Corona LRT stops. The ETS Trip Planner can assist you if you choose to take the bus.
http://etstripplanner.edmonton.ca/PlanYourTrip.aspx

Legislative Assembly of Alberta Grounds Map

Alberta Legislature Building: 10800 - 97 Avenue Edmonton, AB
Legislature Information Line: 780.427.2826
Legislative Assembly Visitor Centre: Edmonton Federal Building | 9820 - 107 Street, Edmonton, AB
Visitor Services: 780.427.7362 | assembly.ab.ca

Accommodations

The Federal Building is located in downtown Edmonton. Some hotels close to the venue are listed below. Members are responsible to book their own accommodations.

Some suggested downtown hotels:

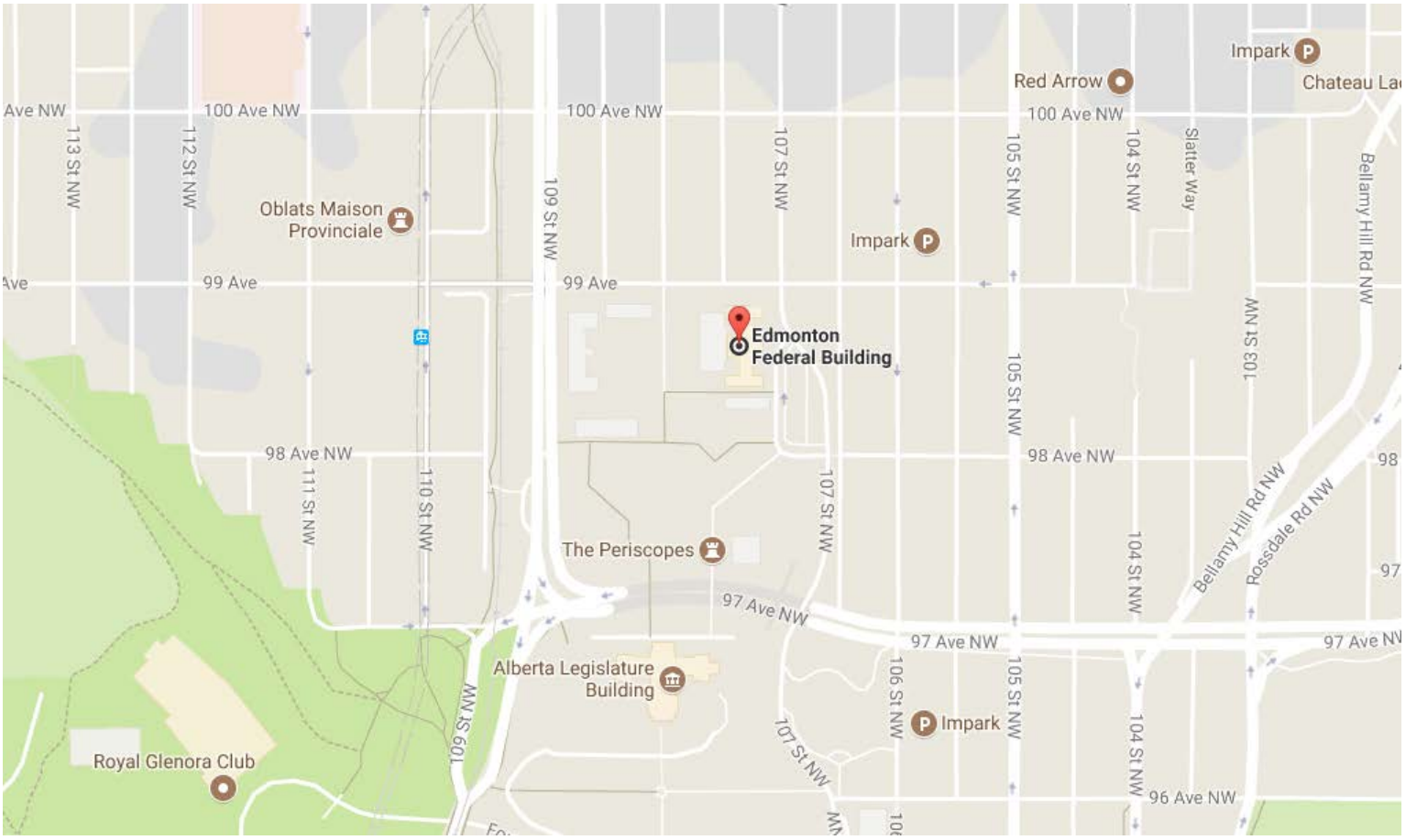
- Days Inn Edmonton Downtown
  10041 106 Street
  780-423-1925
  http://www.daysinn.com

- Comfort Inn & Suites
  10425 100 Avenue
  1-888-384-6835
  http://www.comfortinnedmonton.com/

- Holiday Inn Express Downtown
  10010 104 Street
  780-423-2450
  http://www.hiexdowntown.com/
  Red Arrow operates from this hotel

- Coast Edmonton Plaza Hotel
  10155 105 Street
  780-423-4811
  http://www.coasthotels.com/hotels/alberta/edmonton/coast-edmonton-plaza-hotel/

Wide-Angle Map



Acronyms Commonly Used by the Clean Air Strategic Alliance

AAC	Alberta Airsheds Council
AAF	Alberta Agriculture and Forestry
AAAQO	Alberta Ambient Air Quality Objectives
ACAA	Alberta Capital Airshed Alliance
ADM	Assistant Deputy Minister
AEN	Alberta Environmental Network
AEP	Alberta Environment and Parks
AEPEA	Alberta Environmental Protection and Enhancement Act
AER	Alberta Energy Regulator
AHS	Alberta Health Services
AMD	Air Monitoring Directive
AMSP	Ambient Monitoring Strategic Planning
AOPA	Agricultural Operation Practices Act
AQI	Air Quality Index
AQHI	Air Quality Health Index
AQMS	Air Quality Management System
ARIES	Alberta Regional Inventory Emissions System
AUC	Alberta Utility Commission
AWC	Alberta Water Council
AWN	Alberta Wilderness Network
AZBC	Airshed Zones Board Committee
BATEA	Best Available Technology (or Treatment) Economically Achievable
BLIERS	Base-level Industrial Emission Requirements
BPC	Business Planning Committee
C3	Climate Change Central
CAMS	Comprehensive Air Quality Management System
CAPP	Canadian Association of Petroleum Producers
CARA	Clean Air Regulatory Agenda
CAS	Clean Air Strategy
CC	Communications Committee
CCS	Carbon Capture and Storage
CCME	Canadian Council of Ministers of the Environment
CEMA	Cumulative Environmental Management Association

CEN	Canadian Environmental Network
CEPA	Canadian Environmental Protection Act
CFO	Confined Feeding Operations
CRAZ	Calgary Region Airshed Zone
CDW	CASA Data Warehouse
DoE	Department of Energy
EEC(F)	Energy Efficiency and Conservation (Framework)
EECA	Energy Efficiency and Conservation Act (*also* Authority)
EFR	Electricity Framework Review
EPT	Electricity Project Team
EXEC	Executive Committee
F&V	Flaring and Venting
FAP	Fort Air Partnership
FVPT	Flaring and Venting Team
GHG	Greenhouse Gases
GoA OR GOA	Government of Alberta
HAHT	Human and Animal Health Implementation Team
I&T	Alberta Infrastructure and Transportation
IAFE	Institute for Agriculture, Forestry and the Environment
IAQ	Indoor Air Quality
IUAPPA	International Union of Air Pollution Prevention and Environmental Protection Association
JSC	CASA and Alberta Airsheds Council Joint Standing Committee
LICA	Lakeland Industry and Community Association
LUF	Land Use Framework
MKLW *OR* MLW	Martha Kostuch Legacy Workshop
MRP	Media Relations Rating Points system
NPS	Non-point source
OSC	Ambient Operations Steering Committee
PAMZ	Parkland Airshed Management Zone
PAS	Palliser Airshed Society
PAMZ	Parkland Airshed Management Zone
PAZA	Peace Airshed Zone Associaton

PGC	Procedural Guidelines Committee
PM	Project Manager
PM & O_3 *OR* PMO	Particulate Matter & Ozone
PMC/S	Performance Measures Committee /Subcommittee
PSW	Priority Setting Workshop (for Ambient Objectives)
PSWC *OR* PSC	Priority Setting Workshop Committee
RAPID	Residents for Accountability in Power Industry Development
RE	Renewable sources of Energy
RE&A (REA)	Renewable and Alternative sources of Energy
RHA	Regional Health Authority
SFC	Strategic Foresight Committee
SoO	Statement of Opportunity
SRR	Substance Release Regulation
VET	Vehicle Emissions Team
VET	Vehicle Emissions Team
VOCs	Volatile Organic Compounds
WBEA	Wood Buffalo Environmental Association
WCAS	West Central Airshed Society
WCC	Water Council Collaboration
WPAC	Watershed Planning and Advisory Council
ZIC	Zones Issues Committee

Clean Air Strategic Alliance Board Meeting Agenda
September 13, 2017

Edmonton Federal Building – Windsor Room (10th Floor)
9820 107 Street
Edmonton, Alberta T5K 1E7

7:30		Breakfast available outside of the Windsor Room
8:00 – 9:00		**Caucus Meetings** Government – Windsor Room (10th Floor) Industry – 11001 Room (11th Floor) NGO – York Room (10th Floor)
	1.0	**ADMINISTRATION**
9:00 – 9:05	**1.1**	**Convene Business Meeting and Approve Agenda** *Approve agenda*
9:05 – 9:10	**1.2**	**Review Action Items and Approve Minutes from June 14, 2017** *Review actions and approve minutes*
9:10 – 9:15	**1.3**	**New Representatives** *Introduce and welcome new CASA board members*
9:15 – 9:30	**1.4**	**Executive Director's Report** *Receive a report on secretariat activities, CASA/AWC amalgamation, income and expense statements, budget update*
9:30 – 9:35	**1.5**	**Change in Signing Officer, Board Secretary Treasurer** *Receive the report of directors approving changes in signing officer and the board's secretary and treasurer*
	2.0	**Project Management & Strategic Planning**
9:35 – 9:55	**2.1**	**Ambient Air Quality Objectives Committee Update** *Receive an update and approve a Terms of Reference from the AAQO Committee*
9:55 –10:15	**2.2**	**Non-Point Source Project Team** *Receive an update from the Non-Point Source Project Team and approve extending the timelines of the project charter*
10:15 – 10:30		**BREAK**

10:30 – 11:00	**2.3**	**Strategic Planning Discussion** *Discuss the approach to develop CASA's next multi-year strategic plan and potentially strike a steering committee*
11:00 – 11:45	**2.4**	**Statements of Opportunity** *Receive presentations on two Statements of Opportunity, consider approving them as new work and launch one working group*
11:45 – 12:00	**2.5**	**Performance Measures Committee** *Receive and approve the Performance Measures Report*
12:00 – 1:00		**LUNCH (provided)**
1:00 – 2:00	**2.6**	**Environmental Monitoring and Science Presentation** *Receive an update on EMSD's work from Dr. Fred Wrona*
2:00 – 2:15	**2.7**	**Update on Alberta Airsheds Council** *Receive an update on the CASA/Airsheds Council MOU*
	3.0	**NEW/OTHER BUSINESS**
2:15 – 2:30	**3.1**	**New/Other Business** *Introduce new business and/or complete any unfinished business of the day*
2:30 – 2:45	**3.2**	**Evaluation Forms** *Provide time for board members to fill out the board meeting evaluation forms*
		ADJOURN

CASA Board of Directors Meeting

June 14, 2017, Calgary, Alberta

In attendance:

CASA Board Members and Alternates:

Ann Baran, NGO Rural
Bill Calder, NGO Urban
Carolyn Kolebaba, Local Government-Rural
Claude Chamberland, Oil and Gas Large Producers
Dan Thillman, Mining
David Spink, NGO Urban
Greg Moffatt, Chemical Manufacturers
Jim Hackett, Utilities
Martin Van Olst, Federal Government
Ronda Goulden, Provincial Government-Environment (for Andre Corbould)
Rich Smith, Agriculture
Ruth Yanor, NGO Industrial
Terry Rowat, Chemical Manufacturers
Wayne Ungstad, NGO Rural
Keith Denman, CASA Executive Director

CASA Secretariat:

Matthew Dance, Katie Duffett, Cara McInnis, Kim Sanderson

Guests:

Andre Asselin, Alberta Water Council
Karla Reesor, Alberta Airsheds Council
Sharon Willianen, Alberta Environment and Parks

Presenters:

Keith Denman, *Executive Director's Report* (Item 1.4); *System Mapping Exercise* (Item 2.3); *Performance Measures Committee* (Item 2.5); *2016 Annual Report* (Item 2.6); CASA/*Alberta Airsheds Council Update* (Item 2.7)
Rhonda Lee Curran and Alison Miller, *Non-Point Source Project Team* (Item 2.1)
David Spink, *Ambient Air Quality Objectives Committee* (Item 2.2)
Ronda Goulden, *Future CASA Work* (Item 2.4)
Karla Reesor, *CASA/Alberta Airsheds Council Update* (Item 2.7)

Regrets:

Ahmed Idriss, Utilities
Andre Corbould, Provincial Government-Environment
Andrew Read, NGO Industrial
Brian Ahearn, Petroleum Products
Brian Gilliland, Forestry
Cheryl Baraniecki, Federal Government
Chris Shandro, Provincial Government-Health
David Lawlor, Alternate Energy
Dawn Friesen, Provincial Government-Health
Holly Johnson-Rattlesnake, Aboriginal Government-First Nations
Humphrey Banack, Agriculture
Keith Murray, Forestry
Koray Önder, Oil and Gas Large Producers
Leigh Allard, NGO Health
Mary Onukem, Aboriginal Government-Métis
Peter Noble, Petroleum Products
Rick Blackwood, Provincial Government-Environment
Rob Beleutz, Mining
Scott Wilson, NGO, Consumer
Stacey Schorr, Provincial Government-Energy
Wade Clark, Provincial Government-Energy

Clean Air Strategic Alliance
Board of Directors Meeting
June 14, 2017

Executive Summary

The 2017 AGM was held immediately prior to this board meeting. At this board meeting, one new director and one new alternate were named: Stacey Schorr representing Provincial Government-Energy, and Chris Shandro representing Provincial Government-Health. The CASA office move to 14th floor South Petroleum Plaza is complete and went smoothly. No decision on a joint Executive Director for CASA and the Water Council had been announced by the time of this meeting.

Alberta Environment and Parks (AEP) advised that work related to ambient monitoring and the use of air quality data would be done in-house rather than through CASA. Dr. Fred Wrona, chief scientist with the Monitoring and Science Division, is expected to meet with the board in September to provide more insight into this approach and discuss any possible role for CASA. (This has not yet been confirmed)

The Non-Point Source Project Team presented its 17 draft recommendation themes in eight areas, with a focus on mobile sources. The team expects to complete its work this year but elements of the project are viewed as being a starting point. Not all non-point sources have associated draft recommendations and further work is needed in some areas. Next steps include finalizing the report and recommendations and completing the stakeholder engagement.

The board heard updates in several areas:

- The Ambient Air Quality Objectives (AAQO) Committee is focusing on five priority parameters: $PM_{2.5}$, ozone, SO_2, NO_2 and H_2S/TRS. The committee will report to the board in September with draft terms of reference.
- Follow-up on the recent systems mapping exercise continues, with the intent of having a product ready for board review in September.
- The 2016 performance measures assessment is nearly complete and will be presented at the September board meeting. The 2017 review will start in the fall.
- The 2016 CASA annual report is almost ready for final review and signoff by the executive, following which it will undergo design and be distributed electronically.
- Efforts continue between CASA and the Airsheds Council to clarify the role of CASA in endorsing new airsheds. The board will likely consider this matter further at a future meeting pending receipt of more information from AEP regarding its expectations and plans related to airsheds.

AEP indicated it sees the value of CASA and is considering proposing a project at the September board meeting that would build on the AAQO initiative to look at how to deal with non-attainment and manage tensions as airshed capacity becomes strained over the longer term.

The next CASA board meeting will be September 13, 2017 in Edmonton.

Clean Air Strategic Alliance

Board of Directors Meeting
June 14, 2017

Minutes

Ronda Goulden convened the meeting at 10:00 a.m.

1 Administration

1.1 Approve Agenda

Ronda Goulden reviewed the agenda which was approved as distributed.

1.2 Minutes and Action Items from March 15, 2017

Andrew Read will be the alternate for NGO-Industrial, not NGO-Urban. With this amendment to the Executive Summary, the minutes of the March 15, 2017 meeting were approved.

The action item log was updated:

Action items	Meeting	Status
3.1 – CASA Priorities – IRMS Roadmap Secretariat will work with stakeholders to initiate an IRMS Roadmap working group and develop a Project Charter, to be presented to the board in September or December 2015.	June 17, 2015	Deleted; no longer applicable.
2.1 – State of the Air discussion The Secretariat will organize a meeting or workshop with board members and others once the climate change report is released.	Sept. 17, 2015	Deleted; no longer applicable, but could be brought forward again in future.
2.2 – CASA 2.0 Keith Denman will approach the Water Council to test interest in a possible joint initiative on a municipal environmental tool kit, and will begin a conversation with municipalities about their issues and the potential value of a tool kit to them.	Dec. 8, 2016	Ongoing. Keith has talked with various municipalities and was advised it would be prudent to wait until work on the revised MGA is complete before resuming conversations in early fall.
2.2 – CASA 2.0 The Secretariat will circulate a call for board members to help scope out work to be done on the AMSP topic, including how air quality data is used.	Dec. 8, 2016	AEP advised that this work will be done internally in the Monitoring and Science group and sent out for expert review. This group has a statutory obligation to report on the state of the environment. Funding is also a key element, as monitoring needs far exceed the funds available. Some stakeholder feedback may be sought in 2018. The board discussed whether it would be appropriate to send a letter to the Deputy Minister requesting clarification and

Action items	Meeting	Status
		rationale as to why CASA or a CASA-like process is not being used, since that was a recommendation from the previous CASA team. Board members felt strongly that stakeholder input should be sought in a timely manner. Dr. Fred Wrona is being invited to the September board meeting to provide an update and to receive input from board members. It may be possible to also invite additional experts to participate in this discussion. The board agreed to discuss this item with Dr. Wrona in September and revisit any action after the presentation if necessary.
1.2 – Minutes & Action Items The government mission analysis will be brought to the CASA board once it's been approved by the minister.	Mar. 15, 2017	Complete. The mission analysis is an internal document but the public version of this information is available in the now-published Business Plan.
2.1 – Non-point Source Katie Duffett will provide the board with a list of project team members and the list of key stakeholders identified to date.	Mar. 15, 2017	Complete
2.2 – Non-point Source Board members to provide any additional stakeholders for the communications workshop to Katie Duffett.	Mar. 15, 2017	Complete
2.3 – Non-point Source Katie Duffett will make the Technical Task Group report on non-point sources available to the board.	Mar. 15, 2017	Complete

1.3 New Representatives

One new director and one new alternate are joining the board: Stacey Schorr is the director representing Provincial Government-Energy, and Chris Shandro is the alternate representing Provincial Government-Health. Biographical information was distributed at the meeting.

1.4 Executive Director's Report and Financial Statements

Keith Denman directed the board to his report in the briefing book and briefly spoke to items that will not receive specific attention in other parts of the meeting. The Secretariat has completed the move to the 14th floor of South Petroleum Plaza, sharing space with the Alberta Water Council (AWC). The move went smoothly and Keith thanked the CASA and AWC staff as well as the GoA facilities staff for their help. A small problem remains with the switchboard menu on the

phones, but that is expected to be addressed with technical upgrades next year. The next step will be to streamline operations, some of which will be the responsibility of the new joint Executive Director who has yet to be announced. Keith reminded the board that both CASA and the AWC will continue as two independent organizations with their own boards, bylaws, and budgets. They will be looking at options for sharing equipment as leases expire. To date, there has been no discussion about merging the two organizations. CASA has some funds carried over from prior years. AEP has indicated the grant funding for about $650,000 is in place for this year, but CASA has not yet received funds. The budget will be refined as work plans and shared operations with the Water Council are clarified. It will be important to ensure cost efficiencies and cost effectiveness as the next stages proceed.

2 Updates

2.1 Non-Point Source Project Team

Team co-chairs Rhonda Lee Curran and Alison Miller presented an update on the NPS work, with reference to handouts of their slides and to the briefing book materials. The team is on track to complete its work this year, having expended considerable effort to identify the NPS opportunities where the most value could be added. This work is viewed as a starting point and not all NPS have associated draft recommendations. Rhonda Lee and Alison presented the eight main areas in which 17 draft recommendation themes are being considered, and described the background and rationale for each theme area. The main focus was on mobile emission sources (on-road light duty and heavy duty vehicles). Next steps will be to finalize the recommendations and complete stakeholder engagement, continue drafting the final report for presentation at the September board meeting, and continue ongoing communications with the board and others about the project and the recommendations.

Discussion

- Firewood is not now covered by a carbon tax. As taxes rise on other fuels, are people likely to move to firewood?
    - We are aware of the wood-burning issue and that will be presented as context in the report and recommendations. The intent is to target masonry fireplaces, which have much higher emissions than wood stoves. The Building Code does not permit homes to be built with only wood as the heating fuel.
- We see companies with SmartWay branding on their vehicles; as part of the team's recommendations, will government be encouraged to create incentives for companies to adopt this program?
    - The SmartWay program is voluntary. SmartWay members can be used preferentially, but tampering also needs to be addressed. An emissions testing study is intended to identify the highest emitting vehicles and further management action can be taken to target those rather than all vehicles.
- Are high efficiency internal combustion engine vehicles also considered in the transportation recommendations?
    - In addition to increasing uptake of hybrids and electric vehicles, we will acknowledge in the report that newer gas vehicles are much more efficient than older models.
- Tampering occurs when technology does not work as it is intended and expected to work. As truck fleets are modernized, this problem will be solved.

- In addition to wood-burning sources, some facilities burn other fuels such as used oil, and this creates local air quality issues. There may be an opportunity to look at these too.
- Is there any obligation for private owners of heavy duty vehicles to follow the recommendation (e.g., agricultural vehicles)?
    - They are not excluded from the recommendations, but the focus is on future model year vehicles. As owners invest in new equipment over time, we expect to see improvements.
- There can be local issues where dust results from an acceptable industrial activity but drifts beyond the boundaries of the property. How can this be addressed?
    - The driver for these standards is regional air quality. Good management practices are required and certainly more needs to be done.
- Ozone formation depends on VOCs and NOx. In urban areas, NOx limits the reaction, so there may be a bigger return by reducing NOx rather than VOCs.
    - We don't have a clear answer on this, but we know there is a trade-off, which is why the recommendation is written as it is. The technical task group recognized that this is one of the gaps and we need a better understanding of where to get the "biggest bang for the buck."
- This team has considerably advanced our understanding and it's good to see practical recommendations. Will there be any consideration about the need for AEP to do more work on speciation?
    - Yes, we will be looking at this.

2.2 Ambient Air Quality Objectives Committee

David Spink presented an update on the Ambient Air Quality Objectives (AAQO) work. Last fall, AEP proposed that the advisory committee be housed in CASA, and that CASA would provide the consultation service for work on new priority substances. The board agreed and formed the AAQO committee. The committee is working on terms of reference and expects to bring a draft to the board in September. Three subgroups are looking at the priority parameters: (1) $PM_{2.5}$ and ozone, (2) SO_2 and NO_2, and (3) H_2S/TRS (total reduced sulphur). The first four substances ($PM_{2.5}$, ozone, SO_2 and NO_2) all have AAQOs. $PM_{2.5}$, ozone and SO_2 have Canadian Ambient Air Quality Standards (CAAQS). A NO_2 CAAQS is under development. AEP wants to ensure the two sets of objectives and standards are complementary. There are no CAAQS for H_2S and TRS but these substances are an issue and Alberta Health has identified them as a priority and wants to determine how they should be addressed. AAQOs affect industry and the committee would like to add industry members in addition to the electricity sector. AEP has always tried to get consensus on the committee and the same effort will be made here. If consensus is not achieved, AEP will consider the committee's advice and stakeholder input and will make a decision.

<u>Discussion</u>

- How does this work align with land use planning work?
    - AAQOs are a key aspect when developing an air quality management framework for a specific land use plan. The Lower Athabasca Regional Plan, for example, covers NO_2 and SO_2 and that framework will likely have to be updated to align with the CAAQS.
- When airsheds and others measure H_2S and TRS, what do they do with their results?

  - There is a gap at present as limits for one can't be applied to the other. For some industries, H_2S is not an appropriate parameter to measure reduced sulphur and Alberta is not the only jurisdiction with this issue.
- An economic and social component should be included in this work.

Several industry members indicated they would work with their sectors to secure representation on this committee and Keith Denman will follow up by forwarding the names of interested members to the committee.

2.3 Systems Mapping Update

Keith Denman reviewed the process through which this work was initiated and the facilitated discussion that occurred at the March board meeting. A small multi-stakeholder group met subsequently and went through the material from that exercise to organize it without forcing it into a particular structure and this work is not yet done. Keith briefly described some of the components and topics that arose in the workshop, noting various questions that still need answers. The product of this work will feature both text and diagrams; the challenge will be to capture enough helpful detail but not bury people with content. The completed document is expected to be ready for the board in September. One board member commented that this was a meaningful exercise and that CASA is likely to continue to be a valuable organization for AEP to consult with and test new policy ideas.

2.4 Future CASA Work

Ronda Goulden advised that AEP hopes to bring forward a Statement of Opportunity (SOO) at the September meeting. AEP sees the value of CASA and wants to determine how the input it provides can extend beyond board members to bring in other stakeholders. The GoA needs assurance that CASA consensus recommendations go beyond just those at the table. The GoA is assessing how funds are spent both internally and allocated to other organizations it supports to ensure there is value and to identify where improvements are possible. NPS work was one opportunity where the GoA thought CASA could add value through its collaborative approach, and it's clear that this work is coming together very well. Consequently, AEP will not bring forward another NPS SOO, but will rather support the ongoing work with a new team focusing on areas identified in the recommendations. The work on AAQOs was also a critical piece and a follow-up area of work may be to look at how to deal with non-attainment and manage tensions in a system of competing interests; e.g., allowing an old plant with higher emissions to continue to operate in an airshed that is "full" while turning down a much more efficient new facility. How is space in an airshed allocated? The notion of allocation is just a musing at present, but GoA is thinking about these things, recognizing that the pressure is not yet intense, but is expected to grow and we need to consider how we will meet the CAAQS. A challenge is how do we help air players understand the pressures on airsheds and could CASA contribute to addressing these issues?

<u>Discussion</u>

- With respect to future work, the Electricity Management Framework calls for five-year reviews, and the next one will be due next year. The electricity business is changing quickly and many aspects could be looked at as part of the five-year review. Further, the matter of emission limits for gas-fired units remains outstanding from the two prior

reviews. More of these will be coming on, so we need to determine what those standards will be. We had consensus on this comprehensive framework but if the GoA starts to change it, that broad consensus will be lost. The framework is important and has a lot of benefits. Does AEP have a plan for the Electricity Framework review?
    - AEP: I can't speak to the framework *per se*, but standards are front and centre. The question is: where is the best place for the work to be done and how do we get a broad stakeholder perspective? It's a big challenge to keep up with what is happening in Alberta Energy. We hope there can be a comment from them in September.
- The board could start to identify people who might be involved with the potential work on CAAQS and non-attainment so the process can be expedited when the SOO does come to the board. These individuals could potentially provide input to the SOO, and the work could be further refined in the team charter.

Action: Keith Denman will clarify the potential future CASA work and sequencing with AEP then, if appropriate, circulate an email to board members with a specific request and timeframe.

2.5 Performance Measures Committee

Keith Denman reported that work on the 2016 assessment is nearly complete, and there will be a full presentation at the September board meeting. Keith briefly reviewed each of the PMs and provided a short status report, noting that performance is good in most areas. Work on the 2017 review will likely start in September. A new government member has been appointed to the committee and the hope is to have an industry member in place by then.

2.6 2016 Annual Report

Keith Denman reported that work on the 2016 annual report was slightly delayed this year but the report is expected to be ready in the next month. Comments have come in from the Communications Committee and text is being revised. The text will be finalized then the report designed internally before going to the executive for final approval. The report will be circulated electronically again this year. Although no formal decision was requested, the board generally agreed with this approach.

