

Discussion Guide & Survey 2008

Air quality
and electricity
generation
in Alberta



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Introduction

This discussion guide provides information on the implementation and review of the *2003 Emission Management Framework for the Alberta Electricity Sector*. The Framework describes how air emissions from electricity generation in Alberta will be managed. It was developed by the Clean Air Strategic Alliance (CASA) and is being implemented by the Government of Alberta and the electricity generation industry. The Framework recommends that a review be done every five years to see if specific elements need to be updated. CASA is leading this first review and is now inviting comments from Albertans interested in this issue.

What is CASA?

CASA is a multi-stakeholder organization that brings together industry, government and non-profit organizations to develop recommendations for managing air quality issues in Alberta.

Background

Albertans count on having a reliable supply of electricity – an important commodity in our everyday lives. Alberta's electricity sector has seen many significant changes in the last ten years, including deregulation and a growing demand for power due to rapid industrial development and population growth. At the same time, concerns have been raised about the health and environmental impacts of air emissions due to electricity generated from fossil fuels, mainly coal.

Electrical Energy Generation by Source



Coal: 44,244 GWh



Natural gas: 20,384 GWh



Hydro: 2,013 GWh



Wind: 1,433 GWh



Other: 1,138 GWh

Actual Total Generation (GWh) by Fuel in Alberta in 2007
*Other is biomass and waste heat

Source: Alberta Electric System Operator

The electric power generation sector is a significant emitter of greenhouse gases, as well as several major air pollutants: sulphur dioxide (SO₂), nitrogen oxides (NO_x) and mercury (Hg). In 2006, this sector produced 30 percent of Alberta's total SO₂ and 10 percent of its total NO_x¹. The top six sources of mercury emissions in Alberta are also electric power generation facilities.²

Greenhouse gases (GHGs) were a priority substance in the original Framework, which contained several recommendations related to GHGs. GHGs are being addressed through other climate change initiatives, including Alberta's Climate Change Strategy, and are not part of this review. Coal-fired electricity units are also a source of particulate matter.

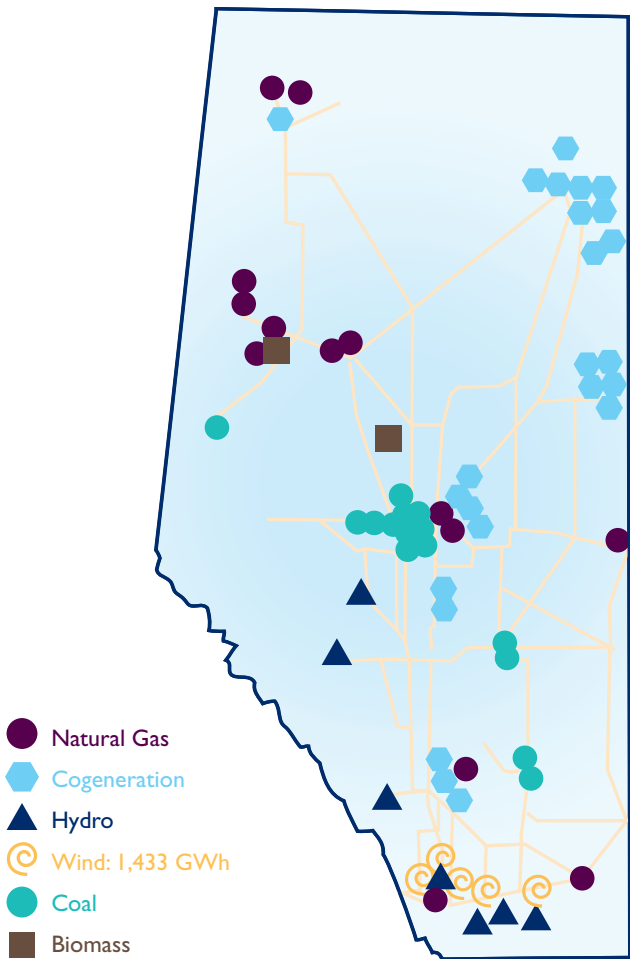
In January 2002, Alberta Environment asked CASA to recommend a new way of managing air emissions from the province's power plants. CASA successfully used a collaborative approach to come up with innovative solutions to deal with these emissions, producing *An Emission Management Framework for the Alberta Electricity Sector* in 2003. Public consultations were an important part of the process to develop these solutions. The Framework was promptly accepted by the Government of Alberta, which, along with the electricity generation industry, is implementing the 71 recommendations for reducing emissions.