2.7 CASA/Alberta Airsheds Council (AAC) Update

Keith Denman and Karla Reesor gave a brief update on the draft MOU between CASA and the AAC. Four key areas were identified and three have been addressed in the current draft. The outstanding item is the process for recognizing and endorsing new airsheds. Keith reviewed the history of CASA's relationship with airsheds, noting that initially airsheds that followed the general CASA criteria and principles were endorsed by the board. At that time, there were approval and funding implications that were viewed as enhancing the credibility of an airshed if it followed the CASA guidelines and was CASA-endorsed. Now that airshed organizations are well-established, CASA endorsement may be less important and relevant. A new group has been formed in the Peace River area using the CASA criteria but did not seek CASA endorsement because it was never suggested to them that they should. They went to the AAC because they wanted to be part of that network and share information. They are willing to work with CASA and seek endorsement if there is value in doing so, but lack of CASA endorsement is not

preventing them from operating. CASA would not likely turn them down, but the question remains as to whether endorsing airsheds is an appropriate role for CASA. Airsheds as a whole provide data to AEP for use in compiling the Air Quality Health Index, which is valuable to Albertans. The AAC annual report (online at https://www.albertaairshedscouncil.ca/featured-resources/) provides additional information on each airshed. The AAC website also includes links to each airshed for those who want more information and details.

Discussion

- Airsheds are working closely with AEP's Monitoring and Science division as they look at options for community-based monitoring.
- The NPS team has had very good and substantial contributions from airsheds, so there is a lot of room for productive collaboration.
- What is the accountability and role of the CASA board on this matter? Are airsheds accountable to CASA? Can we revoke an endorsement? How do we ensure airsheds are doing what they said they would do? These questions need to be sorted out.
- Initially there were many good reasons why CASA had an interest in how airsheds were structured and how they operated and we need to consider if those things still apply. The monitoring role of airsheds vs. the role of AEP is not always clear. At one time, AEP was represented on all airshed boards.
- This discussion needs to involve Dr. Wrona in the Monitoring and Science division to clarify the extent to which AEP will be relying on airsheds. That could affect the CASA board decision.

Action: Keith Denman will follow up with AEP to clarify the views and expectations of the Monitoring and Science Division with respect to airsheds.

3 New/Other Business

3.1 New/Other Business

No new or other business was identified.

3.2 Updated Mailing and Membership Lists

The updated membership lists were included in the briefing package. Board members were asked to contact the Secretariat if any changes or corrections were needed.

3.3 Evaluation Forms

Members were asked to complete meeting evaluation forms for review by the Executive.

The next CASA board meeting will be September 13, 2017 in Edmonton.

The meeting adjourned at 1:50 p.m.

Action Items

Action items	Meeting	Status
2.2 – CASA 2.0 Keith Denman will approach the Water Council to test interest in a possible joint initiative on a municipal environmental tool kit, and will begin a conversation with municipalities about their issues and the potential value of a tool kit to them.	Dec. 8, 2016	Ongoing. Keith has talked with various municipalities and was told it would be prudent to wait until work on the revised MGA is complete before resuming conversations in early fall.
2.2 – CASA 2.0 The Secretariat will circulate a call for board members to help scope out work to be done on the AMSP topic, including how air quality data is used.	Dec. 8, 2016	This work will be done internally at AEP. Any further action by CASA will be considered following the September presentation and discussion with Dr. Fred Wrona.
2.4 – Future CASA Work Keith Denman will clarify the potential future CASA work and sequencing with AEP then, if appropriate, circulate an email to board members with a specific request and timeframe.	June 14, 2017	
2.7 - CASA/Alberta Airsheds Council Keith Denman will follow up with AEP to clarify the views and expectations of the Monitoring and Science Division with respect to airsheds.	June 14, 2017	

CASA Outstanding Actions Log

Action items	Meeting	Status
2.2 – CASA 2.0 Keith Denman will approach the Water Council to test interest in a possible joint initiative on a municipal environmental tool kit, and will begin a conversation with municipalities about their issues and the potential value of a tool kit to them.	Dec. 8, 2016	Ongoing. Keith talked with various municipalities and was told it would be prudent to wait until work on the revised MGA is complete before resuming conversations in early fall.
2.2 – CASA 2.0 The Secretariat will circulate a call for board members to help scope out work to be done on the AMSP topic, including how air quality data is used.	Dec. 8, 2016	This work will be done internally at AEP. Any further action by CASA will be considered following the September presentation and discussion with Dr. Fred Wrona.
2.4 – Future CASA Work Keith Denman will clarify the potential future CASA work and sequencing with AEP then, if appropriate, circulate an email to board members with a specific request and timeframe.	June 14, 2017	AEP has brought forward two Statements of Opportunity and the board is expected to strike one working group at this meeting. The sequencing of future potential work will be revisited as part of the expected strategic planning and operational planning at the December meeting.
2.7 - CASA/Alberta Airsheds Council Keith Denman will follow up with AEP to clarify the views and expectations of the Monitoring and Science Division with respect to airsheds.	June 14, 2017	Keith and Andre discussed the potential for airshed participation with Monitoring and Science Division. Chief Scientist Fred Wrona will present on the work of EMSD and take questions at the meeting.

INFORMATION SHEET

Item 1.3 : **New Representatives**

Issue: New Executive Director Andre Asselin is an ex officio member of the board

Attachment: Biography for Andre Asselin

Biography

Andre Asselin
CASA Executive Director

The executive committees of the Alberta Water Council (AWC) and the Clean Air Strategic Alliance (CASA) appointed Andre Asselin as executive director of both organizations this July. Andre joined the AWC in 2010. He was a project manager for four years, supporting several project teams, working groups and committees by facilitating the AWC's multi-stakeholder consensus decision making process. As he progressively took on more responsibilities through the role of operations manager in 2014, he oversaw the day-to-day operations of the AWC and supported the executive director in advancing the goals of the organization. Later in 2014, he was entrusted with the responsibilities of the senior project manager and his title was changed to senior manager.

In January 2017, long-standing AWC Executive Director Gord Edwards retired and Andre took up the mantle of acting executive director until his appointment to the position of executive director of CASA and AWC. Andre holds a BSc. in environmental and conservation sciences with a specialization in environmental economics and policy and pursued graduate studies in resource economics, both at the University of Alberta. When he is not working, Andre enjoys cooking and travelling with his wife Sheena.

CASA Executive Director Report – August 31, 2017

The past two months have been a whirlwind of activity since I accepted the role of executive director of CASA effective July 1. Staff and contractors have dutifully continued working on their projects while bringing me up to speed on their activities and have been remarkable in supporting me through this foundational change, and I in turn am learning how to support them to be successful in their work.

I would like to especially recognize Keith Denman's professionalism, helpfulness and openness through what has been a difficult process. His contributions have made my transition into the role much smoother than would have been possible without his support. Keith showed that he truly cares about this organization, its staff and membership, and wishes us all continued success. The executive committee recognized him for his service and Keith enjoyed a lunch with staff prior to his departure on August 11, as was his request.

It is important that I be in touch with our members and stakeholders to be aware of their needs and interests, and at the time of writing I have taken meetings with representatives including a number of divisions at Alberta Environment and Parks (air policy, strategy, environmental monitoring and science), Alberta Energy, the Alberta Airsheds Council and the executive directors of three airsheds, members of the Alberta Environmental Network, Alberta Forest Products Association, AAMDC, Environment and Climate Change Canada, and have meetings scheduled with most of the remaining CASA directors prior to the board meeting. I look forward to continue building a strong working relationship with CASA's members and stakeholders.

The executive committee met on August 2 and reviewed and discussed the financial situation and other details regarding the CASA/AWC amalgamation; approved the annual report pending the approval of the performance measures report; discussed the need for strategic planning in 2018 and how the CASA 2.0, systems mapping and my conversations with the CASA membership can inform that process; discussed the potential path forward towards the next electricity management framework review; and set the agenda for this meeting.

Project work in the areas of non-point source pollution and ambient air quality objectives continues, with detailed updates provided in the package. I am looking forward to hearing presentations about new work opportunities for CASA from the GoA and potentially launching one working group immediately. As was noted in the email that distributed the package and has been stated at previous CASA meetings – it would be ideal if members could come prepared to the meeting with who their representatives might be for each statement of opportunity to expedite getting a working group up and running.

Finances

CASA's core operations will be funded until at least March 2018. I received confirmation from Minister Phillips' office that our grant application of $650,000 for 2017 has been approved and the paperwork for the final grant agreement is being processed – which is the last step in the process on our end prior to the funds being provided. The grant funds will cover internal core operations as well as resupply the $250,000 buffer that had previously been provided to CASA by Energy to offset the difference in our fiscal years.

The amalgamation of operations with Alberta Water Council will require some unbudgeted expenses in the short term to be covered, however a reduced staffing level this year and running fewer projects has

left us with an operating surplus of approximately $200,000 (as of July 31) to cover those expenses. I expect the payback period on these operational efficiencies to be less than two years given the cost savings the amalgamation will generate. The budget for the amalgamated operations beginning in 2018 will also be presented for approval at December meeting. Staff will also be working on developing multi-year budgets to support our previous request for multi-year funding, and to provide advance knowledge of potential external funding requests to our members in support of our project work.

Previous executive director reports for the September meeting have included updates on the status of CASA's grants and expenditures, core expenditures, legal reporting requirements and an analysis of the wind-down fund, which are attached as information.

Amalgamation with AWC

Much of my effort has focused on learning about CASA's history and operations, gathering and analyzing the information required to amalgamate operations with the Alberta Water Council. The easiest pieces of the amalgamation are well underway (e.g., phone systems, internet service provider), with the more substantial pieces requiring more time to implement. We continue to work towards amalgamating the responsibilities of the staffs of both organizations. I've engaged an employment lawyer who advised that AWC and CASA's HR policies should be updated and harmonized since the staff will be essentially working for both organizations. That work is underway, however the amalgamation is taking up more of my time. There will still be quite a bit of staff time required to fully amalgamate operations and become familiar with the soon-to-be fully shared systems. I intend to hire a shared operations manager as per the board-approved HR structure as soon as the HR policies are harmonized. I am also expecting to hire another project manager to largely support CASA's expected new work, however, the medium-term goal is for all staff to be supporting both organizations. The 2017 budget included salary room for both positions, which I expect will also be the case for at least the next few years. A full report outlining the expected changes and associated cost savings will be ready for the next meeting. I expect we will be up and running at full staff capacity by the end of the year, and as such will likely need to ease into our full work-load capacity until January 2018.

Respectfully submitted,

Andre Asselin
Executive director

Clean Air Strategic Alliance
Internal Core Expenses June 30/17

Expense Account			Expenditure to date	Budget Jan 2017	% of budget
Supplies & Services					
	Advertising			5,000	0
	Bank and Finance Charges		596	1,498	39
	Computers & IT		13,898	29,122	47
	Courier		39	400	9.6
	Depreciation			0	0
	Development- Stakeholders		5,000	0	0
	Furniture & Display			5,000	0
	Office Move		3,077	12,000	26
	Honoraria - Stakeholders		21,815	66,578	33
	Insurance		1,885	4,800	39.3
	Meeting Expenses		7,508	13,180	57
	Office Supplies		909	4,365	21
	Print & Reproduction Services				
		Annual Report		5,000	0
		General	733	2,822	73
	Repairs & Maintenance			500	0
	Records Storage		808	1,689	59
	Subscriptions		696	3,600	19
	Telecommunications		3,646	6,415	57
	Travel				
		Consultants	1,208	0	0
		Stakeholders	6,682	28,847	23
		Staff	5,337	28,440	18.8
Total Supplies & Services			**73,836**	**219,256**	**33.7**
Professional Fees					
	Legal Fees		0	3,000	0
	Audit		9,200	9,200	100
	Consulting Expense			0	
		Alberta Environmental Network	8,750	21,000	41.7
		Consulting for Board/Projects	20,360	34,500	59
Total Professional Fees			**38,310**	**67,700**	**56.6**
Human Resources					
	Salaries & Wages		172,289	451,682	38.1
	Employer Contributions		11,490	20,827	55.2
	Group Benefits		16,915	46,953	36
	Group Retirement Savings Plan		11,896	31,386	37.9
	Performance Pay		0	0	
	Employee Recognition		139	1,200	11.6
	Staff Development				
		Membership Fees	0	475	0
		Training	238	5,000	5
	Temporary Staff & Contract Labour		1,027	5,000	20
	Recruitment		0	1,000	0
Total Human Resources			**213,994**	**563,523**	**38**
Uncategorized expense					**0**
Total Expenses			**326,140**	**850,479**	**38.3**
					.

Clean Air Strategic Alliance
Legal Requirements Completed to June 30, 2017
January 1 to June 30, 2017

Description	Requirements	Completion Date
Revenue Canada	Annual Filing of Return & Audited Financial Statements	February 2017 (for 2016)
Annual General Meeting	Annual Meeting of Members of the Alliance. Presentation of CASA's Audited Financial Statements	June 14, 2017 June 14, 2017
Revenue Canada – GST Return	Return Filed Quarterly	April 28, 2017(Jan-March/17) July 27 , 2017(April-June/17)
Revenue Canada – Payroll Deductions	Payment is made on about the 15th of the month following	Feb 15/17- Ceridian- for Jan. Mar. 15/17- Ceridian-for Feb. Apr. 18/17- Ceridian- for Mar. May 15/17-Ceridian – for Apr. June 15/17-Ceridian – for May July 15/17-Ceridian –for June
Board of Directors Liability Insurance	Annual Payment for Liability Insurance	Jan 16, 2017(for 2017)
Alberta Tax Return	Annual Filing	February 2017(for 2016)

Stakeholder Support
January 1 to June 30, 2017

Name	Organization
Ann Baran	Southern Alberta Group for the Environment
Bill Calder	Prairie Acid Rain Coalition
Andrew Read	Pembina Institute
David Spink	Prairie Acid Rain Coalition
Randy Angle	Prairie Acid Rain Coalition
Wayne Ungstad	Notinto Sipiy Conservation Authority
Ruth Yanor	Mewassin Community Council

Note: The above stakeholders received stakeholder support from CASA from January to June 2017. This list also includes stakeholders who received travel support.

Revenue	Amount	Note
Balance End of 2009	**$991,658**	
Revenue 2010 -Alberta Energy	**$850,000**	Funding to to March 31, 2011
Total Internal Expenses 2010	**-$928,661**	**Year end actual**
Balance End of 2010	**$912,997**	
Revenue 2011-Alberta Energy	**$850,000**	Funding to March 31, 2012
Total Internal Expenses 2011	**-$983,319**	**Year end actual**
Balance End of 2011	**$779,678**	
Revenue 2012-Alberta Energy	**$850,000**	Funding to March 31, 2013
Total Internal expenses 2012	**-$1,010,114**	**Year end actual**
Balance End of 2012	**$619,564**	
Revenue 2013/2014- Alberta Energy	**$1,700,000**	**Funding to December 2014**
Total Internal expenses 2013	**-$1,056,842**	**Year end actual**
Balance End of 2013	**$1,262,722**	
Total Internal expenses 2014	**-$1,035,096**	**Year end actual**
Balance End of 2014	**$227,626**	
Revenue 2014/2015- Alberta Energy	**$850,000**	**Funding to December 2015**
Total Internal expenses 2015	**-$829,683**	**Year end actual**
	$247,943	
Revenue 2016-Alberta Energy	**$850,000**	**Funding to December 2016**
Actual internal expenses 2016	**-$672,667**	
	$425,276	
Forecasted internal expenses 2017	**-$850,479**	**expenses have not been adjusted to**
	-$425,203	**reflect sharing space with AWC**
Funding for 2017 not received of this date	**$650,000**	
	$224,797	

as of July 20, 2017

Wind Down Fund Re-Assessment

Background

In 2000, the CASA board established a restricted fund of $200,000 to pay necessary expenses in the event of the wind-down of the society. In 2005, the fund was increased to $240,000. In 2008, it was increased to $290,000. In 2012 the Executive determined that $290,000 was still sufficient. In 2014 the Executive determined it should be adjusted to reflect actual obligations plus a 10% buffer. The fund was adjusted to $228,835.

Status
Each year, the Executive should review the wind down fund for adequacy. The Secretariat has reviewed the required funding in the event of a wind down of the organization. The wind down fund for severance applies only if CASA ceases to operate on short notice.

The Wind down Fund re-assessment includes:

- Staff severance pay due in the event of dismissal without cause (calculated at 1 month's gross salary for every year worked at CASA-except where there is a special arrangement) Salaries rounded to the nearest 1/2 year of service.
- Total fund assessment as of October 2016.
- Payments required by termination of existing contractual obligations
- Office closure and file storage
- Consulting, legal and financial document preparation

Expected costs if CASA ceased to operate in 2017:

Expected Costs if CASA ceased to operate in 2017		
Staff Severance(based on current staff)	**$126,123**	Based on one-month pay for each year worked using 2017 salary figures
F12 Contract	**$30,400**	50% of remaining term
Office Closure o File Storage o Moving Costs o Existing Contracts	**$20,000**	Estimated based on conservative figures
Accounting/Legal and Consulting Fees	**$15,000**	Estimated.
Total	**$191,523**	
Total including 10% buffer	**$210,675**	

INFORMATION SHEET

Item 1.5 : **Board Electronic Approvals from July 2017**

Issue: An important decision was sent to board members for approval via electronic means.

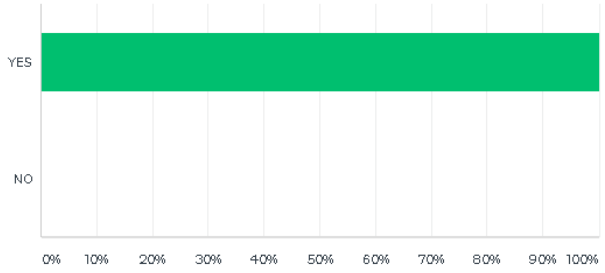
Background: The CASA Board has an Executive Committee that is comprised of a representative from each stakeholder group; government, industry and non-government. Board members were asked to vote electronically to approve Andre Asselin, the new Executive Director of CASA as Secretary Treasurer of the Alliance for a two year term and act as a signing authority.

Other CASA signing officers include board members: Rick Blackwood and Bill Calder and staff persons Cara McInnis.

Attachment: Board approvals for Andre Asselin.

Do you authorize Andre Asselin to be appointed as a signing officer for CASA?

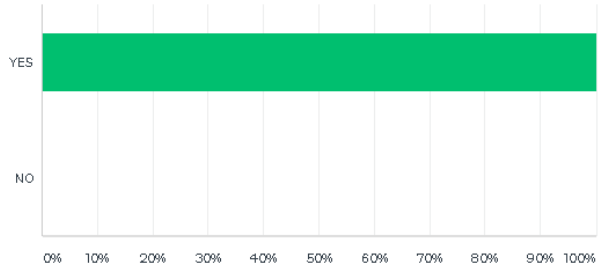
Answered: 18 Skipped: 0



ANSWER CHOICES	RESPONSES	
YES	100.00%	18
NO	0.00%	0
Total		18

Do you authorize Andre Asselin to be appointed as the Secretary & Treasurer for the CASA Board of Directors?

Answered: 18 Skipped: 0



ANSWER CHOICES	RESPONSES	
YES	100.00%	18
NO	0.00%	0
Total		18

Participants

Ann Baran
7/13/2017 11:27 PM
Ruth Yanor
7/11/2017 10:44 AM
Wayne Ungstad
7/10/2017 11:29 AM
Bill Calder
7/10/2017 9:23 AM
Scott Wilson
7/10/2017 9:20 AM
Peter Noble
7/10/2017 8:54 AM
Leigh Allard
7/9/2017 6:08 PM
David Spink
7/9/2017 5:13 PM
Cheryl Baraniecki
7/9/2017 2:58 PM
Rob Beleutz
7/9/2017 11:44 AM
Carolyn kolebaba
7/8/2017 10:47 AM
Andre Corbould
7/8/2017 9:11 AM
Andrew Read
7/8/2017 8:10 AM
Claude Chamberland
7/7/2017 6:51 PM
Brian Ahearn
7/7/2017 2:20 PM
Dawn Friesen
7/7/2017 1:29 PM
Ahmed Idriss
7/7/2017 1:28 PM
Keith Murray
7/7/2017 1:18 PM

DECISION SHEET

Item 2.1: **Ambient Air Quality Objectives Project Team**

Issue: Approve the team's Terms of Reference

Background: Ambient air quality objectives are an important part of Alberta's air quality management system as they help protect the health of Albertan's and the environment. Alberta Environment and Parks (AEP) sets ambient air quality objectives for the province under section 14(1) of the *Environmental Protection and Enhancement Act*. It is important that the objectives be reviewed on a regular basis, updated as appropriate, and new objectives be developed when there is a need.

The priorities for the work of the Ambient Air Quality Objectives Project Team have come from the development of Canadian Ambient Air Quality Standards (CAAQS) and the carry forward of two substances from the previous work plan. CAAQS have been developed for long-term air zone management, while AAQOs are used to assess compliance of regulated industrial air emission sources and overall air quality, using averaging periods ranging from 1 hour to 1 year. Alberta has initiated a review of their current ambient air quality objectives in light of these new standards.

The priority substances being considered by the CASA Ambient Air Quality Objective Team (AAQO) are Fine Particulate Matter ($PM_{2.5}$), Ozone (O_3), Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Hydrogen Sulphide (H_2S), and Total Reduced Sulphur (TRS).

The AAQO Team will propose ambient air quality objectives for $PM_{2.5}$, O_3, SO_2, NO_2, H_2S and TRS after careful review and consideration of:

scientific information, adverse health and ecosystem effects specific to the substance;
technological and economic factors.

The Team will strive to reach consensus on the recommendation to AEP on proposed objectives.

Status: The team is seeking approval of its Terms of Reference.

Attachment: Draft Terms of Reference

Decisions: Approve the project team's Terms of Reference.

Introduction

Ambient air quality objectives (AAQO) are an important part of Alberta's air quality management system as they help protect the health and wellness of Albertans and the environment. Alberta Environment and Parks (AEP) sets ambient air quality objectives for the province under section 14(1) of the *Environmental Protection and Enhancement Act*.

At their December 2016 Board Meeting, the CASA Board of Directors approved a Statement of Opportunity from AEP for the formation of a CASA Ambient Air Quality Objectives (AAQO) Project Team. The AAQO Project Team is to recommend ambient air quality objectives for $PM_{2.5}$, O_3, SO_2, NO_2, H_2S and TRS based on careful review and consideration of:

- scientific information, adverse health and ecosystem effects specific to the substance; and
- technological and economic factors.

The Team will strive to reach consensus on the recommendation to AEP on proposed objectives.

Background

As part of Alberta's comprehensive approach to air quality management, Alberta Environment and Parks have since 2001 worked with a multi-stakeholder committee to develop and review ambient air quality objectives. The committee successfully reviewed or developed thirty objectives in that time and was sunsetted in December 2015.

The priorities for this new CASA project team are to ensure that the recommended AAQOs are: (1) consistent with striving towards CASA's Vision that "*the air will have no adverse odour, taste or visual impact and have no measurable short- or long-term adverse effects on people, animals or the environment*"; (2) are protective of human health and the environment; and (3) are complementary and consistent with current/ future Canadian Ambient Air Quality Standards (CAAQS) for $PM_{2.5}$, O_3, SO_2 and NO_2.

The CAAQS and AAQOs are intended to serve different purposes but they need to work together as air quality management tools. CAAQS have been developed for long-term air zone management while AAQOs have a wide range of applications including for regulatory purposes. Therefore, Alberta has decided to review their current ambient air quality objectives for $PM_{2.5}$, O_3, SO_2 and NO_2 in light of the current CAAQS activity (including both recent and pending reviews). H_2S and TRS are carry forward substances from the previous work plan.

Outcome

The CASA Ambient Air Quality Objective Team will provide to Alberta Environment and Parks consensus recommendations for new, revised or reconfirmed $PM_{2.5}$, O_3, SO_2, NO_2, H_2S and TRS AAQOs. The team will also provide a rationale for proposed ambient air quality objectives that considers the current science.

Roles and Responsibilities

The expectations of AAQO Team Members are consistent with those roles and responsibilities described in CASA's *Managing Collaborative Processes Guide*.

If Team Members determine that additional expertise is required (consultants, modelling of parameters, etc.) they are required to: (1) develop a detailed Terms of Reference for the work, and (2) fundraise. But,

given the current level of knowledge within the AAQO Project Team and with CASA's report writing support, it is anticipated that no additional resources will be required. It is the intent to use sub-groups to conduct the detailed background work associated with developing recommendation for each of the parameters being reviewed.

Fallback

This project team has a different fallback position in the event of non-consensus than the one CASA normally follows. In the event of a non-consensus outcome, team members will outline their positions, including a rationale in support of their specific recommendations. AEP's Air Policy Group will consider all the positions and make a decision on how to proceed.

In contrast, the typical CASA process stipulates that non-consensus items, following the same criteria above, be presented to the CASA Board for review. It would then be up to the CASA Board to define the path forward based on the non-consensus recommendation and alternative views provided them.

Timeline and scope

Item	Date
Terms of Reference presented to the CASA Board	September 2017
Recommendation for $PM_{2.5}$	March 2018
Recommendation for O_3	September 2018
Recommendation for H_2S and TRS	December 2018
Recommendation for NO_2	June 2019
Recommendation for SO_2	December 2019
Final report on the work of Team and a summary of its recommendations and their status within the GoA to the CASA Board	March 2020

Quorum and Team Process

The following quorum was defined by the project team, and will be used as a meeting and decision requirement:

Organization	Number of stakeholders to achieve quorum
Alberta Airshed Council	1
Alberta Environment and Parks	1
Alberta Health	1
Alberta Health Services	1
Environmental Non-Governmental Organizations	1
Industry	1

The AAQO process will require quorum for all substantive decisions involving recommendations, but not on process decisions. In lieu of the team, the co-chairs are empowered to make process decisions between meetings. The team will meet 4 times per year with the expectation that the substantive work will occur at the sub-groups. Additional meetings can be called under exceptional circumstances, by co-chairs.

DECISION SHEET

Item 2.2: Non-Point Source (NPS) Project Update

Issue: The NPS project team needs a short extension of the timeline to complete its work.

Background: The Board approved the NPS project charter in September 2014. For funding reasons, the project was not commenced until Fall 2015. With the time required to identify the team members, the first project team meeting did not occur until near the end of 2015.

The NPS Project was designed to help address regional and provincial scale, cross-cutting NPS through recommendations for management actions. The scope was limited to what could realistically be accomplished by a CASA project team in approximately 22 months and included NPS of PM2.5, and PM2.5 and ozone precursors. The focus was on the Canadian Ambient Air Quality Standards (CAAQS) Framework management levels and the regions and sub-regions where those standards were being approached or not achieved.

The first project objective was to compile and review information and agree on a common understanding of non-point source air emissions in Alberta. This objective was originally planned to take six months and estimated at $100,000 to complete. Due to funding limitations, the Technical Task Group completed the work via in-kind contributions, which resulted in large budget savings but extended the time required to complete this objective to 12 months.

The project has otherwise proceeded on schedule. However a significant amount of feedback was received on the initial draft report and the Project Team requires more time than was originally scheduled to address it. The draft report revisions are in progress, with Project Team approval of the final draft expected in October. The final report will be submitted to the Board for approval in December.

Due to the commitment and dedication of the Project Team, including concurrent activity wherever possible, the final report would then be completed within 2 months of the original estimated timeline of 22 months despite the initial 6 month extension to objective 1.

Attachment: Amended Non-Point Source Project Charter

Decision: Approve the amended Non-Point Source Project Charter.

Non-Point Source Project Charter

Presented by the Non-Point Source Working Group

to the CASA Board of Directors

Originally approved September 2014

Amended August 2017

Non-Point Source Draft Project Charter

Contents

Introduction

Non-point source (NPS) air emissions are a key element in the Government of Alberta's (GoA) *Clearing the Air: Alberta's Renewed Clean Air Strategy (CAS)*, and a significant issue to CASA stakeholders. NPS emissions must be addressed if we are to maintain and improve air quality in Alberta. A project to address NPS emissions aligns with the CASA goals of providing strategic advice, and of contributing to the development and implementation of effective air quality management in Alberta. It would also contribute to management of air quality in the Capital region, Red Deer, and Calgary, by informing potential actions that could be taken as a part of regional management response plans under Alberta's Land Use Framework, or identifying cross-cutting actions benefitting all areas. On a provincial scale, an NPS project complements CAS.

A complex issue, NPS emissions involves a broad range of stakeholders with a wide variety of perspectives and degrees of understanding; many interests will need to be considered. For individual agencies this would pose a challenge, due to the potentially sensitive nature of possible related management recommendations. However, CASA has a unique ability to build relationships and provide a neutral forum in which this type of multi-stakeholder and multi-interest work can be done.

Background

The issue of NPS emissions initially came to CASA through its work on Vehicle Emissions Project Teams (VET), which were active from 1998 to 2007. They had a mandate to implement initiatives to protect human health and the environment from vehicle emissions produced in Alberta. In 2010, the CASA Board of Directors accepted the VET Final Report.

After the disbandment of VET, the CASA Secretariat asked stakeholders to identify priority air quality issues. Transportation continued to be an important issue, however the Secretariat noted that conversations regarding vehicle emissions frequently led to discussions of NPS emissions. Vehicle emissions were seen by stakeholders as only one piece of the greater NPS issue. With clear direction from the Board in 2012, the development of a Statement of Opportunity was focused on NPS emissions. Also in 2012, the GoA released the CAS and the associated Action Plan, which outline four strategic directions and key categories of actions for implementation. Many of the actions identified address NPS emissions.

An NPS Statement of Opportunity was developed collaboratively with interested stakeholders, and presented to the Board in June 2013. The document began to contextualize the issue, including a general description of NPS emissions, current regulations and incentives, and a summary of past CASA work on mobile sources. It also identified options for potential areas of work.

Though each of the areas of work identified had the potential to be the focus for a project team, no corresponding prioritization was provided. Presented with of such varied options of scale, jurisdiction, and audience, the Board was unable to agree on how best to proceed. To

explore how CASA could add value to the management of NPS emissions in Alberta, the Board agreed to convene a targeted one-day workshop.

NPS Workshop

In October 2013, CASA hosted representatives from a broad cross-section of stakeholder organizations at an NPS Workshop in order to begin developing a common understanding of NPS emissions in Alberta, and to discuss needs, gaps, and opportunities for CASA to add value.

Three priority areas of work were identified. Although considered to be equal in importance, it was suggested that they be addressed in the following order:

- ***Understanding the NPS issue***, through: development of an NPS emissions inventory; exploring data management provisions; identification of information/data gaps; and modelling. These activities would be directed at building confidence in available information.
- ***Assessing options for action***, by developing templates and tools that equip organizations and individuals to address important NPS air quality issues, and by providing guidance regarding management options. This work may be complementary to implementation of the Clean Air Strategy and Regional Land Use Plans.
- ***Engaging the public and stakeholder groups*** to build awareness of NPS air quality issues and support for related actions.

NPS Working Group

At the December 2013 Board meeting, in response to the outcomes of the workshop, the GoA offered to champion the preparation of a new NPS Statement of Opportunity, in consultation with other interested parties. At the March 2014 Board meeting, Alberta Environment and Sustainable Resource Development (ESRD) provided an update on GoA's progress. The CASA Board indicated that there was limited interest in continuing with this issue at a Board level until the scope and prioritization of work could be further refined. The Board directed the Secretariat to establish a working group to create an NPS project charter, which would be presented at the September 2014 Board meeting. A group of 10 interested stakeholders convened in June 2014 to form the NPS Working Group. Membership of the working group is provided in Appendix A.

The Working Group noted the recent and historical exceedances of the Canada-Wide Standards for Particulate Matter 2.5 ($PM_{2.5}$) and ozone (O_3), respectively, that have occurred in the Capital, Red Deer, and Calgary regions. Under the new more stringent Canadian Ambient Air Quality Standards (CAAQS), which Alberta will be reporting against in 2015, additional areas may have non-achievement of the $PM_{2.5}$ standard and require management response plans to be developed.

In all three urban areas, NPS as well as point source emissions are thought to be a contributing factor to ambient concentrations of $PM_{2.5}$, but some stakeholders feel that there are significant gaps in information and have a lack of confidence in existing data. Currently the management

focus in Alberta rests primarily on point-source emitters, and NPS must be addressed to adequately respond to current air quality pressures in the urban centres.

The NPS project will be based on the following description of NPS provided by the Government of Alberta[1]. A list of examples of NPS can be found in Appendix B:

Definition:
Point source pollution is a term used to describe emissions from a single discharge source that can be easily identified. Non-point source pollution is subtle and gradual, caused by the release of pollutants from many different and diffuse sources (aggregated sources of emissions). This aggregation is done because the emission sources are either too small and numerous, too geographically dispersed, or too geographically large to be estimated or represented by a single point.

There are four types of non-point sources:

> **Area:** Area sources are spatially diffuse and/or numerous sources that can only be measured or estimated using the accumulation of numerous point sources or as estimation of an entire area (e.g. forest fires, tailings ponds).
>
> **Volume:** A volume source is a three-dimensional source of air emissions. Essentially, it is an area source with a third dimension. Examples include: particulate emissions from the wind erosion of uncovered piles of materials, fugitive gaseous emissions from various sources within industrial facilities, etc.
>
> **Line:** A line source is a source of air pollution that emanates from a linear (one-dimensional) geometric shape, usually a line. Examples include dust from roadways, emissions from aircraft along flight paths, etc. There can be several different segments in a line source (e.g. road network).
>
> **Mobile:** Mobile sources are broad area sources that are the accumulation of non-stationary operations. These include transportation sources such as: cars, trucks, boats and non-stationary construction equipment. Mobile sources can include both on-road and non-road sources. On-road refers to pollutants emitted by on-road engines and on-road vehicles. For example: cars, trucks, motorcycles, etc. Non-road emissions refer to pollutants emitted by non-road engines and non-road vehicles. For example: mine fleets, farm and construction equipment, gasoline-powered lawn and garden equipment, etc.

Scope

The work of the project team will be limited to NPS emissions of primary $PM_{2.5,}$ and precursors of secondary $PM_{2.5}$ and O_3 (SOx, NOx, VOCs, and ammonia). While work to reduce these substances is likely to have the co-benefit of reducing other emissions, recommendations of the project team should address only these substances. Limiting the scope in this manner creates a manageable piece of work, with the potential to complement existing initiatives.

[1] Clean Air Strategic Alliance NPS Workshop October 23, 2013. Background Information. Prepared by: Government of Alberta.

The primary focus of the project team will be on the six major categories of sources of NPS emissions in Alberta, which are (in no order): agriculture, transportation, construction, biogenic, road dust, and forest fires[2]. A more detailed description of each of these categories can be found in Appendix C.

Project Goal

To help address non-point source air emissions contributing to ambient $PM_{2.5}$ and O_3 standard non-achievement in Alberta.

What it means

The team will focus on $PM_{2.5}$ and O_3 non-achievement in the orange[3] or red[4] management levels of the Canadian Ambient Air Quality Standards (CAAQS)[5].

Project Objectives and Strategies

The working group anticipates that the process outlined below will result in the work of the team having an increasingly narrow focus as the project progresses.

The 'Potential Outcomes/Deliverables' under each objective are not meant to be prescriptive or limit the creativity of the project team, rather to provide additional texture around the intent of the objectives. They are meant to help inform discussions of the project team by providing an understanding of Working Group conversations. The project team members will create more detailed work plans which will outline how each strategy is to be executed. As they do so, specific outcomes and deliverables will be identified based on what is most appropriate and useful to achieving each objective.

1. Objective 1

Compile and review information and agree on a common understanding of non-point sources in Alberta.

[2] Clean Air Strategic Alliance NPS Workshop October 23, 2013. Background Information. Prepared by: Government of Alberta.
[3] Under CAAQS, "orange" management level signifies: actions for preventing CAAQS non-achievement. This corresponds to Level 3 in the South Saskatchewan Regional Plan.
[4] Under CAAQs, "red" management level signifies: actions for achieving zone air CAAQS in case of non-achievement. This corresponds to Level 4 in the South Saskatchewan Regional Plan.
5 Canadian Ambient Air Quality Standards (CAAQS) replace the Canada-wide air standards and the CASA PM and Ozone Management Framework (this was Alberta's commitment to achieve Canada-wide Standards). CAAQS for fine particulate matter and ground-level ozone have been developed and were published to Canada Gazette in May 2013. http://www.ccme.ca/en/current_priorities/air/caaqs.html

Strategies

1.1. Review ambient $PM_{2.5}$ and O_3 standard achievement to identify what regions of Alberta are in orange or red management levels according to the Canadian Ambient Air Quality Standards (CAAQS) Management Guidance Document on Air Zone Management.

1.2. For regions of Alberta that are in orange or red management levels, review and compile existing inventories; ambient monitoring data; and modeling[6] of non-point sources and their total and relative contributions to primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$ and O_3.

1.3. Identify gaps in the available inventories; ambient monitoring data; and modeling and 1) where feasible, obtain data to address the gaps and/or 2) make recommendations for addressing the gaps.

1.4. Refine list of non-point sources based on their total and relative contribution of primary $PM_{2.5}$, and precursors of secondary $PM_{2.5}$ and O_3, as well as potential mechanisms and ability to influence these sources.

Potential Outcomes/Deliverables

- Technical document: Inventory of non-point sources in Alberta, their total and relative contributions of primary $PM_{2.5}$ and precursors of secondary $PM_{2.5}$ and O_3, and gap analysis (where feasible, based on available resources and time).
- Refined list of sources and their total and relative contributions in areas of Alberta where there is non-achievement.

2. Objective 2

Identify non-point source opportunities in Alberta, where CASA's multi-stakeholder approach could add the most value.

Strategies

2.1. Review existing work on NPS emissions management in other jurisdictions and identify best management practices and actions.

Inputs could include:

- Other available jurisdictional scans on areas under pressure to reduce NPS.
- Air Quality Management Policy Tools Leading Practice Research, prepared for the purpose of addressing high levels of $PM_{2.5}$ and O_3[7].
- Canadian Council of Ministers of the Environment Mobile Sources Working Group action plan work under the national Air Quality Management System.

[6] The modeling information is only available for ozone at this time.

[7] http://esrd.alberta.ca/air/management-frameworks/canadian-ambient-air-quality-standards-for-particulate-matter-and-ozone/documents/AirQualityManagementTools-Dec2007.pdf

2.2. Review what is currently being done in Alberta to address the list of NPS identified in objective 1.4 and identify gaps.
2.3. Based on foregoing work, further refine the list of NPS candidates for consideration of potential management actions in Alberta.
2.4. Identify the non-point sources where CASA could add the most value (from objective 2.3). Considerations could include the criteria for determining whether an issue is suitable for a collaborative process identified in CASA's *Guide to Managing Collaborative Processes.*
2.5. Review team membership to determine if a change in membership is required for next steps.

Potential Outcomes/Deliverables

- Understanding of work being done in Alberta and elsewhere to address the refined list of NPS identified for consideration of management options.
- List of NPS for consideration of potential management actions that are also good candidates for CASA to add value.
- Regardless of the outcome of the screening, information on any NPS will be documented for potential follow-up by other stakeholders.

3. Objective 3

Identify and recommend management actions, which could include recommending policy change, to address the highest value non-point source air emissions opportunities in Alberta (from Objective 2).

Strategies

3.1. Develop a list of potential management actions for implementers (i.e. Governments, airsheds, etc.).

Inputs could include:

- Existing work on NPS management in other jurisdictions
- Particulate Matter and Ozone Management Response Plans
- Management responses for Land-use Framework regional air quality management frameworks
- GoA Transportation Strategy for Alberta

3.2. Test and refine the management actions with interested parties.
3.3. Evaluate management actions. Some considerations may include:

- Ecological and human health benefit
- Cost effectiveness
- Achievability (ease of implementation, acceptability)
- Environmental costs/benefit

- Cross-regional benefits and efficiencies (i.e. whether an action would have benefits in one area or across multiple jurisdictions)
- Compatibility with existing provincial and national strategies in Alberta.

3.4. Develop related advice on implementation for parties responsible for implementing the management actions that may be required (e.g. measures to educate the public and build acceptance for applicable new actions).

Potential Outcomes/Deliverables

- The evaluated list of management actions and advice (cross-cutting and regional) that has the potential to be used as a practitioner's guide.
- Advice for those managing $PM_{2.5}$ and O_3 in areas that are in or approaching standard non-achievement.
- Identification of cross-cutting management actions or policy recommendations that would benefit more than one area or region.

4. Objective 4

Develop and implement a strategy and action plan for communicating the work of the project team and engaging stakeholders and the public.

Note: Objective 4 will need to be considered at the outset and on an ongoing basis to determine what stakeholder and public engagement will be necessary and/or appropriate at each stage of implementation.

Strategies

4.1. Determine relevant information to be communicated, the appropriate audience, and timing.
4.2. Engage stakeholders as required throughout the project.
4.3. Provide advice on stakeholder and public engagement to the implementers of management actions, where applicable.
4.4. Develop messaging on the outcomes of each objective for project team members to communicate relevant information to their constituents.

Potential Outcomes/Deliverables

- Recommendation for a future phase of work, potentially focused on informing the general public.
- Effective sharing of information and, where required, engagement with project stakeholders as the project proceeds.

Project Deliverables

The project team will develop a final report providing recommendations and key findings, and documenting the methodology and outcomes of each strategy.

As outlined in the strategies of each objective, the following sub-deliverables will also be produced during the course of the project team's work:

- An evaluated list of recommended management actions and advice for implementation (Objective 3.3 and 3.4). Depending on outcomes of each objective, this has the potential to be used as a practitioner's guide.
- Communication tools developed in support of Objective 4. (e.g. Fact sheets)

It should be noted that *CASA's Performance Measures Strategy: A "how-to" guide to performance measurement at CASA* indicates that each project team is required to generate one specific metric that will allow the success of the team to be evaluated 5 years in the future. More guidance on how this can be achieved can be found in the strategy.

Project Structure and Schedule

After a 2-month convening period, project work should begin in November 2015. The working group anticipates that the project will take approximately 24 months, with a completion date of September 2017.

The bulk of the work is sequential, meaning that the outcomes of Objective 1 are the inputs of Objective 2, and the outcomes of Objective 2 are the inputs of Objective 3. The project team should also assess the entire process to identify opportunities for work to be done concurrently.

A series of filters will be applied in the following order. The end result of the filtering process is a list of management actions directed at specific NPS – the process filters the broad list to one or a few specific NPS.

1. Regions in Alberta where ambient concentrations of $PM_{2.5}$ and O_3 are in orange or red management levels. (Objective 1.1)
2. NPS of interest within the regions identified based on relative and total contribution. (Objective 1.2 and 1.3)
3. The potential mechanism and ability to influence each NPS of interest. (Objective 1.4)
4. What work is already being done to address each NPS of interest, and corresponding gaps. (Objective 2.2)
5. Which of the NPS of interest identified are opportunities where CASA could add the most value. (Objective 2.4)

Refer to "Table 1: Non-point Source Project Timeline" for a high level illustration of the process.

Table 1: Non-point Source Project Timeline

NPS Project Team Objectives and Timeline	2015 Oct Nov Dec	2016 Jan Feb Mar	Apr May Jun	Jul Aug Sept	Oct Nov Dec	2017 Jan Feb Mar	Apr May Jun	July Aug Sept	Oct Nov Dec
Objective 1: Compile and review information, agree on a common understanding of NPS in Alberta									
Objective 2: ID NPS opportunities where CASA can add value									
Objective 3: ID and recommend management actions									
Objective 4: Develop and implement a strategy and action plan for communicating the work of the project team and engageing stakeholders and the public									
Write final report and recommendations									
Final report and recommendations approved by the CASA Board									

Projected Resources and Costs

The working group anticipates the following potential external costs over the life of the project. These figures are estimates only. As the work of the project team progresses, detailed work plans and associated budgets will need to be created. The funds to complete this work will need to be assured prior to the commencement of the project. Note that the bulk of the funding will likely be required in implementation of Objectives 1 and 4, which occur at the beginning of the project.

Item	Estimated Cost
Consultant fees to undertake objectives 1.2 and 1.3 as follows: • Review and compile existing inventories; ambient monitoring data; and modeling. • Identify gaps in available inventories and 1) where feasible, obtain data to address the gaps and/or 2) make recommendations for addressing the gaps.	$100,000*
Communications expert to develop a plan for Objective 4.	$15,000
Implementation of plan developed by the communications expert.	$45,000
Contract fee to assist with compiling information in Objective 2.2 • The working group suggests that individuals who have an understanding of the current work being done in Alberta be invited to present to the team. A contractor could be hired to compile the information presented.	$1,500
Two workshops to implement, test, and refine management actions for the highest value CASA work with interested parties (Objective 3.2).	$50,000
Final Report Writing	$1,500
Total Estimated External Costs	**$ 213,000**

*In-depth discussion of the Project Team is needed to confirm the scope of the Request for Proposal.

Risk Analysis

Identifying, analyzing and mitigating project risks is a key component to executing a successful project. The project team should incorporate proactive risk management into the project in order to mitigate risks that could undermine its success. The working group identified risks as well as possible mitigation strategies that the project team should consider as they undertake their work.

Risks	Possible Mitigation Strategies
Timely funding not available	• Identify who the "customers" of this work are. Who will find this valuable – seek funding there.

	• Develop a strong value-proposition that includes: examples of sectors that may be involved or affected. • Project Team members discuss the work and associated need for funding with their constituents early in the process.
Lack of / limited data (accessibility)	• Ensure Project Team membership enables the team access to data. • Use judgement to fill gaps where data is imperfect. • Seek advice from modelers on how to determine whether the data is sufficient. • Reference existing guidelines provided for ambient air modeling to determine adequacy and quality of data. •
Lack of 3rd party/subject matter expertise	• Team members connect with their respective networks to find out who might be able to do the work (rather than being limited to the expertise around the table).Rather than postpone, include funds for an expert advisory team or consultant, rather than postponing work in the event that expertise is not present. •
Can't reach agreement on: • Identification of gaps (1.3) • Highest value NPS (2.4) • Management actions (3.3)	• Determine in advance which pieces of work do and do not require consensus. • Outline a clear decision-making process that includes what happens if the team can't agree – who will make the decision? • Have an explicit discussion around Interest-Based Negotiation, and get all the interests of the team members on the table.
CASA's 3 year review impacts the project	While the project team does not have control over this risk, it does provide incentive for the value proposition to be well described in order to increase likelihood of Board buy-in.
Project Team doesn't understand or follow the Project Charter	• Working group to create a project charter that is clear, especially with respect to the intent for sequencing of objectives. • Board receives regular updates to ensure progress is monitored.
CASA Board doesn't agree with: • NPS priorities identified in Objective 2	• Project Team members liaise with their constituents and Board members on an ongoing basis. • Project Team provides regular status reports for Board meetings

• Management actions identified in Objective 3	
During testing, "interested parties" don't agree with the list of management actions provided in Objective 3.2	• Make an effort to develop the potential management actions collaboratively. • If stakeholders disagree, seek to understand stakeholder reasons for disagreement.
Recommended management actions are too broad or not specific to the project goal.	• Seek a balance between regional needs and provincial applicability in management actions chosen. • Consider prioritizing cross-cutting actions that provide regional benefit and also have the potential to be broadly applicable. • Consider ways to align this work with existing management frameworks and plans (e.g. Capital Region Air Management Framework; CRAZ PMO3 Management Plan).
Lack of engagement/ownership on Project Team (incl. Human resources)	• Identify and communicate with potential stakeholders early in the process. • Create a clear value proposition. • Be clear about what is being asked of stakeholders.
Testing and refining management actions with interested parties (Objective 3.2) takes longer than expected, or causes scope creep.	• Set specific parameters for this piece of work: o Purpose of soliciting feedback. o Scope of influence outcomes will have on overall process. o Time available.
Insufficient time scheduled for Objectives 1 and 2.	• Prior to finalizing workplans, test how much time the outlined tasks might take with people who know (e.g. subject matter experts, consultants). • Have clear parameters in RFPs: o Timeframe o Scope o Specific deliverables • Practice strong oversight and communication with consultants. • Consider the needs for outside resources (i.e. consultants) early in the process, and plan accordingly to avoid delays when project team is ready to implement.
Recommendations of the project team are not	This risk is outside the scope of the project team to mitigate, however this risk will be reduced if i) the parties potentially

implemented. Specifically, advice given on implementing management actions in Objective 4.3.	involved in implementation are engaged, and ii) reference to implementation (who and how) is included in the report's recommendations.
Work isn't linked to $PM_{2.5}$ management response plans.	• Ensure the project team includes members from the airsheds and other stakeholders who are involved in developing PM regional management response plans to: o Understand work they are doing, and o Avoid duplication of effort. • Regularly consider how the outcomes of the project team work can contribute to their work.

Operating Terms of Reference

An Operating Terms of Reference describes how the project team agrees to work together. The project team should discuss and reach consensus on the following items:

- Requirements for quorum
- Governance
- Meeting protocols
- Roles and expectations of project team members
- How decisions will be made
- Ground Rules
- Frequency of project team meetings
- Frequency of updates and reports to the CASA Board
- Protocols for handling media requests
- Protocols for providing updates to interested parties
- Any other considerations for working together

Stakeholder Analysis and Engagement Plan

NPS is a very broad issue, which would benefit from engaging different stakeholders at different levels. Different stakeholders could be engaged in a variety of capacities and at different times throughout the project.

The working group identified the following categories of stakeholders that may be involved:

- Project Team: Stakeholders who are required at the table to reach consensus agreement.
- Corresponding members: Stakeholders who receive all correspondence, but are not required at the table to reach consensus agreement.
- Task Groups or Technical Experts: Stakeholders who have a specific interest or expertise and can be engaged in a more focused way.

- Other:
    - Stakeholders with whom management actions are to be tested (Objective 3.2)
    - Members of the public who may be consulted

The Working Group drafted a list of stakeholders for potential inclusion in the Project Team.

Agriculture:

- Government of Alberta: Agriculture and Rural Development
- Intensive Livestock Working Group
- Agriculture Equipment Suppliers
- Fertilizer manufacturers
- Crop Sector Working Group
- Agri-Environmental Partnership Association
- Alberta Milk
- Alberta Canola Producers Commission
- Alberta Barley Commission
- Potato Growers of Alberta
- Food processors
- Alberta Federation of Agriculture

Construction:

- Industry Associations:
    - Alberta Road Builders and Heavy Construction Association
    - Alberta Sand and Gravel Association
    - Construction Owners Association of Alberta
- Government of Alberta: Infrastructure, Transportation, Municipal Affairs

Road Dust:

- Alberta Association of Municipal Districts &Counties
- Alberta Urban Municipalities Association

Home Heating:

- Government of Alberta: Alberta Environment and Sustainable Resource Development; Alberta Energy

Transportation:

- Alberta Association of Municipal Districts &Counties
- Alberta Urban Municipalities Association
- Alberta Motor Association

- Government of Alberta: Transportation, Alberta Environment and Sustainable Resource Development
- Alberta Motor Vehicle Industry Council
- Alberta Motor Transport Association
- Commercial operators, road builders, fleet operators, transportation business.

NGOs:

- Alberta Environmental Network: Clean Air and Energy Caucus
- CASA Environment Caucus
- Urban
- Health (ex. The Lung Association/ Alberta and Northwest Territories)

Airsheds:

- Calgary Region Airshed Zone
- Parkland Airshed Management Zone
- 1 of the following Edmonton area groups: Fort Air Partnership, Alberta Capital Airshed, West Central Airshed Society

Major Municipalities:

- City of Edmonton
- City of Red Deer
- City of Calgary

Other:

- Alberta Chamber of Resources
- Chemical Industry Association of Canada
- Aboriginal and Metis groups

Given the filtration process outlined for this work, it is likely that new stakeholders will become apparent as the work progresses and the scope of work becomes more refined. The project team will need to regularly evaluate whether the appropriate representation is present based on findings and prioritizations of the group.

For information only:

Organizations identified through the work of the CCME Mobile Sources Working Group:

- Canadian Vehicle Manufacturing Association (CVMA)
- Association of International Automobile Manufacturers of Canada (AIAMC)

- Canadian Trucking Alliance (CTA)
- Truck and Engine Manufacturers Association (EMA)
- Natural Resources Canada – SmartWay Transport Partnership
- Canadian Transportation Equipment Association
- Association of Equipment Manufacturers Canada
- Canadian Fuels Association
- Canadian Natural Gas Vehicle Association
- Automotive Industries Association Canada
- Railway Association of Canada
- Canadian Hydrogen Fuel Cell Association
- Transportation Association of Canada
- Association of Commuter Transportation
- Canadian Urban Transit Association
- Pembina Institute
- Victoria Transport Policy Institute
- Summerhill Impact
- Pollution Probe
- World Wildlife Fund
- Electric Mobility Canada (EV)
- Clean Air Partnership (CAP) – Toronto Centre for Active Transportation (TCAT)
- Better Environmentally Sound Transportation (BEST)
- Richmond Sustainability Initiative
- Fraser Basin Council – E3 Fleets

Appendix A: Working Group Membership

	Role	Organization
Members		
Bill Calder	Co-member with Chris Severson-Baker	Prairie Acid Rain Coalition
Chris Severson-Baker	Co-member with Bill Calder	Pembina Institute
Scott Wilson	Member	Alberta Motor Association
Peter Noble	Member	Imperial Oil
Rich Smith	Member	Alberta Beef
Dan Thillman	Co-member w Rob Beleutz	Lehigh Cement
Rob Beleutz	Co-member w Dan Thillman	Graymont Western Canada
Ann Laing	Member	Jobs, Skill, Training, and Labour
Rhonda-Lee Curran	Member	Environment and Sustainable Resource Development
Mike Mellross	Member	City of Edmonton
Mandeep Dhaliwal	Member	Calgary Region Airshed Zone
Corresponding Members		
Brian Gilliland	Corresponding member	Weyerhaeuser Company
David Lawlor	Corresponding member	Enmax
Martina Krieger	Corresponding member	Environment and Sustainable Resource Development
Sharon Willanen	Corresponding member	Environment and Sustainable Resource Development
Project Managers		
Michelle Riopel	Project Manager	Project Manager
Robyn Jacobsen	Project Manager	Senior Project Manager

Appendix B: Examples of Non-point Sources in Alberta[8]

This information was prepared by the GoA and is not a consensus product of the NPS Working Group

Activities associated with Non-Point Source emissions include industry, transportation, urbanization, and agriculture, to name a few. However, Non-Point Source emissions are also caused naturally as a result of forest (wild) fires and emissions from live and decaying vegetation, soil, etc. Cumulatively, these Non-Point Sources contribute substantially to certain types of emissions.
The following non-exhaustive list depicts the predominant Non-Point Sources as well as the major contributors to these emissions:

- Residential Fuel Combustion (e.g. home heating) – **Public**;
- Commercial Fuel Combustion (e.g. space and water heating) – **Commercial**;
- Residential Fuel Wood Combustion (e.g. fire places, wood burning stoves) – **Public**;
- Transportation (e.g. on-road and off-road vehicles, air, rail, etc) – **Public, Commercial, Industry (construction, road-building and use, mine fleet, mine faces), Airlines, Rail lines**;
- Incineration (e.g. cremation) – **Commercial, Industrial**;
- Cigarette Smoking – **Public**;
- Dry Cleaning – **Commercial**;
- General Solvent Use – **Commercial**;
- Meat Cooking (e.g., BBQ, etc.) – **Public, Commercial**;
- Refined Petroleum Products Retail (gas stations) – **Commercial**;
- Printing – **Commercial**;
- Structural Fires – **Commercial, Public**;
- Surface Coatings – **Commercial**;
- Agriculture (e.g. animals, tilling & wind erosion, fertilizer application) – **Public**;
- Construction Operations – **Commercial, Industrial**;
- Road Dust (paved and unpaved roads) – **Public, Commercial, Industrial**;
- Waste – **Public, Commercial, Industrial**;
- Mine Tailings – **Industrial**;
- Prescribed Burning – Forest Fire and Pest Management, **Industrial**;
- Biogenics (soils and plants) – Natural Processes;
- Forest Fires – Natural Processes, **Public-induced**;
- Etc.

[8] Clean Air Strategic Alliance NPS Workshop October 23, 2013. Background Information. Prepared by: Government of Alberta.

Appendix C: Summary of the Six Major Non-Point Sources and their Emissions Contributions[9]

This information was prepared by the GoA and is not a consensus product of the NPS Working Group

The following information summarizes the sources that contribute the majority of the six major Criteria Air Contaminants. Those with an asterisk contribute substantially more than any other source.