To ensure continuous improvement and keep the Framework timely and relevant, a key recommendation was that a multi-stakeholder review be done every five years. The intent is not to re-do the 2003 Framework but rather to review progress and see if updates are needed in light of new technology or new information related to air emissions and their impacts.

As part of the first review, CASA is talking with Albertans who have an interest in this issue. If you have comments or suggestions, see the section titled "Having Your Say" at the end of this pamphlet for ways to provide your input.

¹ Source: www.ec.gc.ca/pdb/cac/Emissions1990-2015/2006/2006_AB_e.cfm. Natural and open sources are included in the total Alberta emissions.

² Source: Search for mercury in Alberta at www.ec.gc.ca/pdb/querysite/query_e.cfm.



Alberta's Electric System: Generation and Transmission (2007)
 Source: Alberta Energy Overview, Alberta Energy

The Emission Management Framework for the Alberta Electricity Sector and its Implementation

The 2003 Framework has seven key areas, listed in the left column of the table on the next page. The middle column describes progress in implementing recommendations in each key area. The right column notes the specific recommendations in the original Framework that relate to each key area. The Framework, along with other information, is available online at www.casahome.org/?cat=73 or www.environment.alberta.ca/642.html or by request from CASA or Alberta Environment.

Key Area	Implementation Progress	Relevant Framework Recommendations
Emissions standards for new units	Alberta Environment has implemented these recommendations through its approvals process, by issuing Alberta Air Emission Standards for Electricity Generation, and by developing Regulation 33/2006 on emissions trading.	6, 8, 9, 10a, 19
Emissions requirements for existing units	Alberta Environment has implemented these recommendations by issuing Alberta Air Emission Standards for Electricity Generation, and by developing Regulation 33/2006 on emissions trading, and Regulation 34/2006 to control mercury.	7, 8, 9, 10, 10a, 11, 13, 14, 16, 17, 22
Stakeholder review at 5-year intervals	At the request of Alberta Environment, CASA established a project team in 2007 to lead the first five-year multi-stakeholder review of the Framework.	10a, 12, 15, 21, 22, 29, 30, 31, 34, 35, 71
Identifying and addressing hot spots	Alberta Environment created a <i>Guide for Responding to Potential Hot Spots Resulting from Air Emissions from the Thermal Electric Power Generation Sector</i> .	32, 33
Monitoring, transparency and accountability	Alberta Environment has implemented most of these recommendations via Regulation 33/2006 on emissions trading, establishing the Continuous Emission Monitoring System code with electronic data submission to be possible in the future, and working with other stakeholders (e.g., the Canadian Council of Ministers of the Environment, the Alberta Environmental Network).	36 – 54
Renewable and alternative energy	The Government of Alberta accepted the framework target of 3.5% renewable and alternative energy by 2008.	55 – 64
Energy efficiency and conservation	CASA prepared a report and recommendations on energy efficiency and conservation. The other recommendations in this key area are in various stages of implementation.	65 – 68

The Five-Year Review

Although CASA considered a wide range of factors in developing the Framework, it was based on certain economic assumptions and emissions forecasts of the day, as well as best available technology economically achievable (BATEA) at the time. CASA also identified five priority substances that were the focus of the Framework (nitrogen oxides, sulphur dioxide, mercury, particulate matter, and greenhouse gases), knowing that new priority substances could emerge in the future.

The review process involves an initial scoping by CASA to determine which, if any, of the areas warrant a detailed assessment. This initial scoping work is underway. If no new information on technology emerges and no concerns arise from environmental, health or economic factors, a full review will not be necessary. If new information or concerns do emerge, then a detailed review will be done and recommendations made to address them.

Objectives of the 2008 Review

As part of this first five-year review, CASA is examining:

- Information on emissions to determine if revisions to any of the Framework elements are needed.
- New information on air emission substances from power generation, as well as their potential health and environmental impacts.
- Existing and new technologies and whether emission limits or a specific technology should be prescribed.
- Continuous improvement reports submitted by industry and goals identified by industry for further improvements.
- Air emissions standards for nitrogen oxides, sulphur dioxide, mercury, and particulate matter for electric power plants approved for construction after 2010.

Having Your Say

CASA welcomes your input on this topic. Your responses and comments will be combined with those of others and reported as percentages or common themes. You will not be identified by any of your responses. A summary of comments received may appear in the final CASA report.

You can give us your comments in several ways:

- Attend a meeting in your area:

Hanna

Location: Hanna Community Centre
503 - 4th Street West
Hanna

Date: January 27, 2009

Time: 7 – 9:30 p.m.