Significant Sources of Non-Point Source Emissions
PM (Total PM): 1) *Road Dust; 2) Construction; 3) Agriculture
PM10: 1) *Road Dust; 2) Construction; 3) Agriculture
PM2.5: 1) *Road Dust; 2) Construction
VOCs: 1) *Biogenic; 2) Agriculture; 3) Transportation
CO: 1) *Transportation; 2) Forest Fires
NH3: Agriculture
NOx: Transportation

Agriculture
Components of Agricultural emission sources are: i) Animals; ii) Tillage and Wind Erosion; iii) Fertilizer Application; and iv) Agriculture Fuel Combustion
Agriculture is a source of:
1. Particulate Matter
a. Total PM: 481 kilotonnes (6% of total TPM)
b. PM10: 252 kilotonnes (11% of total PM10)
c. PM2.5: 15 kilotonnes (4% of total PM2.5)
2. NH3: 118 kilotonnes (90% of total)
3. VOC: 99 kilotonnes (17% of total if excludes biogenics)

Transportation
Components of Transportation emission sources are: i) on-road; ii) off-road vehicles & equipment; iii) air and rail transportation
Transportation is a source of:
1. CO: 938 kilotonnes (62% of total)
2. NOx: 237 kilotonnes (31% of total)
3. VOC: 69 kilotonnes (~2% of total)
4. Particulate Matter:
a. Total PM: 122 kilotonnes (0.16% of total TPM)
b. PM10: 122 kilotonnes (0.51% of total PM10)
c. PM2.5: 110 kilotonnes (2.7% of total PM2.5)
GoA Non-Point Submission #1 19 Final

[9] Clean Air Strategic Alliance NPS Workshop October 23, 2013. Background Information. Prepared by: Government of Alberta.

5. SO2: Included with 'other sources' as 3 kilotonnes (0.36% of total)

Construction
Components of Construction emission sources are: i) heavy machinery operations including excavation, levelling, loading, unloading and compaction, and all vehicular movement; ii) Residential; iii) commercial, iv) institutional, and v) engineering construction operations. Emissions from construction equipment fuel combustion by off-road vehicles and engines are inventoried as part of off-road use of diesel and gasoline.
Construction is a source of:
1. Particulate Matter:
a. Total PM: 2,182 kilotonnes (29% of total TPM)
b. PM10: 653 kilotonnes (27% of total PM10)
c. PM2.5: 130 kilotonnes (32% of total PM2.5)
2. NOx – fuel combustion
3. CO – fuel combustion
4. NH3 – fuel combustion

Biogenic
Components of biogenic emission sources are: i) Plants; ii) Soil
Sources of biogenics are:
1. VOC: 3,242 kilotonnes (85% of total VOC)
2. NOx: 24 kilotonnes (3.1% of total NOx)

Road Dust
Components of Road Dust are the result of vehicles travelling on paved and unpaved roads (silt, dust, other particles). Particulate matter emissions due to tire and brake lining wear are considered in a separate category in the transportation sector.
Road Dust is a source of:
1. Particulate Matter
a. Total PM: 4,886 kilotonnes (64% of total TPM)
b. PM10: 1,449 kilotonnes (60% of total PM10)
c. PM2.5: 223 kilotonnes (55% of total PM2.5)

Forest Fires
Components of forest (wild) fires covers the emissions of criteria air pollutants from the combustion of forest material (vegetation, soil)
Forest Fires are a source of:
1. Particulate Matter
a. Total PM: 10 kilotonnes (0.13% of total TPM)
b. PM10: 9 kilotonnes (0.35% of total PM10)
c. PM2.5: 7 kilotonnes (1.69% of total PM2.5)
2. CO: 81 kilotonnes (5.35% of total)
3. VOC: 11 kilotonnes (1.90% of total)
4. NOx: 3 kilotonnes (0.34% of total)
5. SO2: 0.006 kilotonne (0.002% of total)
6. NH3: 0.17 kilotonne (0.13% of total)

DECISION SHEET

Item 2.3: **Strategic Planning Discussion**

Issue: CASA needs to update its multi-year strategic plan

Background: CASA has typically undergone strategic planning on a three- or four-year cycle, and the previous strategic plan was intended to cover the 2012–2016 period. The last round of planning was to be completed in 2015, but several events justified delaying the strategic planning cycle:

- Outgoing Executive Director Norm MacLeod produced a CASA performance evaluation in September 2014 that covered many elements of strategic planning
- Keith Denman was appointed as executive director in early 2015
- The impact on CASA's work of two nascent organizations was unknown (Alberta Environmental Monitoring and Reporting Agency was expected to impact plans for the monitoring and evaluation of air quality in Alberta; and the Alberta Energy Regulator began taking on regulatory functions related to energy development)

It was decided in late 2015 that full-blown strategic planning was not necessary, and given available staff capacity, the board's focus should instead be on identifying potential projects CASA could undertake to contribute to the air management system. Staff were also directed to track how CASA's activities were contributing to the previous plans' goals.

In June 2016, the board struck the CASA 2.0 Working Group to identify potential pieces of work that would contribute to the Clean Air Strategy and report back to the board. In December 2016, the working group's report identified a number of work opportunities, however the roles, responsibilities and relationships between groups underpinning the success of the potential projects were identified as an area that needed more work. The board held a Systems Mapping Workshop to try better outline those pieces in March 2017.

A subsequent committee met twice between March and June to try wrap up the workshop findings in a summary that would inform further progress for new work. The Committee found it very challenging to summarize such a complex system but has developed a written summary. The summary identifies the following primary focus areas for air quality management: visioning, defining air quality – standard setting, monitoring and reporting of ambient and emissions levels, policy and management response, education and outreach, and systems

design and oversight. More work in this area may be appropriate as part of an approach to strategic planning.

CASA has done a lot of work analyzing where it should focus its efforts but it has also undergone significant changes as an organization: the CASA data warehouse is no longer under CASA's purview; operations supporting the board are being amalgamated with the Alberta Water Council and there has been a significant reduction in staff as a result (executive director and operations manager will be working at half time for CASA); and the grant which provides for core operations funding (internal) has been reduced and is now being provided by Environment and Parks (AEP) rather than Energy, which may drive different priorities going forward (e.g., the GoA, via AEP, has identified two pieces of potential priority work for CASA to take on and will be presented at the meeting). Also, the new executive director will be developing a report based on initial interviews with CASA board members to outline their perspectives on CASA's direction.

Status: The executive committee discussed the need to take on strategic planning in 2018. There is no set process to advance strategic planning for CASA, but the time to start having the conversation is now. The executive committee suggests that it might be appropriate for the board to strike a steering committee, supported by the staff, to review the documents associated to the work noted above and other relevant information, and recommend to the board an approach for this next round CASA's multi-year strategic planning. The executive committee will lead a discussion with the board about how to approach this important topic.

Decision: Strike a strategic planning steering committee to review relevant information and recommend to the board an approach to CASA's next multi-year strategic planning, which should occur in 2018; or choose a different approach to start discussing the approach to strategic planning.

DECISION SHEET

Item 2.4 **Statements of Opportunity**

Issue: The board needs to consider two statements of opportunity, decide whether to approve them as potential work for CASA and determine whether to launch one working group at this time to develop a project charter.

Background: CASA's "Guide to Managing Collaborative Processes" outlines that stakeholders can ask the board to become involved in resolving a provincial air quality or management issue by submitting a statement of opportunity (SoO). The SoO is submitted to the executive director for initial screening to ensure the issue is provincially significant, requires a strategic approach and would benefit from CASA's collaborative approach. If it passes the initial screening, the statement of opportunity goes to the board along with a report from the executive director.

The GoA, through Environment and Parks (AEP), submitted two statements of opportunity to the executive director in August. The attachments outline the executive director's evaluation of each SoO, which conclude that both projects are appropriate for CASA to take on.

Status: The executive director advises that there is staff capacity and room in the internal budget to take on one new working group and its subsequent project team immediately. He recommends:

- That the board approve both SoOs as potential work
- Launch a working group to scope out the work described in one of the SoOs into a project charter immediately
- That the working group that is launched solicit commitments for external funding needs if required as part of developing the project charter. This will expedite the process for the project team and provide certainty that the project can be completed as envisioned
- Postpone deciding on when to launch the other working group until further discussions around strategic planning, operational planning for 2018 and the 2018 budget are discussed at a later date.

As discussed at previous CASA meetings, it would be ideal if members could provide names of representatives for the working group when staff call for members shortly after the board meeting.

Sheila Lucas and Rhonda Lee Curran of the AEP Air Policy Section will present the SoOs.

Attachments:

- NOx Emissions From Upstream Oil and Gas SOO
- On-road Vehicle Emission Testing Study SOO
- Executive Director's Analysis

Decisions:

It is understood that if the board approves both SoOs at this time, it is on the condition that one working group will start working immediately, and the timing of the launch of the other will depend on strategic planning and operational planning discussion that are to occur in the coming months.

The board approves:

1. NOx Emissions From Upstream Oil and Gas SoO as potential work
2. On-road Vehicle Emission Testing Study SoO as potential work
3. Launching a working group to scope a project charter based on one of the SoOs. The board will have a discussion to decide which SoO should be launched into a working group immediately, and which one will be conditional to further discussions.

A Statement of Opportunity to the CASA Board of Directors

CAAQS Implementation: Managing NOx Emissions from the Conventional Upstream Oil and Gas Sector

*For Discussion Purposes only

7/27/2017

CONTENTS

LIST OF TABLES & FIGURES

INTRODUCTION

The Government of Alberta has committed to meeting the Canadian Ambient Air Quality Standards (CAAQS) as part the commitment to the national Air Quality Management System (AQMS). CAAQS have been developed for sulphur dioxide (SO_2), fine particulate matter ($PM_{2.5}$), and ozone (O_3) and are in development for Nitrogen dioxide (NO_2). These criteria air contaminants need to be monitored and managed in order for Alberta to achieve the CAAQS as they become more stringent over time.

In particular, careful management of nitrogen oxides (NO_x) emissions will be needed as it is an important precursor to the formation of secondary $PM_{2.5}$ and ground-level O_3. Ambient air management of NO_x is generally focused on NO_2, due to its health effects. Emissions data and information, generally refer to NO_X, because emissions can be in the form of both NO and NO_2. NO emissions rapidly react with the ambient air to form NO_2, so emissions data in Canada are usually given as NO_X expressed as NO_2, with the NO emissions assumed to have completely converted to NO_2. As such, this document will refer to NO_2 and NO as NOx when discussing emissions.

The conventional upstream oil and gas (CUOG) sector is the largest source of NO_x emissions in the province. The Government of Alberta, led by Alberta Environment and Parks, has identified an opportunity for a CASA Project Team to support CAAQS implementation. This work would involve:

- reviewing the most effective and feasible options for achieving the largest, most measurable NOx emissions in this sector, both in the short-term and long-term; and
- identifying and evaluating programs that would encourage companies to reduce NOx emissions in the short and long term, and commit to NOx reduction efforts.

For the purposes of this document, the definition of upstream oil and gas will be based on the 2011 Clearstone Upstream Oil and Gas Inventory as follows:
Almost all segments of the industry up to the petroleum product refinery gate will be referred to as "upstream" oil and gas operations.

Implicated in this "upstream" definition includes, what is often referred to as, the 'mid-stream' sector. Generally speaking the activities involved are: Well drilling and completions, production, gathering systems, processing and transport operations. For greater detail on the specific activities included please consult Appendix C.

This Statement of Opportunity outlines the potential work as well as its suitability to the CASA process.

CONTEXT

HEALTH AND ENVIRONMENTAL IMPACTS OF NO_2:

In 2016 Health Canada released a report on *Human Health Risk Assessment for Ambient Nitrogen Dioxide (NO_2)*[1], which established that health effects were observed at levels below current National Ambient Air Quality Objectives. In particular, epidemiological studies indicate that:

[1] Report can be accessed at: https://www.canada.ca/en/health-canada/services/publications/healthy-living/human-health-risk-assessment-ambient-nitrogen-dioxide.html

"..ambient NO_2 causes both short-term and long-term respiratory effects, and short-term mortality, as well as suggestive evidence linking it to a wide range of other adverse health outcomes"

In addition to health effects, NO_2 has been shown to contribute to the acidification and eutrophication of ecosystems.

NO_2 is also a precursor to the formation of $PM_{2.5}$ as well as O_3. Both of these secondary pollutants have negative health impacts, adversely impact regional air quality and contribute to smog.

THE NATIONAL AIR QUALITY MANAGEMENT SYSTEM AND THE CANADIAN AMBIENT AIR QUALITY STANDARDS:

In 2000, the Canadian Council of Ministers of the Environment (CCME) approved the Canada Wide Standards (CWS) for $PM_{2.5}$ and ozone, which established a 24h ambient air concentration limit for $PM_{2.5}$ and an 8h standard limit for ozone.

In October 2012, the CCME approved a new national Air Quality Management System (AQMS), which included the CAAQS for $PM_{2.5}$ and ozone which would replace the previous CWS. In 2013, the CAAQS were established as objectives under the *Canadian Environmental Protection Act*.

Since then, new CAAQS have been developed for SO_2 and are in progress for NO_2. The new standards have more stringent 24hr limits than the previous CWS, along with a new annual, three year average metric (Figure 1). In addition, both the 24hr and annual concentration limits will become more stringent over time. The CAAQS are intended to be used as thresholds to trigger management action on a regional scale (air zones), in order to identify air quality issues before the limits are exceeded.

Air Management Threshold Values				
	Substance:	Ozone	$PM_{2.5}$	
	Averaging time:	8 Hours	Annual	24 Hours
Management Level	Red	Actions for Achieving Air Zone CAAQS		
	Threshold:	63 ppb	10.0 µg/m³	28 µg/m³
	Orange	Actions for Preventing CAAQS Exceedance		
	Threshold:	56 ppb	6.4 µg/m³	19 µg/m³
	Yellow	Actions for Preventing Air Quality Deterioration		
	Threshold:	50 ppb	4.0 µg/m³	10 µg/m³
	Green	Actions for Keeping Clean Areas Clean		

FIGURE 1: CAAQS FOR $PM_{2.5}$ AND OZONE.

As part of the national AQMS, the Base-Level Industrial Emissions Requirements (BLIERS) were also established. BLIERS are an emission source performance standard that applies to a variety of sectors and industrial applications, for instance specific equipment, processes, facilities and fuel types. The BLIERS requirements are legislated in the *Multi-Sector Air Pollutants Regulations.* Both BLIERS and MSAPR have numerous exclusions and exemptions that do not apply to all sources of air contaminants.

In 2013, a policy regarding the application of BLIERS in Alberta was released by Alberta Environment and Parks[2]. This policy indicates that BLIERS are *minimum* national standards that do not take into consideration the air quality where sectors and industrial activities are located. Consequently, the Government of Alberta reserves the right to apply more stringent requirements,

[2] Document can be accessed at: http://aep.alberta.ca/air/legislation/documents/BaseLevelIndustrialEmissions-Jun18-2013.pdf

in order to ensure environmental and human health outcomes; and accommodate future industrial expansion and economic growth.

REGIONAL AIR QUALITY MANAGEMENT:

In 2007, Alberta developed the Land-Use Framework (LUF), which established a regional and cumulative effects approach to land-use planning and natural resource management. Seven land-use regions were delineated, and a Regional Plan was to be developed for each region, which would include an Air Quality Management Framework (Figure 2).

The national AQMS requires provinces and territories to delineate air zones and manage air quality within these boundaries. Alberta delineated six air zones which align with the LUF regions, with the Upper and Lower Peace being combined into one air zone. If a region's air zone approaches or does not achieve a CAAQS threshold (reaching orange or red management levels), the region is required to develop an Air Management Response Plan.

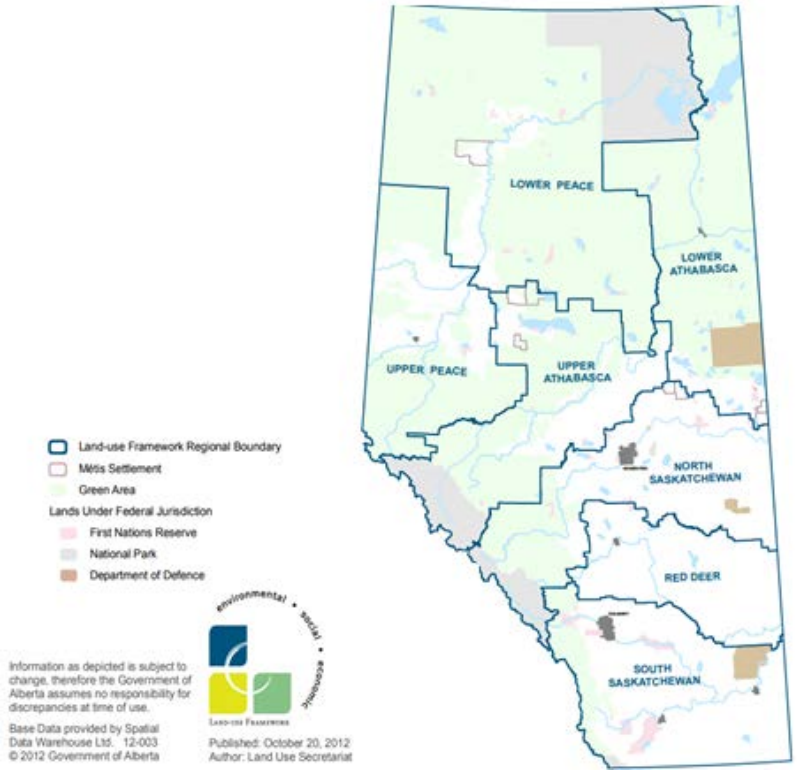


FIGURE 2: LAND-USE FRAMEWORK REGIONS

ALBERTA'S PERFORMANCE AGAINST THE CAAQS:

Preliminary assessments using historical ambient data indicate that 5 out of the 6 air zones are approaching or not achieving the current $PM_{2.5}$ and likely the future NO_2 CAAQS for 2020 and 2025. Data indicates that NO_2 exceedances will be the major cause for CAAQS non-achievement. Since NO_2 is a primary pollutant, and a precursor to $PM_{2.5}$ and ozone,, abating NO_x emissions will also help reduce ambient $PM_{2.5}$ and ozone.

Table 1 provides a summary of Alberta's performance against the previous CWS and the current CAAQS, as well as the management actions taken.

TABLE 1: SUMMARY: ALBERTA'S CWS & CAAQS PERFORMANCE

Date	CWS & CAAQS Performance
2012	• Edmonton's Capital Region air zone exceeded CWS for $PM_{2.5}$ for 2008-2010 reporting period. • Capital Region created Air Quality Management Framework.
2013	• Stations within Capital Region exceeded the 2009-2011 CWS for $PM_{2.5}$ • Red Deer metropolitan area exceeded the 2009-2011 CWS for $PM_{2.5}$ • Capital Region initiated a Management Response plan for the 2012 $PM_{2.5}$ exceedance.
2014	• One station in Capital Region exceeded 2010-2012 CWS for $PM_{2.5}$ • Red Deer metropolitan area exceeded 2010-2012 CWS for $PM_{2.5}$ • Capital Region released the Management Response plan for the 2012 $PM_{2.5}$ exceedance
2015	• The first CAAQS Assessment report[3] for Alberta was released for the 2011-2013 period. • Red Deer metropolitan area Air Zone exceeded 2011-2013 CAAQS for both annual and 24-hour $PM_{2.5}$ • All other Alberta air zones, except for the Peace air zone, either did not achieve or were approaching the CAAQS. Consequently, those regions required Management Plans to be developed within two years. • The two CWS exceedance reports for the Red Deer metropolitan area and Capital Region are completed. • The Government of Alberta completed CWS response action plan report for Red Deer metropolitan area, as well as the Capital Region's.
2016	• The Red Deer metropolitan area PM 2.5 response plan and Capital Region's Implementation progress reports[4] were released for 2012-2015. • The Government of Alberta released CAAQS response action plan report for Red Deer.

NO_X EMISSIONS IN ALBERTA:

As shown in Figure 3a), Alberta has significantly higher NO_x emissions than any other province in Canada. This is mainly due to the large number of industrial facilities in Alberta, particularly in the CUOG sector. Coal-fired power plants and the oil sands are also large sources of NO_x emissions in Alberta. In 2015, Alberta accounted for 53% of industrial and 38% of total NO_x emissions in Canada. Alberta annually emits almost as much NO_x as Ontario, Quebec and BC combined.

Unlike the rest of Canada, NO_x emissions in Alberta have seen overall increases over the last 25 years. Total Canadian NO_x emissions decreased 20% between 1990 and 2015, while Alberta's NO_x emissions have increased 11% since 1990. Between 1990 and 2015, other major Canadian provinces saw varying, but decreasing levels of NO_x emissions (see Figure 3b). These provincial declines in NO_x emissions were mostly attributable to a reduction in emissions from transportation sources, given the progressive federal regulations for cleaner technologies and fuels for vehicles.

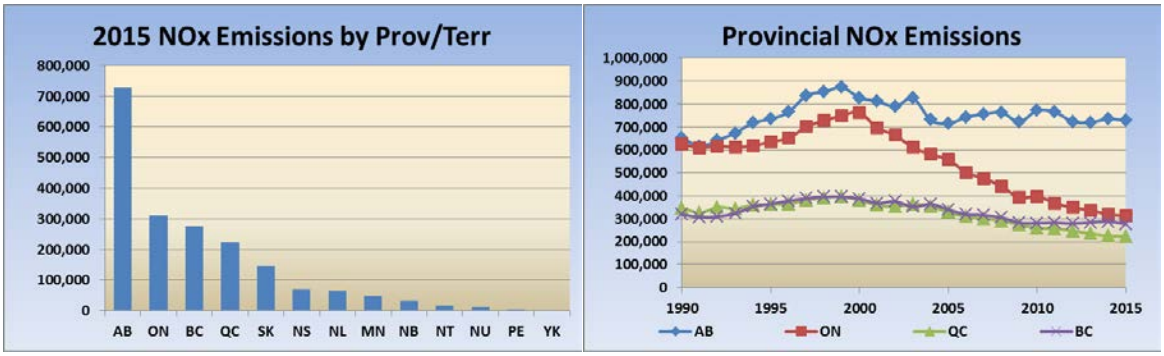


FIGURE 3 a) and b): NO_X EMISSIONS BY PROVINCE (1990-2015 APEI).

[3] Alberta: Air Zones Report 2011-2013

[4] Red Deer's PM2.5 response plan can be accessed here, and Capital Region's Implementation progress report can be accessed here.

Alberta has seen some reductions in NO_x emissions from transportation sources, but these decreases have not been as large as the other provinces. This has been due to Alberta's rapidly growing population and, consequently, an increase in the number of on-road vehicles.

NO_X EMISSION SOURCES:

As shown in Figure 4, conventional oil and gas is the largest NOx emitter among the industrial sector in Alberta, accounting for about 39% of NO_x emissions in the province.

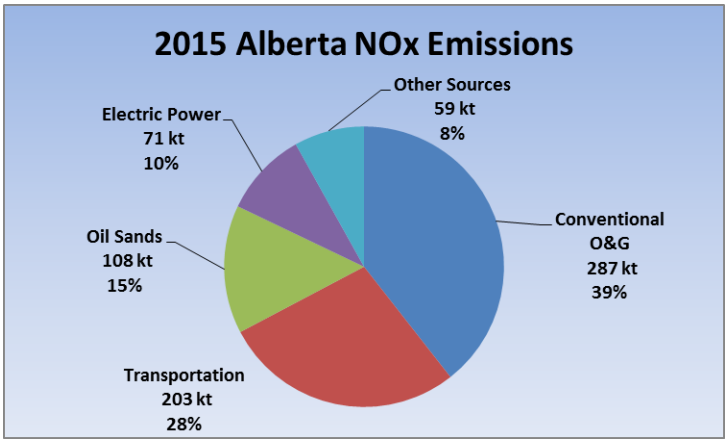


FIGURE 4: MAJOR SOURCES OF NO_X EMISSIONS IN ALBERTA (2015 NPRI).

The 2014 Air Pollutant Emissions Inventory indicates that, within the oil and gas sector, "Emissions from the oil and gas sector mostly come from upstream activities"[5]. In Alberta, approximately 1% of NO_x emissions can be attributed to the downstream sector. Although the province could also benefit from further NO_x emissions reductions in the downstream sector, given the CUOG sector accounts for 39% of NO_x emissions there is the potential for larger overall NO_x emission reductions from significantly more facilities and sources.

TABLE 2: NOX EMISSIONS IN ALBERTA FROM UPSTREAM AND DOWNSTREAM OIL AND GAS OPERATIONS (2015 APEI)**SECTOR**	**2015 AB NOx (tonnes)**	**% of 2015 AB Total NOx**
Downstream	3,664	1%
Upstream O&G	286,991	39%

As shown in Figure 5, industrial sources are the largest contributors to total anthropogenic NOx emissions in all of the Alberta air zones, except for South Saskatchewan where transportation sources are the largest emitting sector. Air zones with large population centres (South Saskatchewan, North Saskatchewan and Red Deer) have relatively larger proportions of NO_x emissions coming from transportation sources because of their higher numbers of on-road vehicles. Air zones with smaller populations (Lower Athabasca, Upper Athabasca and Peace) have relatively larger proportions of NO_x emissions coming from industrial sources.

[5] Environment and Climate Change Canada (2016) *Air Pollutant Emission Inventory, 2014*. https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=117ECDEC-1

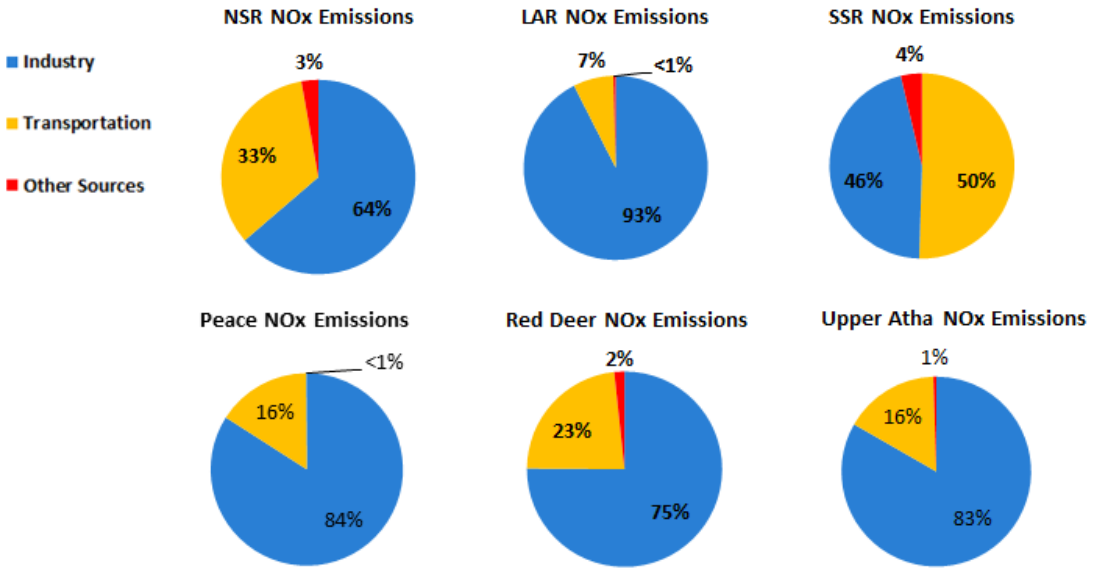


FIGURE 5: MAJOR NO_x SOURCES BY AIR ZONE (AIR POLLUTANT EMISSIONS INVENTORY[6] (APEI)).

Conventional upstream oil and gas operations are the largest NO_x emitting industrial sector in the Red Deer (59 kt), South Saskatchewan (57 kt), Upper Athabasca (46 kt) and Peace Air Zones (74 kt) (NPRI, 2015). CUOG is the second largest NO_x emitting sector in the North Saskatchewan and Lower Athabasca regions.

A recent source apportionment modelling study by the Parkland Airshed Management Zone[7] (technical consultant: Ramboll Environ) indicated that within the modelling domain (Central Alberta), upstream oil and gas was the largest industrial source sector contributing to ambient $PM_{2.5}$ concentrations. Source apportionment was only modelled for the period of January-February 2010; five other source sectors were also assessed[8].

The 2011 Clearstone Upstream Oil & Gas Inventory provides the best available emissions data covering the entire CUOG sector. The 2011 Clearstone Inventory identifies combustion sources as being responsible for nearly all of the NO_x emissions in the CUOG. Natural gas production and natural gas processing are the largest sources of NO_x emissions in the CUOG sector, followed by light/medium crude oil production. The ten largest Alberta CUOG facility subsectors, which together account for about 86% of NO_x emissions from this sector, includes gas gathering systems, sweet gas plants, crude oil and gas batteries, compressor stations and sour gas plants (see Appendix D for detailed breakdown).

ISSUE

Based on our understanding of the issue, and work already underway, an opportunity was identified for a CASA Project Team to address NOx emissions in the CUOG sector.

[6] *Air Pollutants from the oil and gas sector* - https://www.ec.gc.ca/indicateurs-indicators

[7] *Source Apportionment of secondary fine particulate matter in Central Alberta using CMAQ*, February 2017 – contracted by Parkland Airshed Management Zone (PAMZ)

[8] The other five individual source sectors include: Coal-fired power plants; Other point sources such as petroleum refining, chemical manufacturing, cement manufacturing, etc. , All Anthropogenic On-road; Non-coal EGUs (aka natural gas)

According to the 2011 National Pollutant Release Inventory (NPRI) 1,957 upstream oil and gas facilities in Alberta reported a total of 178,604 tons of NOx[9]. Although many CUOG facilities do report, at least in part, to the NPRI, many exceptions exist, and a significant number of CUOG facilities do not. Around 50,000 CUOG facilities did not report to the NPRI[10], cumulatively accounting for almost 60% of the CUOG sector's total NOx emissions in 2011.

Although certain CUOG facilities do require EPEA approvals, or require adherence to provincial Codes of Practice or Registrations, such regulations do not apply to all facilities in the CUOG sector of concern.

Given the large contribution to Alberta's NO_x emissions from a variety of activities and facilities in the CUOG sector, adequate management of these sources will be critical for achieving the CAAQS. This will require the following initial steps to be taken:

- determining the most effective and feasible options for achieving the most measurable NOx emissions reduction in this sector, both in the short-term and long-term; and
- identifying and evaluating programs that would encourage companies to reduce NOx emissions in the short and long term.

The cumulative effects from all of these CUOG activities present a potential opportunity for significant NO_x reductions in the province, and could help Alberta with achievement of the CAAQS for NO_2, $PM_{2.5}$, and O_3.

SCOPE

The Project Charter will further define the scope of the project. It is recommended that the scope:

- Focus on non-EPEA approved upstream oil and gas facilities.
    - Downstream facilities such as refineries would be out of scope. See Appendix C for a detailed list of activities and facilities included in the project.
    - Oil sands activities and facilities would be out of scope.
- Focus on the highest value opportunities to reduce emissions, particularly cost-effective approaches that help maintain the overall competitiveness of the sector.
- Consider what work can be completed in one year.
- Consider, where possible, opportunities to achieve reductions from other $PM_{2.5}$ and ozone pre-cursors as co-benefits.
- Focus on opportunities for the greatest emission reductions in the most economically achievable way.
- Not include any additional emission inventory work.

PROJECT GOALS, OBJECTIVES & OUTCOMES

Reducing NO_x emissions to achieve the CAAQS is a long-term goal involving multiple emission sources, sectors, policy tools and research. For this piece of work, Alberta Environment and Parks is proposing the following project goal, objectives and outcomes.

[9] NPRI 2011 inventory results can be accessed from this link.
[10] Based on the 2011 Clearstone Oil and Gas Inventory

PROJECT GOAL

The project goal is to identify and assess the most effective and feasible mechanisms for achieving actual, measureable reductions in NOx emissions in the top NO_x sources (outlined in Appendix D[11]). To identify short-term and long-term[12] strategies that will encourage companies to partake and commit to NO_x abatement programs.

POTENTIAL PROJECT OBJECTIVES & OUTCOMES

1. Review the most effective and feasible options for achieving the most measurable NOx emissions in this sector, both in the short-term and long-term.

   What this means: In light of the highest NO_x emission sources identified in Appendix D, the Project Team will identify and evaluate the best options for reducing NOx emissions from these sources. In evaluating such options, the group should consider: cross-sector applicability, feasibility in short-term and longer-term deployment, cost-effectiveness, social, economic and environmental concerns. The options should also consider regional CAAQS management levels and meeting national ambient air quality standards.

   Potential Outcomes:

- Understand the current state of NOx air pollution prevention and mitigation controls, and best management practices that currently exist for the top NOx sources.
- Assess the feasibility and resources needed to implement such NOx reduction options in both the short-term and long-term.
- Learn from companies in the CUOG sector that have achieved NOx reductions.
- Understand the drivers and barriers for reducing emissions in the CUOG sector.
- Develop a common understanding of the applicability of such options in CAAQ orange and red level zones.

Expertise needed:

- A wide variety of oil and gas industry expertise that includes small and big production companies, mid-stream companies, oil and gas equipment providers and manufactures. More specifically, professionals with knowledge in combustion equipment used in the various activities identified in Appendix C.
- Professionals with knowledge of regional CAAQS management levels, regional operations and compliance will help evaluate option applicability and implementation.
- Expertise in economics to present balancing views on the costs and benefits that NOx reductions may have on regional economies, public health and the environment.
- Academics in the field of air-pollution control technologies, who can contribute their knowledge of innovations and latest research studies.
- NGOs, such as health associations, and environmental organizations, that can contribute their perspectives on potential environmental and health impacts.
- Indigenous representatives can voice their views on how the NOx reductions might impact their communities.

[11] This is not to suggest that all top sources identified in Appendix D be considered. During the development of the Project Charter, the working group could further specify and select the number of activities and facilities the project will focus on.
[12] Definitions of what short and long term will be, can be specified in the Project Charter.

2. Identify and evaluate programs that would encourage companies to reduce NOx emissions in the short- and long-term, and commit to NOx reduction efforts.

   What this means: In addition to identifying options for reducing NOx in this sector, the Project Team will need to evaluate strategies for encouraging companies to partake and commit to reducing NOx. This will also require discussions around strategies for overcoming barriers, and promoting compliance in the CUOG sector.

   Potential outcomes

- Identify and understand the attributes in successful air pollution reduction programs and compliance mechanisms in leading jurisdictions[13].
- Develop possible options that would encourage the CUOG sector in reducing NOx emissions and especially early adopters.
- Evaluate the applicability of the various options to the CUOG sector in Alberta, and make recommendations on the best ones.
- Understand the costs, and resources needed for such options, as well as their potential benefits and limitations.
- Develop processes and mechanisms necessary to track the operation and maintenance of the NOx emitting CUOG activities

Expertise needed:

- Professionals with knowledge on successful emission reduction programs.
- Professionals with experience in compliance and program implementation in regional operations.
- Legal professionals with knowledge of Alberta's regulatory system, who could provide insight on the legal feasibility of possible options.
- Airshed organizations to identify potential opportunity for community involvement
- Indigenous peoples to provide their perspective about the role they can play in encouraging NOx reduction efforts.
- Health and environmental interest groups that can contribute ideas on effective programs that encourage NOx reduction in CUOG and compliance

POTENTIAL PROJECT DELIVERABLES

The Project Charter will further define the project deliverables. It is expected that a final report is completed, that would include the project methodology, findings, outcomes and recommendations. The recommendations will outline short- and long-term options for reducing NOx in this sector, encouraging companies to partake and commit to such reductions, as well as propose future projects. In addition, it is requested that a communications plan be developed by CASA to disseminate the findings and results of the project.

[13] The project charter will identify in more detail the specific jurisdictions to be considered, and the reasons for their consideration. For instance, this could include, but not limited to: Canada (B.C, Ontario, Quebec); The USA (Colorado, California, and Texas).

RANGE OF POTENTIAL STAKEHOLDERS

This initial list of potential stakeholders was identified based on current knowledge:

Individual or Organization	Possible Interests and Concerns
Provincial Regulators : Environment and Parks, Energy, Alberta Energy Regulator, Health, Economic Development & Trade, Justice	Responsible for ensuring achievement of the CAAQS as well as provincial policy. Will likely be responsible for implementing many management actions. Interested in environmental protection and health of Albertans as well as ensuring sustainable economic prosperity.
Federal government	Interested in ensuring achievement of the CAAQS across Canada, alignment with federal policies, such as BLIERS and MSAPR, National Energy Board regulations as well as meeting transboundary commitments.
First Nation and Métis	Interested in ensuring the health of communities. Interested in protecting the environment.
Well licensees, Enhanced Recovery Approval holders, Energy Utilities Development licensees, Energy Development licensees	Will likely be responsible for implementing management actions. May be concerned that management actions will make industry less competitive or are too costly.
Upstream Oil & Gas Sector Associations *	Involved in upstream oil and gas operations.
Academia**	Have expertise related to emissions as well as technological solutions.
Health and Environmental Non-Government Organizations	Interested in ensuring the health of Albertans. Interested in protecting the environment.
Airshed Organizations	Conduct monitoring activities that will be used as an input to discussions. May be involved in implementing management actions.

*Organizations such as the Petroleum Services Association of Canada (PSAC), Canadian Association of Petroleum Producers (CAPP), Explorer & Producers Association of Canada (EPAC), Canadian Energy Pipelines Association (CEPA) , Alberta Pressure Vessel Manufacturers' Association (APVMA)
** University research organizations, research groups such as the Canadian Energy Research Institute (CERI), Pembina Institute are some examples.

SUITABILITY OF WORK TO CASA AND CASA PROCESS

A project related to CAAQS implementation and emission reductions aligns with the CASA goals of providing strategic advice, and of contributing to the development and implementation of effective air quality management in Alberta. It also aligns with CASA's three air quality management goals:

1. Protect the environment by preventing short and long-term effects on people, animals and the ecosystem.
2. Optimize economic efficiency.
3. Promote pollution prevention and continuous improvement.

The issue is well-suited to be dealt with through CASA and CASA's collaborative process because:

- The project has provincial implications as the oil and gas sector exists across the province.
- It requires a strategic approach to balance social, environmental and economic factors in order to achieve emissions reductions in the most cost-effective manner.
- This issue involves a broad range of stakeholders with a wide variety of perspectives and interests that need to be considered. This poses a challenge due to the potentially sensitive nature of the possible related management recommendations. Therefore a variety of perspectives are needed in order to evaluate the different options available.
- CASA has a unique ability to build relationships and provide a neutral forum in which this type of multi-stakeholder work can be done.

NEXT STEPS

If the Statement of Opportunity is approved by the CASA Board of Directors, next steps will follow as outlined in the *CASA Guide to Managing Collaborative Processes*.

The Board of Directors is asked to direct the CASA Secretariat to form a Working Group to develop a Project Charter. The Working Group would be led by a Project Manager from CASA's Secretariat and have at least one Board member that is prepared to act as a "champion". This Working Group would develop a Project Charter and secure Board of Directors approval to convene a Project Team. This Working Group would include representatives from government, industry and non-government organizations that are knowledgeable about the issue and the collaborative decision-making process. Following CASA Board of Directors approval of the Project Charter, the project team would begin work.

The Project Charter describes the scope, deliverables, outcomes, projected resources and costs, timelines, stakeholder analysis and plan for engagement, a communications plan and draft ground rules for the Project Team.

The Project Charter serves several different purposes including to:

- Obtain approval from the CASA Board of Directors.
- Provide the foundation for the work of the Project Team.
- Communicate the project and scope of work with stakeholders.

A timeline is proposed for next steps as follows:

- September 13, 2017: CASA Board of Directors meeting – if the Statement of Opportunity is approved, the Board of Directors direct the CASA Secretariat to form a Working Group to develop a Project Charter and provide CASA with the names of the appropriate representatives to participate.
- December 13, 2017: CASA Board of Directors meeting – the Working Group present the Project Charter to the CASA Board of Directors for approval. If the Project Charter is approved, the Board of Directors request the CASA Secretariat to stand up the Project Team and provide CASA with the names of the appropriate representatives to participate.
- January 2018: CASA Secretariat to stand up the Project Team and begin work.
- December 2018: CASA Board of Directors meeting – the Project Team present their final report for approval.

CASA has been moving towards a more "nimble" model for project team work. The overall timeline of one year aligns with this new approach.

Based on these next steps and best available knowledge, Appendix A outlines a draft project schedule and Appendix B outlines potential resources and costs for the consideration of the Working Group as they develop the Project Charter.

APPENDIX A – POTENTIAL PROJECT STRUCTURE & SCHEDULE

The following potential project structure and schedule is presented for the consideration of the Working Group during the development of the Project Charter.

- It is anticipated that if the Project Charter is approved by the CASA Board of Directors in December 2017, project work would begin in January 2018.
- It is anticipated that this project work will take approximately 12 months to complete, with a completion date of December 2018.
- It is anticipated that the project work is sequential, meaning that the outputs of Objective 1 become the input of Objective 2, etc. The Working Group should also consider opportunities where work could be done concurrently.

APPENDIX B – POTENTIAL RESOURCES & COSTS

Based on best available knowledge, the potential projected resources and costs are presented for the consideration of the Working Group as they develop the Project Charter as follows:

Data needed:

- 2011 Clearstone Upstream Oil & Gas Inventory.
- North Saskatchewan Region and Red Deer Source Apportionment Study.
- Air Pollutant Emissions Inventory.
- National Pollutant Release Inventory.
- Alberta Energy Regulator Active and Inactive Facility Lists, licenses issued.
- Registrations issued to date.
- Compliance reports.

Information needed:

- Facility and equipment sources of NO_x, their quantity and location.
- NO_x reduction technologies for this sector.
- Jurisdictional scan of successful NO_x reduction or other air pollutant voluntary programs.
- Successful compliance assurance programs for air pollution reduction non-regulatory policies.
- Innovations in environmental policy for air pollution.
- Stakeholder views about NO_x air pollution in Alberta from this CUOG sector.
- The role communities and NGOs can play in public education, awareness and encouragement of NO_x emissions reductions.

Funding required:

- No funding is identified at this time, assuming that Project Team members identified are able to conduct the work internally.
- In the case where internal expertise is not available among CASA's stakeholders, contractors might be needed.

APPENDIX C – SECTOR AND FACILITY DETAILS

Sub-Sector	Facility Type	Facility Sub-Type
Well Drilling	All	All
Well Servicing		Drilling, completion, test, workover and abandonment
Well Testing		Testing (ex. Pressure test)
Light/Medium Crude Oil Production	Injection Facility	Enhanced recovery scheme
		Concurrent production-cycling scheme
	Battery	Crude Oil (Medium) Single
		Crude Oil (Medium) Multiwell Group
		Crude Oil Multiwell Proration
		Crude Oil (Light) Single
		Crude Oil (Light) Group
	Wells	Conventional Oil – Flowing
		Conventional Oil – Pumping
Heavy Crude Oil Cold Production	Custom Treating Facility	Custom Treating Facility
	Battery	Crude bitumen single-well
		Crude bitumen multiwell group
		Crude bitumen multiwell proration
		Water Source Facility
		Brine production
Natural Gas Production	Compressor Station	Compressor Station
	Battery	Gas Single
		Gas Multiwell Group
		Gas Multiwell effluent
		Gas Multiwell proration SE AB
	Gas Gathering System	Gas Gathering System
		Meter stations
	Wells*	Shallow Gas Well
		Deep Gas Well – Sweet
		Deep Gas Well – Sour
Natural Gas Processing	Gas Plant	Gas Plant Sweet
		Gas Plant Sour (receives <1 t/d sulphur). - Flaring
		Gas Plant Sour – Injection
		Gas Plant Sour – Recovery
		Gas Plant Sweet – Straddle
		Gas Plant fractionation
		Gas Plant Sour (receives >1 t/d sulphur). - Flaring
	Injection Facility	Acid Gas Disposal
Gas Transportation	Injection Facility	Underground gas storage
		Underground LPG storage
		Underground CO2 storage
	Pipeline	Gas transporter
		Gas distributor
		CO2 Pipeline
Petroleum Liquids Transportation	Injection Facility	Underground oil storage
	Pipeline	Oil pipeline
		NGL pipeline
	Tank Farm- Terminal	Tank loading and unloading terminal
Disposal and Waste Treatment	Custom Treating Facility	Custom Treating Facility (approved as waste plant)
	Injection Facility	Water Disposal
		Disposal
	Waste Plant	Waste Processing Facility
Waste Plant	Waste Processing Facility	Pipeline Ruptures
		Spills
		Surface Casing Vent Flows *
		Gas Migration to Surface*

*These activities have been included as NOx sources due to *potential* combustion activities from flaring. The project is concerned only with combustion activities, not venting.

APPENDIX D – NOX SOURCES BY SECTOR AND FACILITIES

TABLE 3: CUOG NOX EMISSIONS BY SUBSECTOR (2011 CLEARTSONE INVENTORY).

#	Sub Sector	Sum of Emissions (t)	%
1	Natural Gas Production	174165.5	49.19
2	Natural Gas Processing	95768.8	27.05
3	Light/Medium Crude Oil Production	50471.0	14.26
4	Well Drilling	21664.4	6.12
5	Gas Transportation	5087.5	1.44
6	Petroleum Liquids Transportation	4752.0	1.34
7	Well Servicing	1827.8	0.52
8	Disposal and Waste Treatment	184.1	0.05
9	Well Testing	127.0	0.04

Table 3 shows the ten largest NOx emission sub sectors within the CUOG sector. Natural gas production and natural gas processing are the largest sources of NOx emissions in the CUOG sector, followed by light/medium crude oil production. Note that within the sub type *light/medium crude oil production* Clearstone Inventory states:

"Accurate identification of light/medium versus heavy crude oil is not always possible given the facility sub type codes available in Table 2 of the AER Directive 007[14]. Consequently, cold-flow heavy oil outside of the designated oil sands areas is grouped with light/medium crude oil production." (Volume 3 - UOG Emissions Inventory Methodology Manual, p.160)

TABLE 4: TEN LARGEST CUOG NOX EMITTING FACILITY SUB TYPES (2011 CLEARSTONE INVENTORY).

#	AER Facility Sub-Types	NOx Emissions (t)	%
1	Gas Gathering System	78,916.13	22.3
2	Gas Plant Sweet	52,233.41	14.8
3	Crude Oil Multiwell Proration Battery	42,696.26	12.1
4	Compressor Station	31,756.64	9.0
5	Gas Multiwell Group Battery	31,202.10	8.8
6	Drilling	21,664.43	6.1
7	Gas Plant Sour – Recovery	18,433.94	5.2
8	Gas Multiwell effluent measurement battery	15,029.41	4.2
9	Gas Plant Sour (receives >1 t/d sulphur). - Flaring	7,720.70	2.2
10	Gas Plant Sour (receives <1 t/d sulphur). - Flaring	7,602.36	2.1

Table 4 shows the breakdown of Alberta CUOG NOx emissions by AER subsector. The top ten list includes gas gathering systems, sweet gas plants, crude oil and gas batteries, compressor stations and sour gas plants.

[14] http://www.aer.ca/data/codes/ST102_code.pdf

A Statement of Opportunity to the CASA Board of Directors

ROVER III Project: On-road Vehicle Emissions Testing Study and Path Forward for Highest Emitters

*For Discussion Purposes only

7/27/2017

CONTENTS

INTRODUCTION

The Government of Alberta has committed to implementing the Canadian Ambient Air Quality Standards (CAAQS) as part of the national Air Quality Management System. Air emissions need to be managed in order for Alberta to achieve the CAAQS as they become more stringent over time.

In particular, careful management of emissions of nitrogen oxides (NOx) will be needed and the Clean Air Strategy highlights the need for management actions on non-point sources. Based on the 2014 Air Pollutant Emissions Inventory, the transportation sector is one of the largest sources of NOx emissions in the province, second only to industrial emissions, and contributes approximately 30% of total NOx emissions. The transportation sector is across the province and concentrated in populated, urban areas. In addition to emitting other air contaminants with associated health impacts, the transportation sector is a notable emitter of greenhouse gases.

The Government of Alberta, led by Alberta Environment and Parks, has identified an opportunity for a CASA Project Team to support CAAQS implementation and general air quality management. This work would involve: a) an on-road vehicle emissions testing study to gather information on in-use vehicle emissions, focusing on diesel-fuelled trucks, and to communicate with Albertans on vehicle emissions and air quality, b) identifying highest emitters and any trends from this and similar studies, and c) evaluating and recommending strategies or management actions for highest emitters.

This Statement of Opportunity outlines the potential work as well as its suitability to the CASA process.

CONTEXT

The CASA Project on Non-Point Sources (2015-2017) was tasked with helping to address non-point source air emissions contributing to ambient particulate matter ($PM_{2.5}$) and ozone (O_3) standard non-achievement in Alberta, and had a large focus on the transportation sector. This Statement of Opportunity was informed by draft recommendations from that project.

Based on the 2014 Air Pollutant Emissions Inventory, the on-road transportation sector is a large emission source of NOx (particularly heavy-duty diesel vehicles, followed by light-duty gasoline trucks and other vehicles), a source of volatile organic compounds or VOCs (particularly light-duty gasoline trucks and other vehicles), and a source of primary $PM_{2.5}$ (particularly heavy-duty diesel vehicles). In 2012, the International Agency for Research on Cancer (IARC) classified diesel engine exhaust as carcinogenic to humans based on evidence that exposure is associated with an increased risk for lung cancer[1].

An innovative on-road vehicle emissions testing study would help 1) characterize emissions from in-use vehicles (e.g. determine which age/class of vehicles have highest/lowest emissions and whether emissions reality matches perception) in a particular area such as within the Edmonton to Calgary corridor or other, 2) identify potential impacts of program/policy options (e.g. design to target highest emitters), and 3) test the feasibility of integrating emissions testing into program options (e.g. for identifying excessively-high emitters). In addition to data gathering, this would also be an ideal opportunity for education/awareness on vehicle emissions and impact on air quality.

[1] Reference: "Diesel Engine Exhaust Carcinogenic", Press Release N° 213, International Agency for Research on Cancer, World Health Organization, 12 June 2012

A similar, short-term study was conducted in British Columbia in 2012[2], where emissions data for nitric oxide, particulate matter, hydrocarbons, carbon monoxide and carbon dioxide were collected for a variety of diesel vehicles and model years through the use of a remote sensing device (RSD) system and a heavy duty emissions tunnel (HDET). These newer technologies provide data beyond the snap acceleration smoke test, used for tailpipe testing, which has limitations for measuring PM and does not measure NOx.

Furthermore, the earlier ROVER (Roadside Optical Vehicle Emissions Reporter) I and ROVER II projects were completed in Alberta through CASA. In 1998, the ROVER project assessed actual in-use vehicle emissions using a remote sensing van equipped to measure exhaust emissions including carbon monoxide. It also communicated with Albertans about vehicle emissions. During ROVER I, over 66,000 light-duty vehicles were tested in four municipalities. In 2006 the project was repeated as ROVER II, testing over 50,000 vehicles in Edmonton, Calgary, Red Deer and Canmore. This time the team measured exhaust emissions of nitric oxide, particulate matter, hydrocarbons, carbon monoxide and carbon dioxide. ROVER II found emissions per kilometer were falling but vehicle use was increasing. Furthermore, the results indicated the number of higher emitters was relatively small yet contributed a larger proportion of emissions.

At the CASA Board meeting on September 30, 2010, in advance of the renewed Clean Air Strategy, the Board reviewed the CASA Vehicle Emissions Team Final Report to the CASA Board and agreed upon the following consensus statement:

1. Transportation-related air emission issues continue to exist.
2. Understanding the Clean Air Strategy and its guidance will be important in developing future work on transportation emissions.
3. Stakeholders are encouraged to bring a statement of opportunity to CASA, at an appropriate time, to address these issues.

The additional step in this project would include recommending strategies or management actions for highest emitters, which would be informed by the emissions testing study, reference material on management actions implemented in other jurisdictions, and discussions with key stakeholders.

ISSUE

While federal emission standards for new vehicles are increasingly stringent and known, emissions from in-use vehicles fall under provincial jurisdiction and may vary. There is interest and high value in knowing the actual emissions from vehicles that are being operated in Alberta, to help target management actions. Emission performance is impacted by vehicle maintenance for example. In some cases, vehicles may not be maintained per manufacturer's instructions or there may be purposeful tampering with emission controls. Emissions testing can determine actual emission levels and be an opportunity for public engagement. Characterizing the fleet emissions can help inform more accurate emission inventories and target highest emitters in future management actions.

[2] Reference: Greater Vancouver Regional District Remote Sensing Device (RSD) Trial for Monitoring Heavy-duty Vehicle Emissions, Envirotest Canada, March 2013

PROJECT GOALS, OBJECTIVES & OUTCOMES

Reducing emissions to achieve the CAAQS is a long-term goal involving multiple emission sources, sectors, policy tools and research. For this piece of work, Alberta Environment and Parks is proposing the following project goal, objectives and outcomes.

PROJECT GOAL

To manage NO_x, VOCs, and $PM_{2.5}$ from the on-road transportation sector, particularly diesel-fuelled trucks, to help achieve the Canadian Ambient Air Quality Standards in Alberta.

POTENTIAL PROJECT OBJECTIVES & OUTCOMES

1. To undertake an on-road vehicle emissions testing study to gather data on in-use vehicle emissions, focusing on diesel-fuelled trucks, and to communicate with Albertans on vehicle emissions and air quality.

   What this means: The study would be to gather data and disseminate information, not be for compliance. A consultant with expertise in roadside emissions testing would be contracted for the study. The study would focus on, but not be limited to, emissions from diesel-fuelled trucks and gather data on vehicle ages, classes, and emissions. Emission parameters must include both air and greenhouse gas emissions such as nitric oxide, particulate matter, hydrocarbons, carbon monoxide and carbon dioxide for a holistic approach. The project team would help determine the locations for the study with the goal of obtaining a representative sample.

   In addition to the testing, there would be education/awareness opportunities by the contractor, project team or partners for the study participants or general public through outreach regarding impact of vehicle emissions on air quality. These opportunities may include leveraging existing education/awareness initiatives. To reinforce air quality considerations in individuals' decisions, those with lower emitting vehicles could be recognized for helping to do their part and those with higher emissions could be guided to available resources to help reduce emissions.

   Potential Outcomes:
   - Study is undertaken for the target vehicles and locations during the desired time period(s).
   - Survey of study participants is undertaken, which may include their typical vehicle usage and any self-disclosure as having a tampered or poorly maintained vehicle.
   - Feedback from study participants is gathered to inform future education/awareness activities, e.g. to encourage good performers and debunk any myths.

2. To identify highest emitters and any trends from this and similar studies.

   What this means: The study results would be evaluated and summarized to characterize the fleet including identifying which model years or classes of vehicles, which may include different fuel types, are the lowest and highest emitters. Similar studies from British Columbia and Alberta or elsewhere could be used for comparison, to highlight any similarities or differences in trends.

Potential outcomes:

- On-road vehicle emissions testing study report is completed and includes characterization of the fleet and highlighting any trends from this and similar studies.

3. To evaluate and recommend strategies or management actions for highest emitters.

What this means: Evaluate potential strategies or management actions based on study results, existing information from available reference materials and other jurisdictions, and input from key stakeholders. Recommendations from the project would target highest emitters, rather than all vehicles, for most efficient use of resources. Highest emitters may include a particular vehicle age range or class of vehicles as a whole, or a subset that may comprise a small amount of vehicles but a large proportion of the emissions. Considerations for addressing highest emitters may include socioeconomic concerns, any unfair advantages or disadvantages to certain stakeholders, and alignment of provincial initiatives with the intent of federal legislation to reduce both air and greenhouse gas emissions from vehicles.

Potential outcomes:

- Evaluation of potential strategies or management actions for the targeted emitters, including but not limited to cost/benefit analysis, ease of implementation, and the feasibility of integrating emissions testing into program options (e.g. for identifying excessively-high emitters on a more ongoing basis).
- Recommendations for strategies or management actions to help reduce emissions from higher emitting vehicles.

POTENTIAL PROJECT DELIVERABLES

The Project Charter will further define the project deliverables. At a minimum, the following are expected to be completed:

- a consultant report containing a description and the results of the vehicle emissions testing study, and
- a final report that includes the project methodology, findings, outcomes and recommendations including any advice to implementers of potential strategies or management actions.

In addition, it is requested that a communications plan be developed by CASA to disseminate the findings and results of the project.

RANGE OF POTENTIAL STAKEHOLDERS

The following is an initial list of potential stakeholders for consideration:

Individual or Organization	Possible Interests and Concerns
Provincial Regulators: e.g. Environment and Parks, Transportation, Agriculture and Forestry, Alberta Energy Regulator	Responsible for ensuring achievement of the CAAQS as well as provincial policy Will likely be responsible for implementing many management actions Interested in environmental protection and health of Albertans as well as ensuring sustainable economic prosperity Involved in education/awareness initiatives May be involved in implementing management actions or have interest in certain sectors, e.g. forestry trucks, shuttle buses to mine sites
Federal government	Interested in ensuring achievement of the CAAQS across Canada, effectiveness of and alignment with federal policies, as well as meeting transboundary commitments
Municipalities	Involved in education/awareness initiatives May be involved in implementing management actions
First Nation and Métis	Interested in ensuring the health of communities Interested in protecting the environment
Trucking companies/associations	Interested in fairness across the sector Concerns regarding possible costs or inconvenience of potential management actions
Industry	Interested in management actions to reduce NOx emissions that include both industrial and non-industrial emission sources
Pacific NorthWest Economic Region (PNWER) Foundation	Interested in awareness of requirements in each jurisdiction, for cross-border activities
Health and Environmental Non-Government Organizations	Interested in ensuring the health of Albertans Interested in protecting the environment
Airshed Organizations	Involved in education/awareness initiatives May be involved in implementing management actions

SUITABILITY OF WORK TO CASA AND CASA PROCESS

A project related to vehicle emissions aligns with the CASA goals of providing strategic advice, and of contributing to the development and implementation of effective air quality management in Alberta. It also aligns with CASA's three air quality management goals:

1. Protect the environment by preventing short and long-term effects on people, animals and the ecosystem.
2. Optimize economic efficiency.
3. Promote pollution prevention and continuous improvement.