Keephills

Location: Keephills Community Hall
15A - 51515 Range Road 32A
Duffield

Date: January 29, 2009

Time: 7 – 9:30 p.m.

- Complete the online survey at www.electricaid.ca
- Call or email CASA at 780-427-9793 or casa@casahome.org for more information or to request a copy of the discussion guide and survey. Mail or fax your completed survey to:

Clean Air Strategic Alliance
10th Floor 10035 - 108 St. NW
Edmonton AB T5J 3E1

Fax: 780-422-3127

- Send us a written submission of not more than two pages, answering the following questions:
 - What do you think is the key issue related to emissions from power plants?
 - What are your solutions?
 - How should these solutions be incorporated into the five-year review?

The deadline for input is February 28, 2009.

Survey



CASA welcomes your input on the management of emissions associated with electricity generation in Alberta. Your responses to this survey will be combined with those of others and reported in summary form only, as percentages or common themes. You will not be identified by any of your responses. A summary of comments received may appear in the final CASA report.

A: To help us analyze the survey responses, please tell us about yourself by answering the following questions.

I. Which category best reflects your role when answering this survey.

- Individual – general public
- Individual – air quality or energy-environmental issues professional
- Representative of a company working in the electricity sector
- Representative of any other company or business (not working in electricity or directly related service industry)
- Representative of a government department or agency
- Representative of a public interest group (e.g., environmental, agricultural, surface land owners, health)
- Representative of an Aboriginal community or group
- Other (please specify)

Survey con't

2. Which category best describes the location of your residence relative to electricity generation facilities:

- I live, or own a seasonal property, close to a coal or gas fired power plant [within 50 km]
- I live downwind of a coal or gas-fired power plant but more than 50 km away
- I do not live or own property close to a coal or gas-fired power plant

3. Please provide the first three characters of your postal code (e.g., "T 5 K")

4. How old are you?

- Under 25 years
- 25 to 44 years
- 45 to 64 years
- 65 and over

5. How familiar are you with the Alberta (CASA) Electricity Management Framework?

- I have read the framework and am quite familiar with it
- I have looked at some of the framework but am only slightly familiar with it
- I have heard of it but haven't ever reviewed it
- I have never heard of it



B: Responses

I. Overall Perspective

1.1 What issues concern you most about the production of electricity **in Alberta?**

1.2. What issues concern you most about the production of electricity **in your local community or immediate region?**

1.3. How concerned are you about air emissions from electricity production **in Alberta?**

Extremely Very Somewhat Slightly Not at All

Why ?

1.4. How concerned are you about air emissions from electricity production in your community?

Extremely Very Somewhat Slightly Not at All

Why ?

2. Albertans are interested in a number of potential air quality issues and related emissions related to electricity production. In the table on the next page please assign your priority level based on your view of the need for action and improvement.

Please note – the CASA Electricity Management Framework does not currently address all of the issues and emissions included in this table. Some issues, such as Climate Change, are addressed through a separate strategic management framework.

B: Responses con't

Potential Issue and Associated Emissions	Priority Level			
	Hi	Med	Low	None
Acid Deposition / Acid Rain: Sulphur dioxide and nitrogen oxide emissions	Hi	Med	Low	None
Air Toxins: Mercury, heavy metals, fine particulates	Hi	Med	Low	None
Climate Change: CO ₂ and other greenhouse gas emissions	Hi	Med	Low	None
Ground-level ozone / Smog: Nitrogen oxide emissions	Hi	Med	Low	None
Odour	Hi	Med	Low	None
Dust Particulates	Hi	Med	Low	None
Aesthetic (Visual):	Hi	Med	Low	None
Other: please specify	Hi	Med	Low	None

For issues above to which you assigned a **high or medium** priority – please now rank them in relative **order** of priority:

Potential Issue and Associated Emissions	Priority Rank			
	1	2	3	4
Acid Deposition / Acid Rain: Sulphur dioxide and nitrogen oxide emissions	1	2	3	4
Air Toxins: Mercury, heavy metals, fine particulates	1	2	3	4
Climate Change: CO ₂ and other greenhouse gas emissions	1	2	3	4
Ground-level ozone / Smog: Nitrogen oxide emissions	1	2	3	4
Odour	1	2	3	4
Dust Particulates	1	2	3	4
Aesthetic (Visual):	1	2	3	4
Other: please specify	1	2	3	4



B: Responses con't



3. What are the most important changes you would like to see implemented to address your concerns?

4. Albertans are interested in a number of potential solution strategies for further improving air quality and reducing emissions, which are listed below. Please assign a priority level related to electricity production, based on your view of the need for action and improvement.