The issue is well-suited to be dealt with through CASA and CASA's collaborative process because:

- The transportation sector exists across the province.
- It requires a strategic approach to balance social, environmental and economic factors in order to achieve emissions reductions in the most cost-effective manner.
- This issue involves a broad range of stakeholders with a wide variety of perspectives and interests that need to be considered. This poses a challenge due to the potentially sensitive nature of the possible related management recommendations.

- CASA has a unique ability to build relationships and provide a neutral forum in which this type of multi-stakeholder work can be done.

NEXT STEPS

If the Statement of Opportunity is approved by the CASA Board of Directors, next steps will follow as outlined in the *CASA Guide to Managing Collaborative Processes*.

The Board of Directors is asked to direct the CASA Secretariat to form a multi-stakeholder Working Group to develop a Project Charter. The Working Group would be led by a Project Manager from CASA's Secretariat and have at least one Board member that is prepared to act as a "champion". This Working Group would develop a Project Charter and seek Board of Directors' approval to convene a Project Team. This Working Group would include representatives that are knowledgeable about the issue and the collaborative decision-making process. Following CASA Board of Directors' approval of the Project Charter, the project team would begin work.

The Project Charter would describe the scope, deliverables, outcomes, projected resources and costs, timelines, stakeholder analysis and plan for engagement, a communications plan and draft ground rules for the Project Team.

The Project Charter serves several different purposes including:

- It is used to obtain approval from the CASA Board of Directors.
- It provides the foundation for the work of the Project Team.
- It can be used to communicate the project and scope of work with stakeholders.

A timeline is proposed for next steps as follows:

- September 13, 2017: CASA Board of Directors meeting – if the Statement of Opportunity is approved, the Board of Directors direct the CASA Secretariat to form a Working Group to develop a Project Charter and provide CASA with the names of the appropriate representatives to participate.
- December 13, 2017: CASA Board of Directors meeting – the Working Group present the Project Charter to the CASA Board of Directors for approval. If the Project Charter is approved, the Board of Directors direct the CASA Secretariat to stand up the Project Team and provide CASA with the names of the appropriate representatives to participate.
- January 2018: CASA Secretariat to stand up the Project Team and begin work.
- December 2018: CASA Board of Directors meeting – the Project Team present their final report for approval.

CASA has been moving towards a more "nimble" model for project team work. The overall timeline of one year aligns with this new approach.

Based on these next steps and best available knowledge, Appendix A outlines a draft project schedule and Appendix B outlines potential resources and costs for the consideration of the Working Group as they develop the Project Charter.

APPENDIX A – POTENTIAL PROJECT STRUCTURE & SCHEDULE

The following potential project structure and schedule is presented for the consideration of the Working Group during the development of the Project Charter.

- It is anticipated that if the Project Charter is approved by the CASA Board of Directors in December 2017, project work would begin in January 2018.
- It is anticipated that this project work will take approximately 12 months to complete, with a completion date of December 2018.
- It is anticipated that the project work is sequential, meaning that the outputs of Objective 1 become the input of Objective 2, etc. The Working Group should also consider opportunities where work could be done concurrently.

APPENDIX B – POTENTIAL RESOURCES & COSTS

The potential projected resources and costs are presented for the consideration of the Working Group during the development of the Project Charter:

Information needed:

- Management actions for vehicle emissions as available through existing resources such as those identified during the CASA Project on Non-Point Sources (e.g. materials through the Canadian Council of Ministers of the Environment Mobile Sources Working Group and the previous CASA ROVER projects)
- Existing education/awareness initiatives to help reduce vehicle emissions, which could be leveraged through this project (e.g. those identified through the CASA communications workshop in spring 2017)

Expertise needed:

- Contractor specializing in roadside vehicle emissions testing
- Knowledge of common transportation routes in Alberta, that could help inform potential emissions testing locations
- Knowledge of vehicle emission reduction technologies and programs, that could help inform strategies or management actions

Funding required:

- Contractor for emissions testing study - costs to be determined (rough estimate $100,000)
- Project Final Report writing, editing, completion

Other resources needed:

- Perspectives from trucking companies/associations, provincial and municipal governments, industry, non-government associations, and Airshed Organizations

Executive Director's Screening of Issue Identification Documents for Statements of Opportunity

Background

The *Guide to Managing Collaborative Processes* sets out CASA's process for identifying new work. The Guide outlines that a stakeholder completes a template to define what air management issue the stakeholder wants to address, why it is an issue, what would be gained by addressing this issue in a collaborative process, and what are the risks associated with not addressing the issue. The executive director then considers a number of factors in deciding if CASA is the most appropriate agency to address the issue. If the Issue Identification document passes initial screening, a statement of opportunity is written and presented to CASA for consideration as new work to be taken on. The statement of opportunity should identify and define the issue, examine the context, identify key stakeholders, identify potential resource needs (information, expertise, as well as funding), identify the obstacles.

In July 2017 Alberta Environment and Parks submitted two completed Issue Identification documents to the executive director. Following a discussion with the proponents about whether the Issue Identification documents fit with CASA's mandate, AEP submitted Statements of Opportunity to identify new work for CASA. The findings of the screenings are below.

Analysis

1. Screening results of "NOx emissions from upstream oil and gas Statement of Opportunity"

Initial screening criteria from the Guide	
Is CASA's collaborative approach the most appropriate way to deal with the issue?	Yes. CAAQS were developed through a collaborative process that included industry associations, non-government organizations, Indigenous organizations and governments. Air quality in Alberta air zones are approaching the CAAQS and in some cases are exceeding the CAAQS. Alberta has more sources and volumes of air pollution than other provinces. New and more stringent CAAQS will be coming into effect in 2020 and 2025 and Alberta needs to get achieve compliance. Failure to act will affect the health of Albertans and the environment
Does the issue require a strategic approach?	Yes, the project objectives include evaluating programs that would encourage companies to reduce NOx emissions in the short and long-term and commit to NOx reductions, but this must be achieved while balancing the social, environmental and economic factors to achieve emissions reductions
Does the issue have provincial implications?	Yes, Alberta has committed to achieving the CAAQS. Preliminary assessments using historical ambient data indicate that 5 out of the 6 air zones are approaching or not achieving the current

	$PM_{2.5}$ and likely the future NO_2 CAAQS for 2020 and 2025. Data indicates that NO_2 exceedances will be the major cause for CAAQS non-achievement. Since NO_2 is a primary pollutant, and a precursor to $PM_{2.5}$ and ozone,, abating NO_x emissions will also help reduce ambient $PM_{2.5}$ and ozone
Is there a range of stakeholders that have an interest in addressing the issue?	Yes, the following groups are identified as potential stakeholders that may have interests or concerns: Provincial regulators (AEP, ENERGY, AER, Health, Economic Development and Trade, Justice), Federal Government, First nations and Metis, Well licensees, Enhanced Recovery Approval Holders, Energy Utilities Development licensees, Energy Development licensees, upstream oil and gas sector associations, academia, health and environmental NGOs, airsheds

Executive Director recommendation: Approve the "NOx emissions from upstream oil and gas Statement of Opportunity" as new work.

2. Screening results of "ROVER 3 Project: On-road Vehicle Emissions Testing Study and Path Forward for Highest Emitters Statement of Opportunity"

Initial screening criteria from the Guide	
Is CASA's collaborative approach the most appropriate way to deal with the issue?	Yes. CASA's current project team working in the area of non-point sources (NPS) is drafting recommendations on further potential work to address NPS pollution, and this would build on that work. NPS make up a significant portion of air emissions in Alberta, and come from a number of sources including industry, transportation, agriculture, construction and urbanization). The SoO outlines that this project would be the third project in the vein of the successful Roadside Optical Vehicle Emission Reporter (ROVER) projects of the past
Does the issue require a strategic approach?	Yes, some of the project's potential objectives include evaluating and recommending strategies or management actions for the highest emitters targeted emitters. This will also require incorporating environmental, economic and social considerations

Does the issue have provincial implications?	Yes, emissions from the transportation sector affect CASA's three air quality management goals or protecting the environment by preventing short and long term effects on people, animals and the ecosystem; optimize economic efficiency and promote pollution prevention and continuous improvement
Is there a range of stakeholders that have an interest in addressing the issue?	Yes, the Issue Identification document and SoO outline interests from the GoA, Federal Government, Municipal Governments, BC and SK governments, Energy Efficiency Alberta, EPEA Approval and Registration holders, the Transportation sector, construction and agriculture sectors, health and environmental NGOs, Airshed organizations and Albertans

Executive Director recommendation: Approve the "ROVER 3 Project: On-road Vehicle Emissions Testing Study and Path Forward for Highest Emitters Statement of Opportunity" as new work.

DECISION SHEET

Item 2.5: **Performance Measures Report**

Issue: Approve the 2016 Performance Measures Committee Report

Background: CASA's performance management strategy assists CASA in determining how effectively it is doing its work, and enables improvements that can ensure we deliver on our mandate as well as possible. The strategy provides definitions of performance measure (areas where CASA has a higher degree of control over results) and performance indicator (areas where CASA has a lower degree of control over results).

This combination of performance measures and performance indicators provides a well-rounded description of CASA as an organization and, through providing timely and meaningful information, supports continuous improvement at CASA. The strategy looks at the performance of project teams, staff support, Board member participation and support of project teams, knowledge and application of CASA's processes, the implementation of CASA recommendations, as well as ambient and emissions data.

The Performance Measures Committee, with the assistance of staff and data gathered by staff at Environment and Parks, reviews the data and develops an annual report for presentation to the Board. Some of the measures are also included in the Annual Report.

Status: The Performance Measures Committee and Executive Committee have reviewed the report and recommend approving it.

It should be noted that the Committee currently consists of one dedicated member, Ruth Yanor, whose dedication is very much appreciated.

Attachment: 2016 Performance Measures Committee Report.

Decision: Approve the 2016 Performance Measures Committee Report.

2016 Performance Measures Committee Report

Prepared by the
Performance Measures Committee
for the
Clean Air Strategic Alliance
Board of Directors

July 2017

Table of Contents

Acknowledgements

The Committee would like to thank various CASA team members and implementers for their assistance in reviewing the implementation of past CASA project team recommendations and in gathering the information required to prepare this report. In particular Bob Myrick, Richard Melick, Lucas Zhang, Casandra Brown, Celeste Dempster, Randy Dobko and Andrew Clayton assisted in gathering this information.

It should be noted that the Performance Measures Committee (PMC) does not meet CASA's standards for quorum, but, as the work needed to proceed, a decision was made to proceed with the available membership. The members of the Committee are: Keith Denman (CASA) and Ruth Yanor (Mewassin Community Council). Additional members would be welcomed. We would like to thank previous members David Lawlor and Martina Krieger for their work over the last few years.

Executive Summary

In March 2016, the CASA board approved the new CASA Performance Measurement Strategy. The strategy ensures transparency and accountability in the performance measurement process, and reflects stakeholder satisfaction in elements of project team work. The strategy contains modified performance measures and indicators for the Secretariat, the Board, and goals from CASA's Strategic Plan as well as project teams. These modified measures and indicators were incorporated with CASA's pre-existing metrics and reorganized according to the definitions of performance measure and indicator achieved in the first revision of the strategy undertaken in 2012.

The Performance Measures Committee was charged with two tasks:

1. To calculate CASA's performance measures and indicators, and
2. To follow-up on low-rated recommendations from previous years.

The Committee calculated the results of CASA's performance measures and indicators which are outlined in Tables 1 and 2 respectively. Performance indicators are not compared to a target, but rather provide the context in which CASA works.

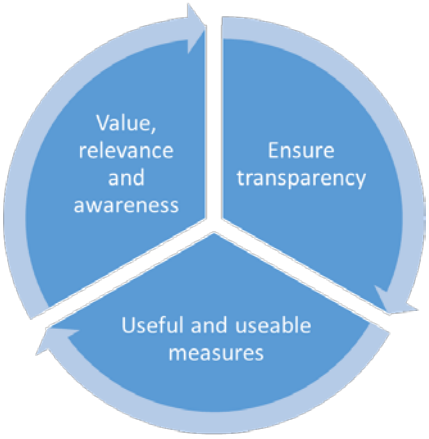
The Committee collected updates on the low-rated recommendations from previous years which are tracked in a living document called the low-rated recommendations matrix. In light of this information, the committee will provide feedback on the following recommendations from the following past project teams:

- 2002 Acidifying Emissions Project Team (1 recommendation)
- 2008 EFR recommendation: Deemed Credit Threshold (1 recommendation)
- 2013 Ambient Monitoring Strategic Planning Project Team (2 recommendations)
- 2015 Electricity Framework Review (3 Recommendations)

Introduction

In June 2016, the CASA board approved the new CASA Performance Measurement Strategy. The review of the strategy involved investigating the alignment between performance measurement and CASA's audience, mission, vision, Strategic Plan, strategic plan goals, principles and criteria, as well as conducting consultations with current CASA project team co-chairs, the CASA Communications Committee, the CASA Board and a survey design expert from Alberta Environment and Parks (AEP).

The strategy provides definitions of performance measure (areas where CASA has a higher degree of control over results) and performance indicator (areas where CASA has a lower degree of control over results). This combination of performance measures and performance indicators provides a well-rounded description of CASA as an organization and, through providing timely and meaningful information, supports continuous improvement at CASA.



Some of CASA's performance measures and indicators are calculated annually and some are calculated every three years. The three-year metrics are due and will be reported on in this report.

Performance Measures

Table 1 outlines the 2016 performance measures results.

Table 1: Performance Measures (* indicates that the measure will be included only in the PMC Annual Report and NOT in the CASA Annual Report. These measures are for internal consideration only. All other measures will be included in the PMC and the CASA Annual Report)

Objective		Performance Measure	Target	Actual	Notes
Ensure that CASA is financially efficient and accountable.	1.	Sufficient operating funds are available to bridge CASA's and Government of Alberta (GoA)'s fiscal years.	3 months of operating funds	~ 6 months as of December 31, 2017	Based on estimated operating expenses for January through March.
Implement the CASA Strategic Plan.	2.	*Percentage of objectives from the Strategic Plan listed as in progress or complete (according to the Secretariat's colour coded rating system).	Goal 1 100% Goal 2 100% Goal 3 100% Goal 4 100%	Goal 1 100% Goal 2 90% Goal 3 40% Goal 4 58%	Some initiatives under Goals 3 and 4 have been moved to the Environmental Monitoring and Science Division (EMSD) within AEP or are beyond CASA's available resources in the current fiscal climate.
Monitor the implementation of CASA recommendations.	3. a.	*Percentage of low-rated recommendations being monitored.	100%	100%	Currently monitoring seven low rated recommendations.
	3. b.	*Percentage of administrative and operational recommendations from the previous four years that have been implemented.	Administrative 100% Operational 100%	Administrative 100% Operational 100%	This work examines the recommendations for the previous four years (2012 – 2015). The bulk of these refer to work CASA has agreed to do at a future date.
Provide support to CASA stakeholders.	4. a.	*Degree of satisfaction with support provided by Secretariat.	Awareness Maintain or increase Value Maintain or increase Relevance Maintain or increase	Awareness – High Value – medium (varies) Relevance – medium	CASA 2.0 work is intended to address this area of work and progress is being made as we focus on areas important to our

Objective		Performance Measure		Target	Actual	Notes
					(varies)	stakeholders.
		b.	*Project teams' degree of satisfaction with support provided by Secretariat.	Maintain or increase	Increase – 85%	Data focuses on the NPS team's work and was somewhat limited due to delays in implementing the meeting surveys Was 75% in 2015.
Encourage Board member participation in CASA.	5.	a.	Percentage of Board attendance at Board meetings by sector.	75%	Government – 48%[1] Industry – 75%[2] Non-Governmental Organizations (NGOs) – 73%[3]	The target for government and the NGO caucus were not met. The government caucus consists of federal, provincial, municipal, First Nations, and Métis representatives. Low attendance may reflect on a lack of current teams addressing issues for some stakeholders.

[1] Government attendance:
Aboriginal (First Nations): 0%
Aboriginal (Metis): 0%
Federal: 67%
Local (Rural): 67%
Local (Urban): Vacant, not included in totals
Provincial (Energy): 33%
Provincial (Environment): 100%
Provincial (Health): 67%

[2] Industry attendance:
Agriculture: 100%
Alternate Energy: 67%
Chemical Manufacturers: 100%
Forestry: 33%
Mining: 33%
Oil & Gas – Large: 67%
Oil & Gas – Small: Vacant, not included in totals
Petroleum Products: 100%
Utilities: 100%

[3] NGO attendance
NGO Health.....67%
NGO Rural.....33%
NGO Industrial.....100%
NGO Urban.....100%
Consumer Transportation.....67%

Objective		Performance Measure		Target	Actual	Notes
						Sectors without current representation are not included in the calculations. 2015 Results: Government – 52% Industry – 92% NGO – 100%
		b.	*Project teams' degree of satisfaction with support provided by Board member counterparts, by sector.	Maintain or increase	Government – 80% Industry – 100% NGO – 100%	2015 results: Government – 100% Industry – 100% NGO – 75%
Develop reports and recommendations adhering to CASA's managing collaborative processes guide.	6.	Degree of satisfaction with project team work by team: o The Project Charter was completed. o The process was collaborative. o The team developed recommendations using the SMART (Specific, Measurable, Actionable, Realistic, Time-bound) model.		Project Charter complete: 75% Collaborative: 75% SMART Recs.: 100%	Project Charter complete: 75% Collaborative: 75% SMART Recs.: n/a	The only team which completed its work in 2016 was the "CASA 2.0" process, which was atypical and for which these measures are only partially applicable. The Non-Point Source team is on track to complete its work as set out in the Project Charter.
Improve project team knowledge of the managing collaborative processes guide.	7.	Project teams' degree of satisfaction with ability to participate in collaborative processes.		Maintain or increase	70%	Reflects the Non-Point Source and CASA 2.0 teams. 58% in 2015.

Objective		Performance Measure	Target	Actual	Notes
Increase awareness of CASA, CASA projects and the managing collaborative processes guide.	8.	Speaking engagements and meetings undertaken by CASA's Executive Director.	Maintain or increase	18	Down slightly from last year. 2015 had 20 total.

Recommendation 1: Approve performance measures results.
The Performance Measures Committee recommends that the Board approve the 2016 performance measures results for inclusion in the 2016 CASA Annual Report.

Performance Indicators

Table 2 provides a summary of the 2016 performance indicator results. Additional information can be found in Appendix 2.

Table 2: Performance Indicators Summary (all indicators will be included in CASA's Annual Report)

Objective		Performance Indicator	Actual	Notes
Implement CASA recommendations.	1.	Percentage of substantive recommendations from the previous 4 years that have been implemented.	57%	See "Additional Information in Appendix 1 - Section 1". Note that this % is based on 4 recommendations that were classified as substantive.
Measure impact of completed project team work.	2.	*Each completed project team comes up with one specific metric to measure success of team 5 years in the future.	N/A	No team metrics were scheduled for reporting in 2016.
Track Air Quality in Alberta	3.	*Measured every three years – 2016	See Appendix Five for Air Quality results	
Improve capacity to monitor Air Quality in Alberta	4.	The percentage of monitoring stations and/or parameters implemented from the 2009 Ambient Monitoring Strategic Plan (AMSP)	Overall 57%	See Appendix Four for detail
		Geographic percentage of province covered by airshed zones	46%	The Peace River Air Monitoring Program (PRAMP) has been recognized as an Airshed by the Monitoring and Science Division and by the Airsheds Council but has not yet been endorsed by CASA. Without PRAMP the number drops to 45%.

Recommendation 2: Approve performance indicators results.

The Performance Measures Committee recommends that the Board approve the results of the 2016 performance indicators for inclusion in the 2016 CASA Annual Report.

Review of Past CASA Recommendations

In June 2008 the CASA Board identified the need to follow-up on low-rated recommendations on a longer term basis, rather than just the one year snapshot provided in the related performance indicator. The Committee developed a matrix of all low-rated recommendations since 1997 as well as a Decision Tree for assessing low-rated recommendations which was approved by the Board in 2009 (see Appendix 2). The matrix is intended to be a living document that will be updated as the Committee gathers information from implementers. The Committee will then use this information to advise the CASA Board on appropriate follow-up for the low-rated recommendations.

The CASA Board has the final decision whether to consider a recommendation closed (i.e. CASA no longer pursues information on its implementation). There are three criteria to weigh in the decision that were approved by the Board in September 2009:

1. Priority level: Is the current importance of the issues and/or recommendation high, medium or low?
2. Need for the recommendation: Given legal, technological, societal and economic changes since the recommendation was made, is the action prescribed still needed?
3. Practical challenges: Given the current work of the implementing body, are the necessary resources and capacity available to implement the recommendations?

The Committee is tracking the following low-rated recommendations, and received instruction from the Board in 2016 to maintain them on the list. Further guidance may be offered by the Board when this report is received.

Recommendation	Update
2002	
Acidifying Emissions Project Team	
3. Alberta Environment should lead an evaluation of the acidifying emissions management system every two to three years based on the evaluation process that has been established by the Acidifying Emissions Implementation Team (AEMIT). Evaluation results should be reported to the CASA Board and the next evaluation should be done in 2003. This task would require Alberta Environment to complete the forms that AEMIT has developed and used to conduct its evaluation; these are:	As of spring 2017: The Acid Deposition Framework, including the modeling software used in the analysis, is currently being reviewed and the CASA board will be provided with an update when available.

• the goals, objectives and performance measures table, and • the evaluation protocols table.	
2009	
2008 Electricity Framework Review (EFR) Team	
7. The following deemed credit thresholds for the 2011 BATEA standards be applied to new coal-fired and gas-fired units: A. NOx (coal-fired) – 0.38 kg/MWh net B. SO2 – 0.55 kg/MWh net C. NOx (gas-fired) – "A" factor = 0.07 kg/MWh net and "B" factor = 0.008 kg/GJ Non-Peaking Standard Formula: NOx (kg/h) = [Net Power Output (MW net) x A] + [Heat Output (GJ/h) x B]	The 2013 EFR Team agreed that this recommendation has not been implemented. This is because it is felt that the renewed Climate Change Strategy may affect parts of the Framework. Once the Strategy is complete, the recommendation will be revisited. The consensus recommendations are being used informally by ESRD but have not been formally incorporated into standards, in part because no new plants have been approved since January 1, 2011.
2013	
Ambient Monitoring Strategic Planning (AMSP) Project Team	
18. The AMSP team recommends that the MIC: • Do a scientific, objective analysis to determine the appropriate network density for a province-wide network that will spatially represent air quality in Alberta. • Use industry, airshed and government monitoring stations where possible to address gaps in air monitoring. An assessment of where these gaps are and what stations could be used to fill these gaps is required.	Update as of May 2017 from AEP's Monitoring and Science division: The analysis indicated by this recommendations has been initiated for selected airsheds in the province. In the 2017-18 fiscal year, an analysis will be completed for the province.
26. The AMSP Project Team recommends that:	The current provincial air emissions inventory is not GIS-based and not as comprehensive as it needs to be. The provincial air emissions inventory is also not

Alberta Environment develop and maintain a comprehensive GIS-based provincial inventory of all relevant emission sources that influence provincial air quality commencing within one year following board approval.	presently being maintained, lacking information past the year 2010. (AEP) has established modernized air emission inventory reporting requirements, under the revised Air Monitoring Directive, that apply to large Environmental Protection and Enhancement Act (EPEA) approved industrial operations. These new reporting requirements will come into force in 2019 and will require detailed air emission inventory information be submitted to AEP annually. The current plan is to use the emissions information that will coming into AEP to help update and enhance the provincial air emissions inventory. Overall, AEP has yet to fully satisfy this CASA recommendation. **Further Information provided by: Richard Melick, Air Policy – AEP (2017)** I believe the CASA Performance Measures Committee has been using data from Environment and Climate Change Canada's Air Pollutant Emissions Inventory (APEI). The main benefits of the APEI are that it is publicly available and does provide a fairly consistent dataset for emissions of the criteria pollutants going all the way back to the 80's/90's. It is therefore useful for looking at provincial emission trends and time series. While the APEI dataset does provide useful provincial emission totals going back many years, it is not sufficiently detailed or adequately broken down (to Alberta's Air Zones / Land Sue Framework management regions) for what AEP requires. AEP's current emissions inventory requirements are set out in the 1989 Air Monitoring Directive, with the data collected typically limited to NOx, SO2 and some other varying reported substances. In 2010, we did carry out an industrial air emissions survey that collected detailed 2006-2008 emissions data for 25 pollutants. This was just a one-time survey of Alberta's large industrial facilities, and it is still be used today as part of the provincial air emissions inventory. As AEP requires detailed emissions information for the large EPEA approved facilities, our emissions inventory reporting requirements have now been updated via the revised Air Monitoring Directive. Beginning in 2019 (for 2018 emissions), we will be collecting detailed stack-level emissions data from the EPEA approved industrial

	facilities. The main reasons for the long delay between our 2010 industrial air emissions survey and the new emissions reporting requirements were: five years were spent updating the Air Monitoring Directive, there was an extended consultation period on the new reporting requirements, and two years were given to industry to get ready for the new reporting requirements. At some point in the future, it will likely make sense to begin to use the new comprehensive AMD emissions inventory dataset for tracking emission levels instead of the APEI. This will have to wait until we have a few years of data collected and a way to try to reconcile our data with that of Environment and Climate Change Canada's. The CASA Performance Measures Committee should likely continue to use the APEI for at least the next few years.

Summary of PMC Recommendations

Recommendation 1: Approve performance measures results.
The Performance Measures Committee recommends that the board approve the 2016 performance measures results for inclusion in the 2016 CASA Annual Report.

Recommendation 2: Approve performance indicators results.
The Performance Measures Committee recommends that the board approve the results of the 2016 performance indicators for inclusion in the 2016 CASA Annual Report.

Appendix 1: Additional Information for Table 2 (Performance Indicators)

Performance Indicator 1: Percentage of substantive recommendations in the last four years (2012 onwards) that have been implemented.

For 2016, the Performance Measures Committee considered the recommendations approved by the CASA Board in 2012, 2013, 2014 and 2015. In these years, the CASA board approved one recommendation from the Confined Feeding Operations Project Team, two recommendations from the PM and Ozone Implementation Team, one recommendation from the Human and Animal Health Team, one from the Odour Management team and twelve from the Electricity Framework Review. Of these, one recommendation from the PM and Ozone Implementation Team and three recommendations from the Electricity Framework Review were deemed substantive. The remaining recommendations were deemed either administrative or operational and so are only recorded under performance measure 3.b.

Overall, the degree of implementation of CASA recommendations in 2016 is 57%. Table 1 shows the rating of the substantive recommendation and subsequent calculation of overall implementation of recommendations and Table 2 summarizes the results since 1997.

Table 1: Rating of Substantive Recommendations

Project Team (No. of substantive recommendations)	**Rating of Recommendations** (Original recommendation numbers placed in appropriate rating column)										
	0	1	2	3	4	5	6	7	8	9	10
PM & Ozone Implementation Team (1)									2		
Electricity Framework Review (3)						5,6,7					
Total number (4)						3			1		

Mean Calculation: ((8 x 1) + (3 x 5))/4 = 5.74

Overall (average rating) = 57%

Reviewer: PM & Ozone Implementation Team: Bob Myrick (AEP - MSD)

Comments: This recommendation was essentially implemented as planned from a technical perspective. The technical expertise in the AEP Air Policy group was available and part of the development of the CAAQS. However, there were no additional CASA teams developed to assess the CAAQS during the transition from Canada-wide Standards to CAAQS.

Reviewer: Electricity Framework Review Team (Randy Dobko AEP – Air Policy)

Comments: Many of the items relating to the electricity system are currently under review and a further update on specific items will depend on the outcome of this review.

Table 2: Summary of Results for Recommendation Implementation

Year Approved by CASA Board	Number of Substantive Recommendations	Degree of Implementation of Substantive Recommendations (%)
1997	25	77
1998	54	76
1999	30	62
2000	0	n/a
2001	5	94
2002	53	74
2003	79	73
2004	47	91
2005	18	77.2
2006	1	100
2007	1	30
2008	2	90
2009	13	42
2010	1	100
2011	0	n/a
2012	0	n/a
2013	1	70
2014	0	n/a
2015	3	50
2016	0	n/a

Appendix 2: Decision Tree for Low-Rated Recommendations

Three years after a substantive recommendation has been approved by the CASA Board, CASA assesses the implementation of recommendations by engaging stakeholders involved in the original team and/or the implementing agency. Assessors are asked to rate the degree of implementation on a scale of 0-10. Low rated recommendations are defined as recommendations receiving a 0-3 rating.

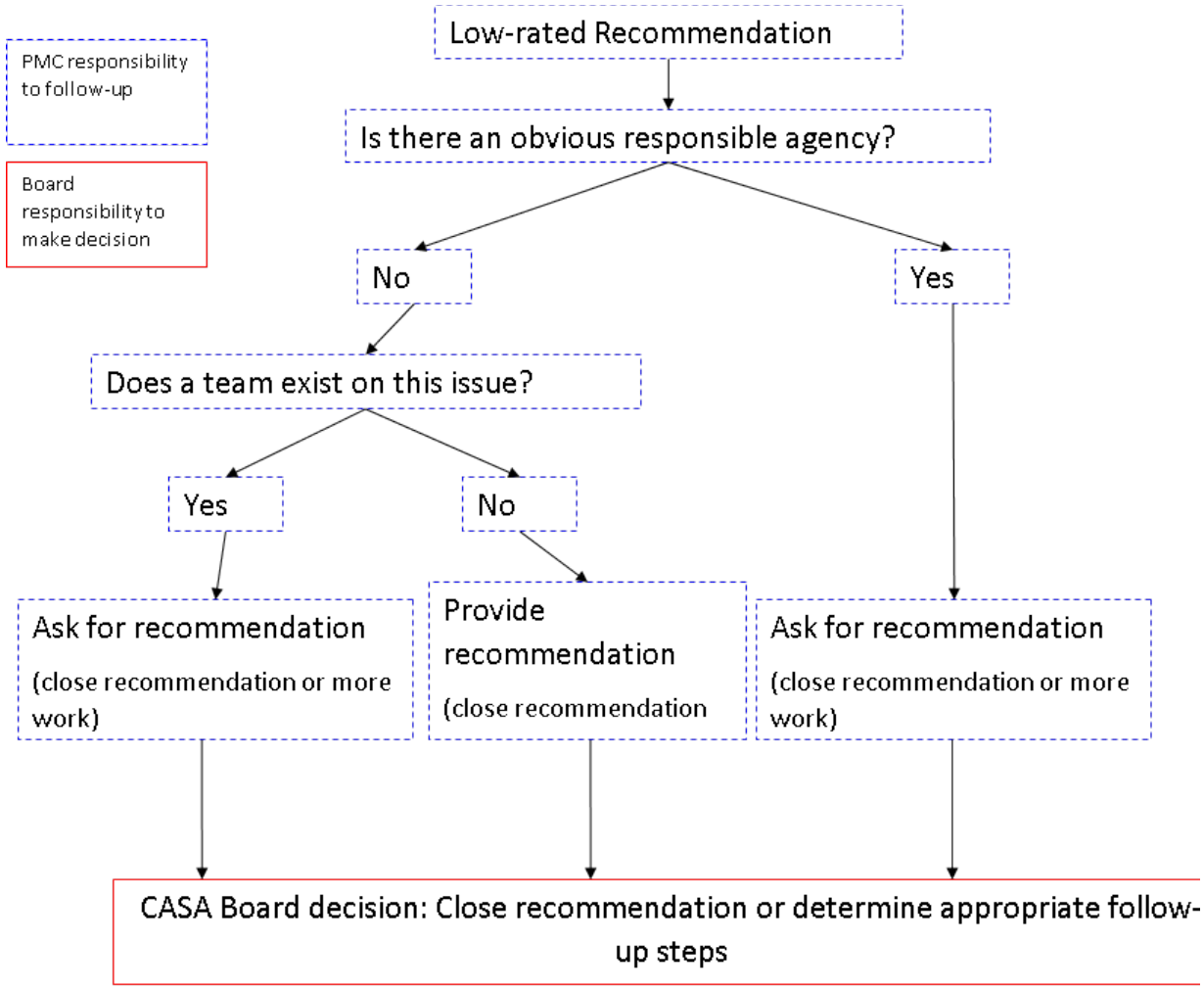
The Decision Tree, as illustrated on the next page, is intended to provide guidance on how to follow-up on low-rated recommendations. The Decision Tree will only be used for low-rated recommendations. The Committee will first follow-up with the implementer for information why a recommendation was not implemented. If no implementer is discernable, the Committee approaches a CASA team (if available) for information. Should neither be available, the Committee can make a recommendation to the CASA Board. Recommendations, whether from the implementer, CASA team or Committee, could include:

- Close the recommendation, and document the explanation
- More work that could be required, such as an implementation team, new work for an existing team, Board involvement, etc.
- More information the Board would require to make its decision regarding follow-up or closure of the recommendation.

<u>CASA Board Decision</u>
The Performance Measures Committee will use the information to advise the CASA Board on appropriate follow-up for the low-rated recommendation. The CASA Board has decision-making power whether to follow-up or to close the recommendation.

There are three criteria to inform the board's decision to close a recommendation:

1. Priority level: Is the current importance of the issue and/or recommendation high, medium or low?
2. Need for the recommendation: Given legal, technological, societal, and economic changes since the recommendation was made, is the action prescribed still needed?
3. Practical challenges: Given the current work of the implementing body, are the necessary resources and capacity available to implement the recommendation?


PMC responsibility to follow-up
Board responsibility to make decision
Low-rated Recommendation
Is there an obvious responsible agency?
No
Yes
Does a team exist on this issue?
Yes
No
Ask for recommendation
(close recommendation or more work)
Provide recommendation
(close recommendation
Ask for recommendation
(close recommendation or more work)
CASA Board decision: Close recommendation or determine appropriate follow-up steps

Appendix 3: Summary of Low-Rated Recommendations

Year	Project Team	Recommendation	Status
2002	Acidifying Emissions Project Team	3. Alberta Environment should lead an evaluation of the acidifying emissions management system every two to three years based on the evaluation process that has been established by AEMIT. Evaluation results should be reported to the CASA Board and the next evaluation should be done in 2003. This task would require Alberta Environment to complete the forms that AEMIT has developed and used to conduct its evaluation; these are: • the goals, objectives and performance measures table, and the evaluation protocols table.	Continue monitoring
2009	Ambient Monitoring Strategic Planning Project Team	18. The AMSP team recommends that the MIC: • Do a scientific, objective analysis to determine the appropriate network density for a province-wide network that will spatially represent air quality in Alberta. Use industry, airshed and government monitoring stations where possible to address gaps in air monitoring. An assessment of where these gaps are and what stations could be used to fill these gaps is required.	Continue Monitoring
2009	Ambient Monitoring Strategic Planning Project Team	26. The AMSP Project Team recommends that: Alberta Environment develop and maintain a comprehensive GIS-based provincial inventory of all relevant emission sources that influence provincial air quality commencing within one year following board approval.	Continue Monitoring
2009	2008 Electricity Framework Review	7. The following deemed credit thresholds for the 2011 BATEA standards be applied to new coalfired and gas-fired units: A. NOx (coal-fired) – 0.38 kg/MWh net B. SO2 – 0.55 kg/MWh net C. NOx (gas-fired) – "A" factor = 0.07 kg/MWh net and "B" factor = 0.008 kg/GJ Non-Peaking Standard Formula: NOx (kg/h) = [Net Power Output (MW net) x A] + [Heat Output (GJ/h) x B]	Continue monitoring
2015	2013 Electricity Framework Review	**Recommendation 5: Emissions Standards for New Diesel-Fired Reciprocating Engines (regular use units)** The 2013 Electricity Framework Review Project Team recommends that: The following standards apply to new diesel-fired reciprocating engines in regular use units that are approved on January 1, 2016 or later: > 1200 HP (0.89 MW) (<30 L displacement per cylinder): 0.50 g/bhp-hr (approximately 0.67 g/kWh)	Monitor

		> 699 kW (805 HP) (≥30 L displacement per cylinder): 1.8 g/kWh (approximately 1.34 g/bhp-hr) These standards are expressed in a similar format to the US EPA Tier 4 Compression Ignition New Source Performance Standards, which include diesel-powered generator sets, and is based on selective catalytic reduction (SCR).	
	2013 Electricity Framework Review	**Recommendation 6: Emissions Standards for New Diesel-Fired Reciprocating Engines (stand-by units)** The 2013 Electricity Framework Review Project Team recommends that: The following standard apply to new diesel-fired reciprocating engines in stand-by units that are approved on January 1, 2016 or later: > 750 HP (0.560 MW) 4.8 g (NMHC+NOx)/bhp-hr (approximately 6.4 g (NOx+NMHC)/kWh) This standard is expressed in a similar format to the US EPA Tier 2 Compression Ignition New Source Performance Standards for generator sets, and is based on combustion controls (that is, no SCR).	Monitor
	2013 Electricity Framework Review	**Recommendation 7: Emissions Standards for New Natural Gas-Fired Reciprocating Engines** The 2013 Electricity Framework Review Project Team recommends that: The following standard apply to new natural gas-fired reciprocating engines that approved on January 1, 2016 or later: > 75 kW (500 hp is US size range): 2.7 g/kWh (based on 2.01 g/bhp-hr) This standard is based on the BLIERs for NOx for natural gas-fired reciprocating spark ignition engines, which are based on the US EPA requirements for these types of engines.	Monitor

Appendix 4: Number and Location of Air Monitoring Stations

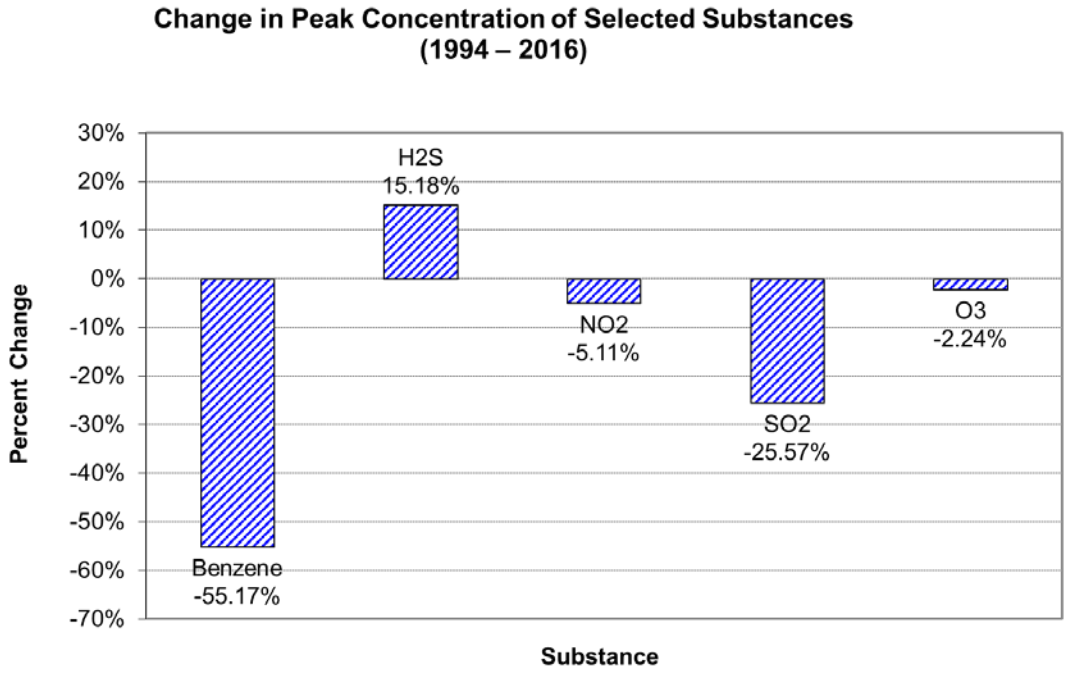
As requested under recommendation three of the 2015 Performance Measures Review, the PMC has been asked to provide a snapshot of the number and location of air monitoring stations in the province of Alberta.

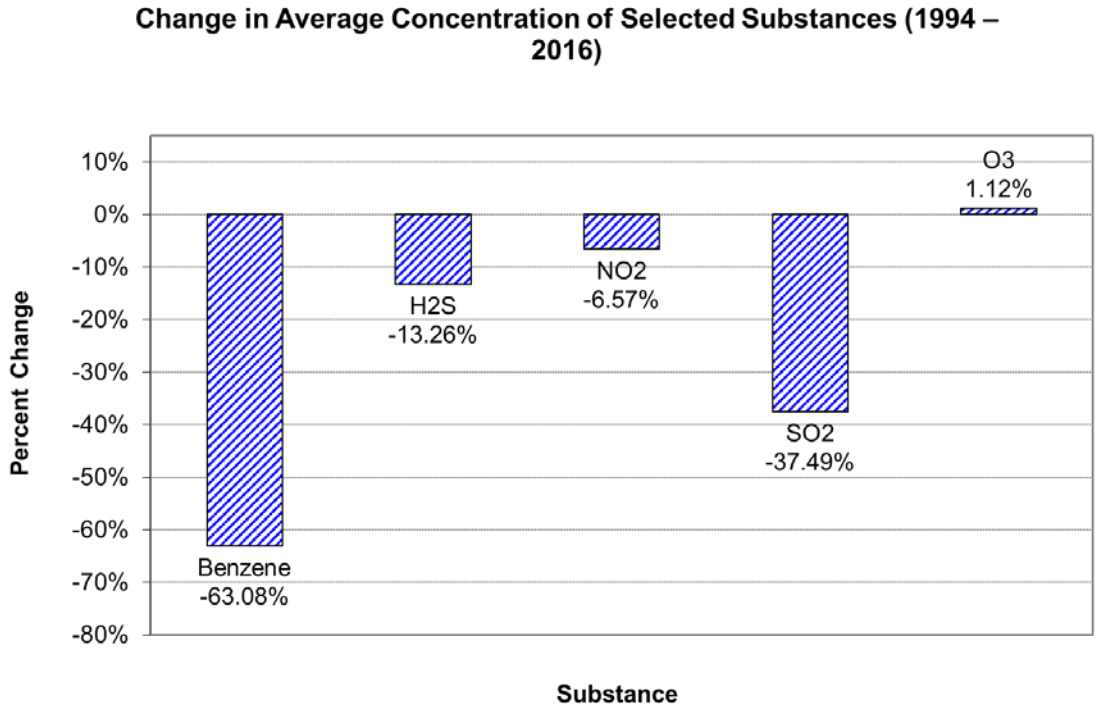
The percentage of monitoring stations and/or parameters implemented from the 2009 Ambient Monitoring Strategic Plan (AMSP).

	2016	2013	2010
Population Based Completed:	**63%**	**60%**	**57%**
Ecosystem Based Completed:	**25%**	**25%**	**20%**
Ozone Completed:	**61%**	**41%**	**52%**
Background and Boundary Transport Completed:	**44%**	**44%**	**44%**
Pattern Recognition Completed:	**47%**	**47%**	**40%**
Overall Completed:	**57%**	**52%**	**54%**

New stations added to the network include the St. Albert monitoring station that was commissioned in April 2016. The Calgary Central-Inglewood and Calgary Southeast stations also were moved and began operating in April 2015 and April 2014, respectively. New focused monitoring for particulate matter speciation in the Red Deer area should also meet the AMSP monitoring objectives of upwind and downwind monitoring in the Parkland Airshed Management Zone. A new air monitoring station was deployed in April 2017 in Airdrie, however this is not included in the 2016 performance measure.

Appendix 5 Air Quality Data



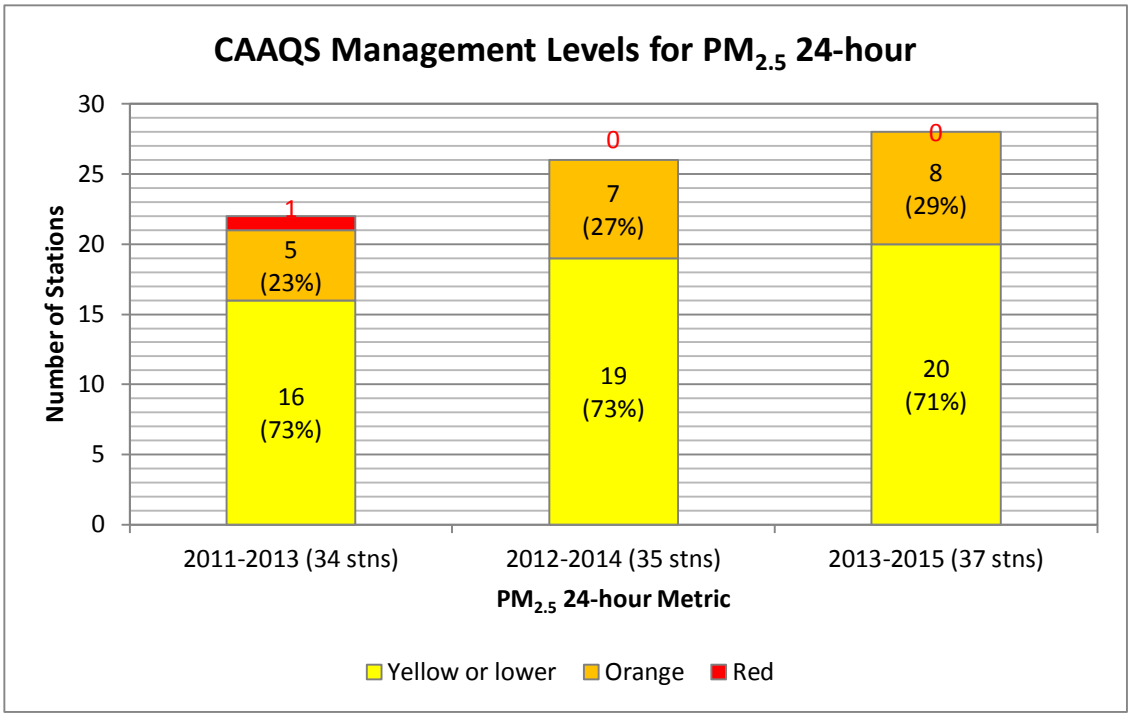


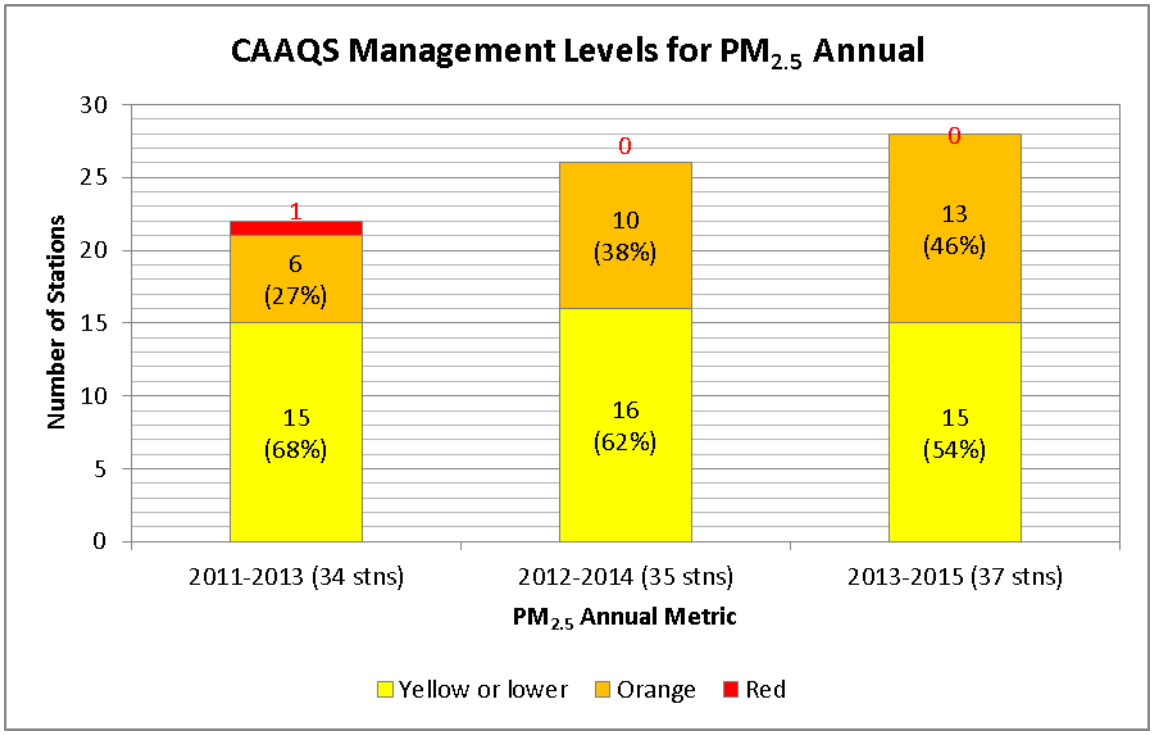
Percentage of Stations in Each Canadian Ambient Air Quality Standard Management Levels

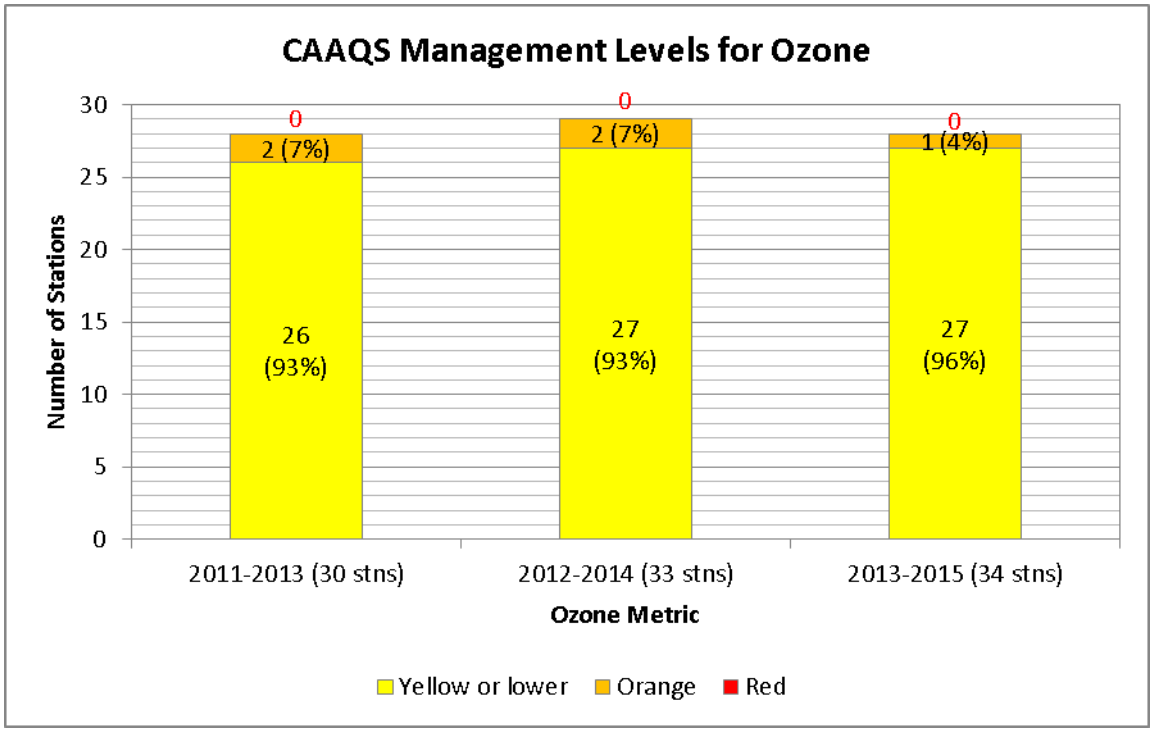
Notes:

TF/EE analysis for the 2011-2013 and 2012-2014 assessment periods was completed for all stations in the red, orange, and yellow management levels. TF/EE analysis for the 2013-2015 assessment period was completed for all stations in the red and orange management levels only. Stations in the yellow management level prior to TF/EE analysis were not analyzed as removal of TF/EE would have resulted in the management level either moving to the green management level or remaining in the yellow management level (such stations are identified as "yellow or lower"). Management actions for stations in the yellow and green management levels do not need to be implemented. For consistency, all three assessment periods are presented with the following management levels: "Red", "Orange", and "Yellow or lower".

The total number of stations is indicated in the x-axis labels. This number may be lower than the total number of stations represented by the bar. This is due to some stations having insufficient data to calculate a three-year average concentration.




CAAQS Management Levels for PM2.5 Annual
Number of Stations
30
25
20
15
10
5
0
1
6
(27%)
15
(68%)
0
10
(38%)
16
(62%)
0
13
(46%)
15
(54%)
2011-2013 (34 stns)
2012-2014 (35 stns)
2013-2015 (37 stns)
PM2.5 Annual Metric
Yellow or lower
Orange
Red


CAAQS Management Levels for Ozone
Number of Stations
30
25
20
15
10
5
0
0
2 (7%)
26
(93%)
0
2 (7%)
27
(93%)
0
1 (4%)
27
(96%)
2011-2013 (30 stns)
2012-2014 (33 stns)
2013-2015 (34 stns)
Ozone Metric
Yellow or lower
Orange
Red

Percentage of modelled grid cells falling within each acid deposition load level

Model-predicted PAI values were below the Monitoring Load as outlined in the Alberta Acid Deposition Management Framework. The current assessment was conducted in accordance with the Alberta Acid Deposition Management Framework and did not identify areas within Alberta that exceeded deposition criteria for acidifying substances. Relative to predicted PAI for 2006, a general decrease is observed in predicted PAI when using the projected 2020 emissions. The current assessment using projected emissions for 2020 did not identify acid deposition patterns over the long term that exceeded deposition criteria. It should be noted, however, that at regional or local levels, site-specific modelling and/or deposition assessment criteria may identify areas that require acidifying emissions management.

Acid deposition loadings as fractions (Load %) of Critical, Target and Monitoring Loads (Figures 1 to 3) for each grid cell were calculated using the RELAD modelled PAI for 2006, and 2020 and the receptor sensitivity map for Alberta (Figure 8). The highest modelled PAI for 2006 emissions for any grid cell was 60% of the Critical Load, 67% of the Target Load and 86% of the Monitoring Load. This modelled PAI for 2006 emissions was predicted for a grid cell in the Killam-Hardisty area east of the Edmonton-Calgary corridor. PAI between 60 to 80% of the Monitoring Load was predicted for the Wabamun area, east of the Capital Region, north-east of Calgary and the Fort McMurray area.

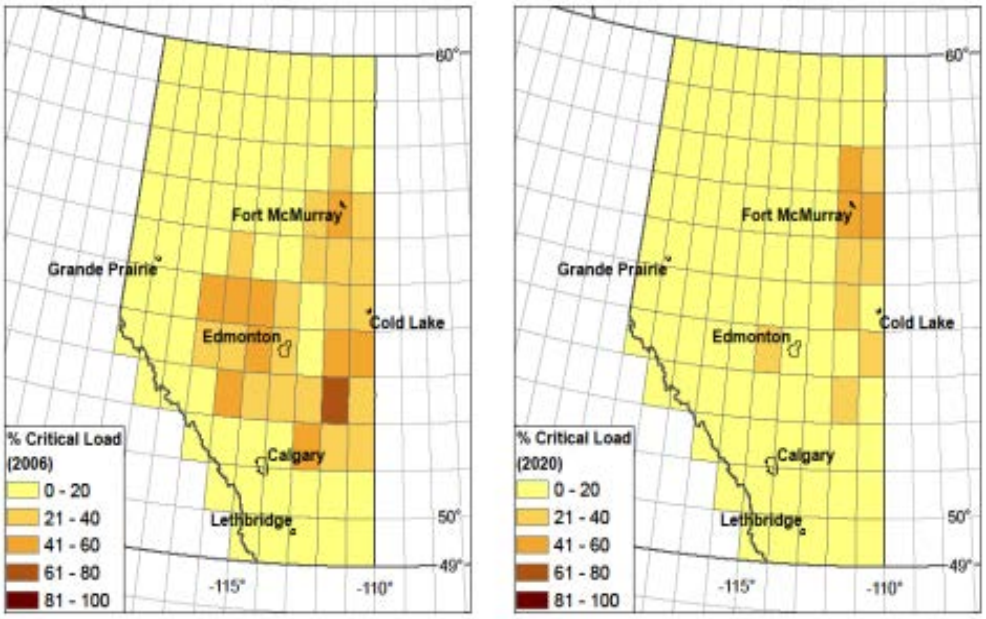


Figure 1. Acid deposition loading as a percent (%) of the Critical Load for the years 2006 (left) and 2020-projected (right). [4]

[4] Figures 1~3: 2011 Acid Deposition Assessment for Alberta (http://aep.alberta.ca/air/management-frameworks/acid-deposition/documents/2011AcidDepositionAssessment-Jul2014.pdf).