Potential Solutions	Priority Level			
Increasing the efficiency of coal and gas fired power generation	Hi	Med	Low	None
Increasing the proportion of clean renewable electricity sources	Hi	Med	Low	None
Encouraging reduction of end-use demand for electricity through behaviour change / conservation	Hi	Med	Low	None
Encouraging reduced use of electricity through adoption of more efficient technologies	Hi	Med	Low	None
Imposing tougher standards on the release of air emissions from generation facilities	Hi	Med	Low	None
Other: please specify	Hi	Med	Low	None

For issues above to which you assigned a **high or medium** priority – please now rank them in relative **order** of priority:

Potential Solutions	Priority Rank			
Increasing the efficiency of coal and gas fired power generation	1	2	3	4
Increasing the proportion of clean renewable electricity sources	1	2	3	4
Encouraging reduction of end-use demand for electricity through behaviour change / conservation	1	2	3	4
Encouraging reduced use of electricity through adoption of more efficient technologies	1	2	3	4
Imposing tougher standards on the release of air emissions from generation facilities	1	2	3	4
Other: please specify	1	2	3	4

B: Responses con't

5. Please review the following statements and indicate to what degree you agree or disagree with each:

5.1. Electricity production has no negative impacts on me or my family.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.2. Government and industry have achieved the right balance between managing the cost of pollution control for generation facilities and protecting the environment.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.3. Air emissions from electricity production have no significant impact on human health in my family or community.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.4. Air emissions from electricity production have no significant impact on the natural environment in my family or community.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.5. The CASA electricity framework plays a valuable role in maintaining good air quality in **my community**.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.6. The CASA electricity framework plays a valuable role in maintaining good air quality **in Alberta**.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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B: Responses con't



5.7. Air emissions from electricity production are having no significant impact on agriculture in my community.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.8. Effective environmental monitoring is in place to detect and report any significant problems associated with air emissions from electricity production.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.9. I would be prepared to pay up to 20 percent more for the electricity I consume to achieve significant reductions in air emissions.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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5.10. I plan to pursue the option of generating some or all of my own electricity in the near future.

Strongly agree	Agree	Disagree	Strongly disagree	Don't know	Not relevant
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6. Please provide any general comments or explanations you wish to share.

Thanks for taking time to provide CASA with your input.

If you would like to receive future information or updates from CASA on this topic, please provide your contact information. This information will not be connected or stored with your responses to the survey that you have just submitted:

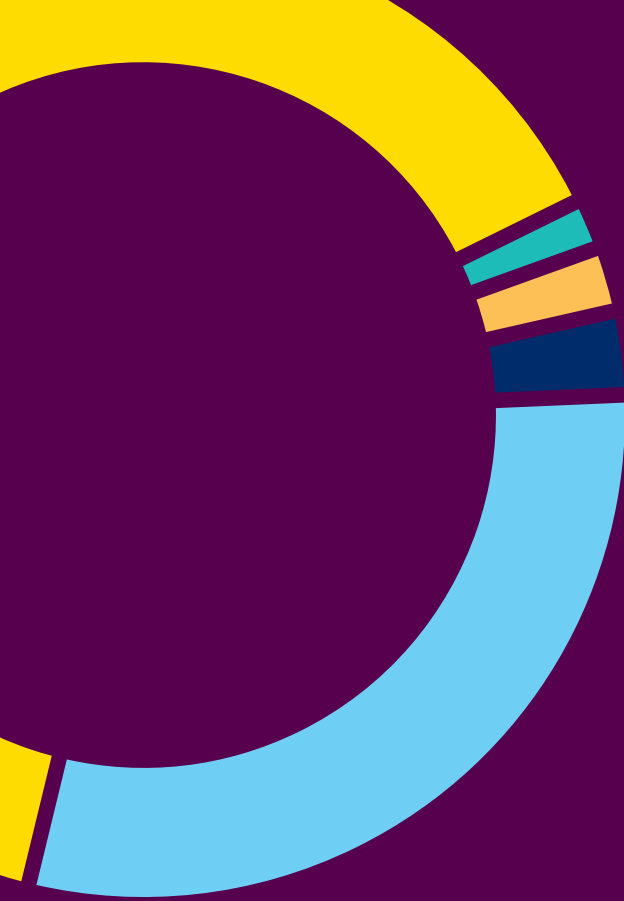
Name _____

Postal Address _____

Or

Email _____





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