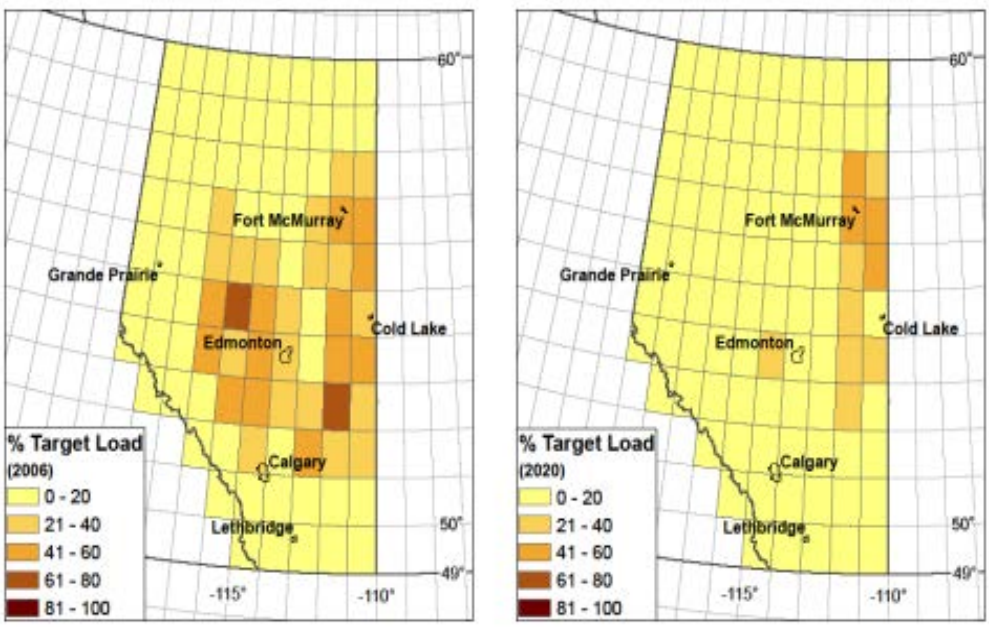


Figure 2. Acid deposition loading as a percent (%)of the Target Load for the years 2006 (left) and 2020-projected (right).

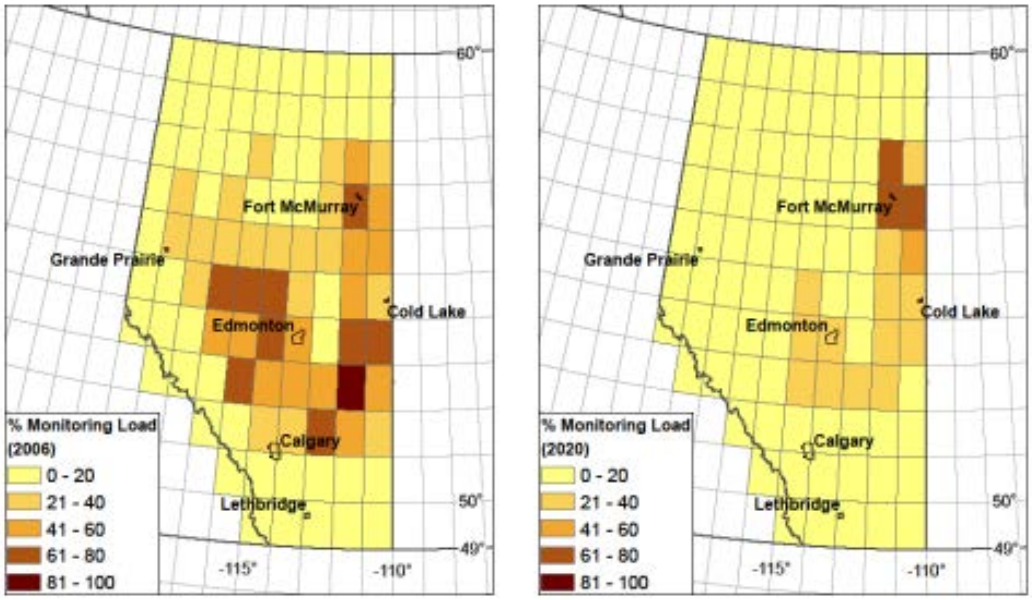
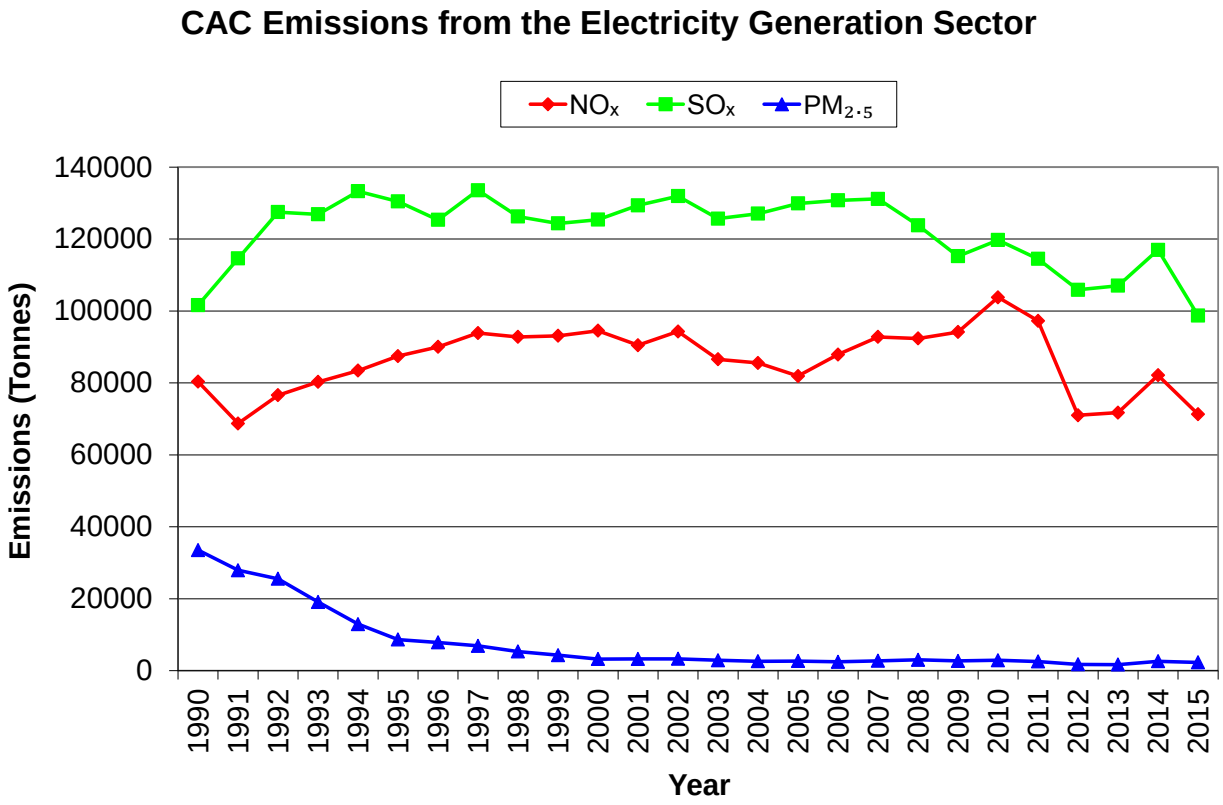


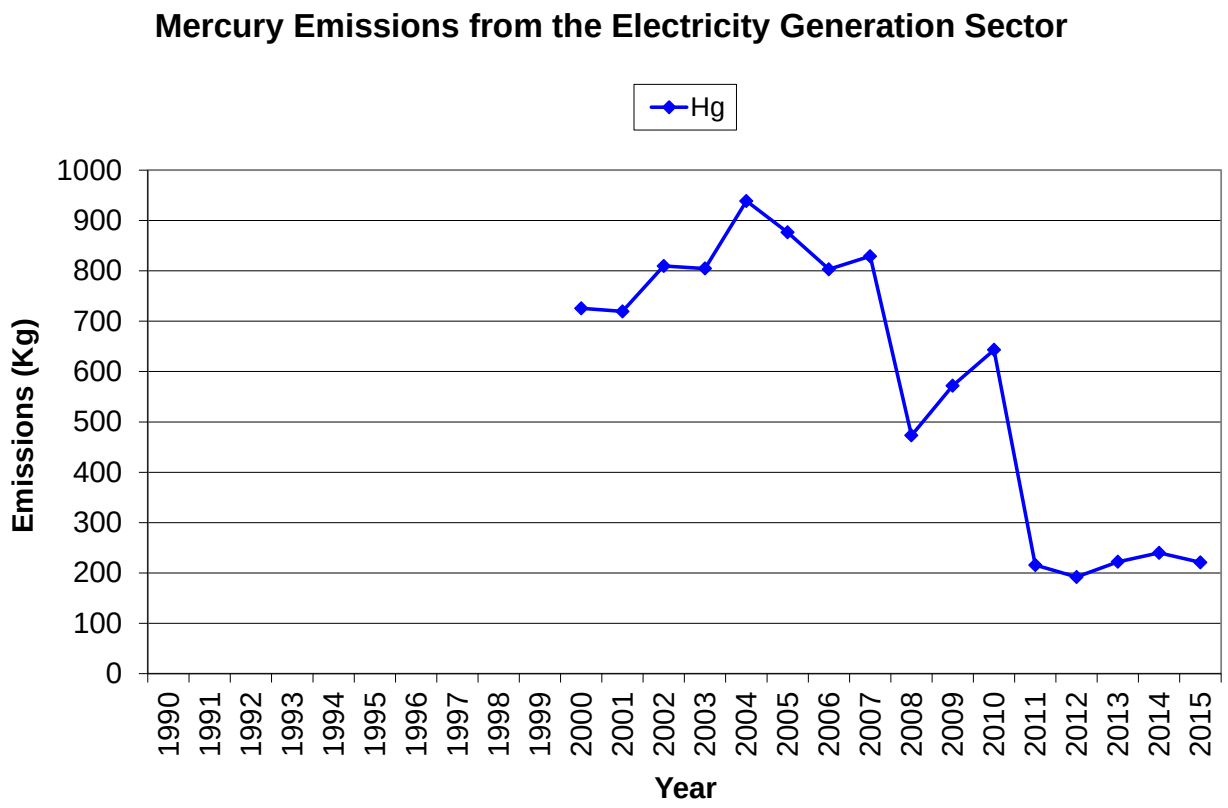
Figure 3. Acid deposition loading as a percent (%)of the Monitoring Load for the years 2006 (left) and 2020-projected (right).



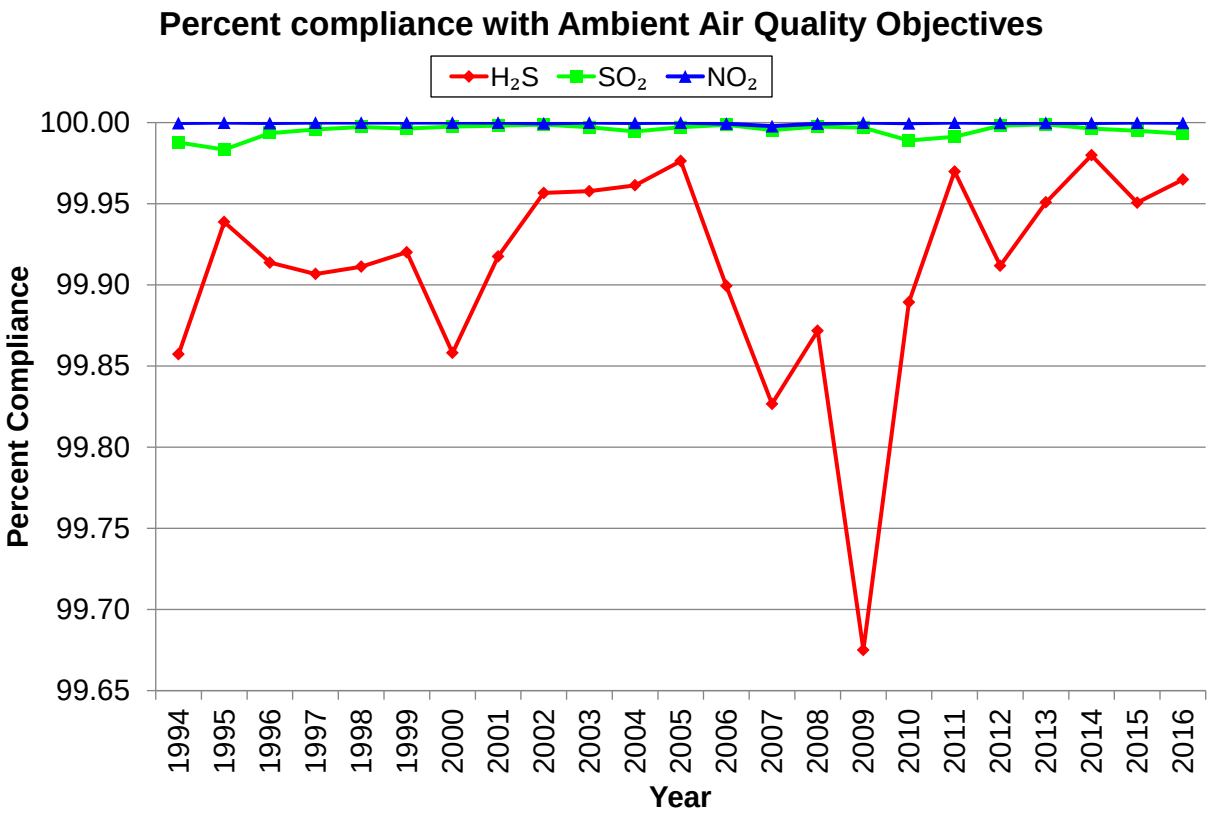
The emissions for NO_X, SO_X, and primary $PM_{2.5}$ have been recalculated for some previous years relative to the last time this performance measure was reported. Previously, 1990, 1995, 2000, 2002 and 2003 were the only years available prior to 2005, at which point data became available every year. Now data for every year from 1990 forward are available, and the measure has been restated using these updated data. Testing for statistical significance in the trends for these emissions totals was performed, and indicates that there is a statistically significant decreasing trend in $PM_{2.5}$ emissions, falling by 92% from 1990 to 2015. There is a potentially significant trend in SO_X emissions, however it may be the result of autocorrelation effects, therefore it is advisable to wait and test again when more data become available. There is no significant trend in the NO_X emissions.

In some years, the restated data show different results from the data reported previously. Most notably, the PM emissions total for 1990 was 12,938 tonnes before, but has been restated as 33,534 tonnes, about 2.5 times higher. Results from 1995 forward are similar to what has been reported in the past. Since this is an increase at the beginning of the time series, this could potentially have had an impact on the statistical significance of the trend. Therefore, the test was run a second time, on data from 1994 (the year of CASA's founding, and the starting year for the ambient measures) forward. The results from this test once again show a statistically significant decreasing trend, with a 92% decrease from 1994 to 2015.

Note: Emissions data are only available up to 2015.

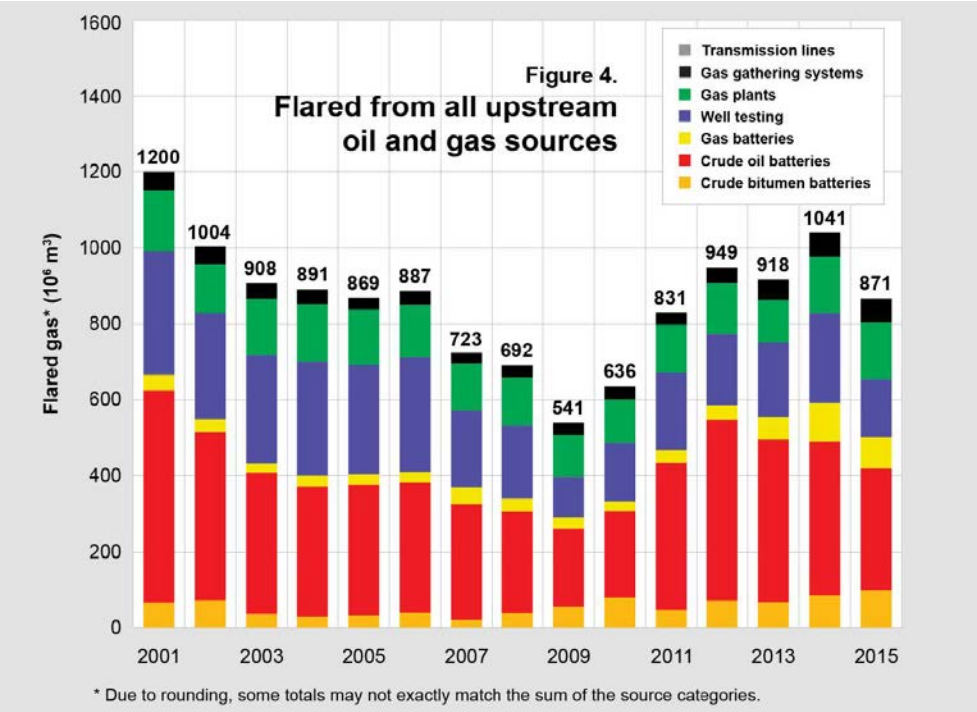


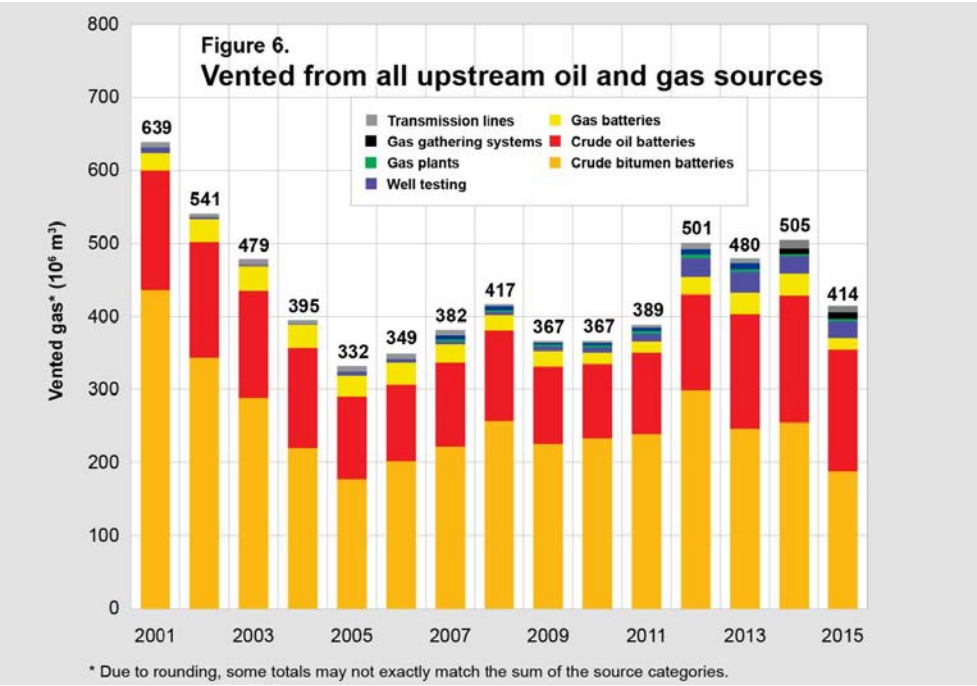
2011 was the most recent year of mercury emissions data available when this measure was reported last. Results since then show relative stability in mercury emissions, ranging from 192 Kg in 2012 to 240 Kg in 2014. This is a substantial reduction from the previous low of 473 Kg in 2008.



Compliance with Ambient Air Quality Objectives is consistent with previous reporting. NO_2 continues to have virtually 100% compliance. SO_2 shows some variation year-to-year, but compliance is generally very high. Compliance with the H_2S objective has also been relatively high, better than 99.95%, over the past 4 years, which is in line with other years with high compliance. None of these trends is statistically significant.

Flared and Vented Volumes





For further detail please read the *Upstream Petroleum Industry Flaring and Venting Report by* the Alberta Energy Regulator, available here: http://aer.ca/documents/sts/ST60B-2016.pdf

INFORMATION SHEET

Item 2.6: **Environmental Monitoring and Science Division Presentation**

Issue: Hear a presentation from Chief Scientist Fred Wrona on the work of Alberta Environment and Parks' Environmental Monitoring and Science Division

Background: The Environmental Monitoring and Science Division (EMSD) is responsible for monitoring, evaluating and reporting on key air, water, land and biodiversity indicators. The division's mandate is to provide open and transparent access to scientific data and information on the condition of Alberta's environment, including specific indicators as well as cumulative effects, both provincially and in specific locations.

EMSD provides provincial environmental monitoring, evaluation and reporting:

- Based on sound science and evidence.
- Presented in a timely, open and transparent manner.
- Respects and incorporates community and Traditional Ecological Knowledge (TEK) from First Nations and Métis people.

This includes providing the information necessary to understand cumulative effects, and to inform the public, policy makers, regulators, planners, researchers, communities, and industry.

The role of environmental monitoring and science is to provide proactive, objective reporting of scientific data and information on the condition of Alberta's environment, including: baseline environmental monitoring, cumulative effects monitoring; data evaluation and management; on-going condition of environment reporting in all regions of Alberta; credible data, evaluation, knowledge and reporting to inform policy and regulatory decision-making.

Fred Wrona, Chief Scientist and Assistant Deputy Minister of EMSD will present and take questions.

INFORMATION SHEET

Item 2.7: **Update on Alberta Airsheds Council**

Issue: Hear an update on recent conversations between the CASA executive director (ED) and the EDs of the AAC and three airsheds on the draft MOU

Background: CASA has had a working relationship with the airsheds and the Alberta Airsheds Council (AAC) for over a decade. CASA and AAC members attend each others board meetings, AAC provides valuable support to CASA teams with their participation, and CASA has provide interest-based negotiation training to airsheds.

CASA has endorsed new airsheds as being consensus-based, multi-stakeholder organizations for a long time. Receiving CASA's endorsement was previously tied to the airsheds receiving funding from AEP to undertake monitoring. As the number of airsheds have grown and the organizations have matured, the relationship between CASA and the individual airsheds and the AAC has evolved. The board has discussed the relationship between these three groups and there have been several project teams that have looked at what airsheds are and how CASA and the airsheds can best work together.

The AAC hired an ED to support all the airsheds in 2016. A new airshed, Peace River Area Monitoring Program (PRAMP), also stood itself up in 2016. The group sought guidance on whether there was a need for CASA's endorsement, particularly in light of the AAC's existence, and offered to seek endorsement if requested. The CASA board has since discussed this topic anew, and it was considered that CASA and AAC could enter into a Memorandum of Understanding (MOU) to outline the relationship between the two groups. An MOU was drafted, however the board has not come to agreement regarding CASA's role in endorsing airsheds.

Status: The new ED of CASA met recently with the ED of AAC and the EDs representing three airsheds. The three EDs all agreed that there is uncertainty around the role of airsheds and the AAC given the work of the Environmental Monitoring and Science Division to develop a provincial monitoring plan. There is also uncertainty around the funding status of airsheds and the AAC. PRAMP has made no request from CASA to endorse their group as an airshed.

The EDs agreed that the long-standing working relationship between CASA and AAC is valuable and can continue without the details of endorsement needing to be addressed in an MOU at this time. All agreed the work on the MOU should be put on hold until further information on airsheds and AAC roles and funding becomes available.

9915 108 St, 1400
EDMONTON AB T5K 2G8
CANADA

Meeting: CASA Board Meeting
Date of meeting: September 13, 2017
Meeting place: Federal Building
Windsor Room
9820 107 St NW, Edmonton, AB T5K 1E7

1. Were the objectives as listed in the agenda accomplished? Yes / No

2. The objectives we did not accomplish are:

3. How can future meetings be improved?

4. Did the board book (decision sheets, attachments, reports) provide you with the information needed to make informed decisions? Yes / No

5. Do you have any other feedback you would like the Executive Committee to consider?

6. How do you feel about the value of this meeting for the time you spent here?

Name (optional): _____

Clean Air Strategic Alliance
List of Stakeholder Groups and Representatives

Stakeholder Group	*Sector*	*Member*	*CASA Board Representative*	
			Director, Association/Affiliation	*Alternate Director, Association/Affiliation*
Industry	Petroleum Products	Canadian Fuels Association (formerly CPPI)	**Peter Noble –** Senior Regulatory Affairs Manager Imperial Oil	**Brian Ahearn**, Vice President – Western Division Canadian Fuels Association
NGO	NGO Health	The Lung Association - Alberta & NWT	**Leigh Allard**, President & CEO The Lung Association - Alberta & NWT	**Vacant**
NGO	NGO Rural	Southern Alberta Group for the Environment	**Ann Baran** Southern Alberta Group for the Environment	**Wayne Ungstad** Notinto Sipiy Conservation Authority
Industry	Mining	Alberta Chamber of Resources	**Rob Beleutz**, Environmental, Health and Safety Manager Graymont Western Canada Inc.	**Dan Thillman**, Plant Manager Lehigh Cement
Government	Federal	Environment Canada	**Cheryl Baraniecki**, Associate Regional Director General, West & North Environment Canada	**Martin Van Olst**, Senior Analyst Environment Canada
Government	Provincial Government – Energy	Alberta Energy	**Stacey Schorr** Assistant Deputy Minister Resource Development Policy Division Alberta Energy	**Wade Clark**, Executive Director Resource Land Access Alberta Energy
Industry	Oil & Gas – Large Producers	Canadian Association of Petroleum Producers	**Claude Chamberland,** Canadian Association of Petroleum Producers	**Koray Onder,** Canadian Association of Petroleum Producers
Industry	Forestry	Alberta Forest Products Association	**Brian Gilliland**, Manager International Environmental Affairs Weyerhaeuser Co. Ltd.	**Keith Murray**, Director Industry/Government Relations Alberta Forest Products Association
Government	Local Government - Rural	Alberta Association of Municipal Districts & Counties	**Carolyn Kolebaba,** VP (Deputy Reeve, Northern Sunrise County) AAMDC	**Vacant**
Industry	Alternate Energy		**David Lawlor**, Director of Development NextEra Energy Canada	**Vacant**
Aboriginal Government	First Nations	Samson Cree Nation	**Holly Johnson Rattlesnake** Samson Cree Nation	**Vacant**
Industry	Chemical Manufacturers	Chemistry Industry Association of Canada (CIAC)	**Terry Rowat,** Manager Methanex Corporation	**Greg Moffatt**, Director Government Stakeholder Relations – Western Canada Chemistry Industry Association of Canada

Clean Air Strategic Alliance
List of Stakeholder Groups and Representatives

Government	Provincial Government – Health	Alberta Health	**Dawn Friesen**, Executive Director Health Protection Alberta Health	**Chris Shandro**, Executive Director Health Protection - Public Health & Compliance Division Alberta Health
Aboriginal Government	Métis	Métis Settlements General Council	**Mary Onukem**, Environmental Coordinator Métis Settlements General Council	**Vacant**
NGO	NGO Industrial	Pembina Institute	**Ruth Yanor** Mewassin Community Council	**Andrew Read** Pembina Institute
NGO	NGO Urban	Prairie Acid Rain Coalition	**Bill Calder** Prairie Acid Rain Coalition	**David Spink** Prairie Acid Rain Coalition
Industry	Agriculture	Alberta Beef Producers	**Rich Smith**, Executive Director Alberta Beef Producers	**Humphrey Banack** Alberta Federation of Agriculture
NGO	Consumer Transportation	Alberta Motor Association	**Scott Wilson**, Senior Policy Analyst Alberta Motor Association	**Vacant**
Government	Provincial Government – Environment	Alberta Environment Sustainable Resource Development	**Andre Corbould**, Deputy Minister Alberta Environment and Parks	**Rick Blackwood**, Assistant Deputy Minister Alberta Environment and Parks
Industry	Utilities	TransAlta Corporation	**Jim Hackett**, Director, Health, Safety, Security & Environment ATCO Power	**Ahmed Idriss,** Senior Advisor, Environment Policy Capital Power Corporation
Government	Local Government – Urban	Alberta Urban Municipalities Association	**Vacant**	**Vacant**
Industry	Oil & Gas – Small Producers	Vacant	**Vacant**	**Vacant**